

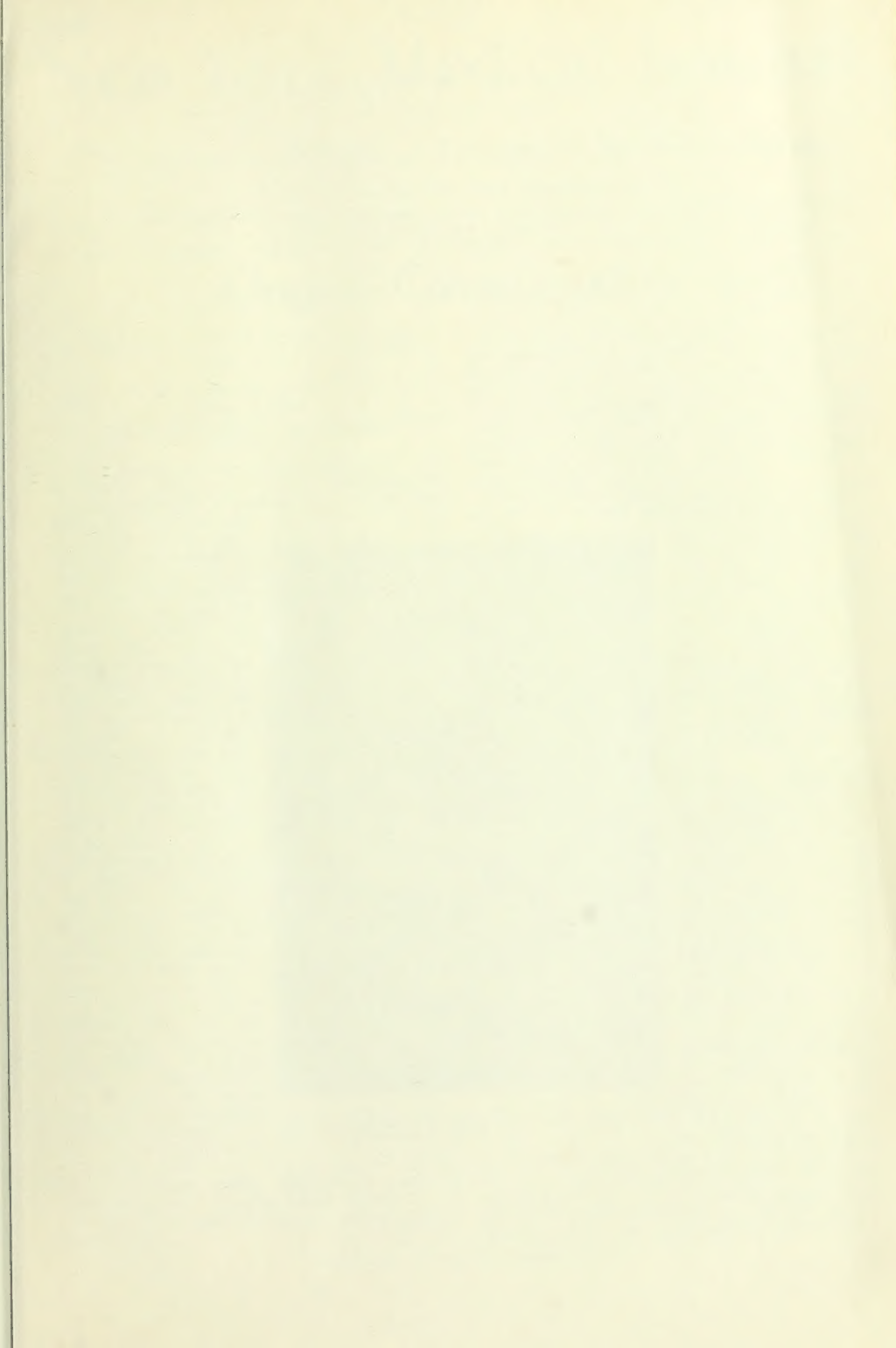
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THE TUBED PEDICLE IN PLASTIC SURGERY.

By H. D. GILLIES, F. R. C. S.,

London, England,

Senior Plastic Surgeon, Queen's Hospital, Sidcup, Kent; Surgeon in Charge, Plastic Department, Prince of Wales's Hospital, London, N.

The principle described was evolved by the writer in October, 1918, at which time he was confronted with the difficulties of restoration in severe facial burns. In such cases, unlike the gunshot injury of a part of the face, all of the skin had been damaged or destroyed by fire and no facial flaps were available from which to make the necessary repairs. Recourse was had to the chest and neck, but when the flaps were taken in these regions much difficulty was encountered in securing an adequate blood supply for the flaps. This difficulty was overcome to a very great extent by the principle which forms the subject of this article.

Supposing it is desired to graft a large area of skin of the chest to the face, it is necessary to have a pedicle to the flap of skin whose base is situated somewhere at the upper part of the neck.

A strip of skin, usually between two and one quarter and three inches in breadth, is raised from the neck to form the pedicle, its upper and lower extremities being left untouched. Two edges of the pedicle are accurately sutured together, skin edge to skin edge, by a continuous suture. Subcuticular catgut is perhaps the most effective suture material but in the majority of cases an ordinary continuous horse-hair is used.

It is usually possible to undermine the edges of the wound which is caused by the removal of the flap by raising the pedicle sufficiently free to obtain approximation beneath the pedicle. This is facilitated by raising the shoulder and inclining the head toward the affected side. Tension sutures in addition to the skin edge sutures, are required to obtain union. The pedicle, now tubed, lies like a sausage between base and extremity.

In the course of some three weeks considerable arterial and venous anastomosis has occurred in the pedicle, and the circulatory fluids are led from the base of the pedicle toward the chest extremity. The flap may now be raised from the chest and sewed into position on the face, the pedicle being left in its tubed condition. In this manœuvre it is obvious that the pedicle cannot become infected. It will stand a considerable amount of twisting and even kinking, and the blood supply of the flap is enormously improved.

When the flap has taken root on the face the pedicle may be divided and returned to the neck, or, as is more commonly the case, the pedicle is divided at its neck end, opened out until it remains flat, and spread on some other portion of the face. Once having placed the flap onto the face, it is possible to use the pedicle in a variety of ways and positions.

Flaps of skin can thus be brought, by stages, from a long distance to the face. In other parts of the body which are the site of severe burns and contractions, larger flaps of skin may be used to relieve the disability by this method. The photographs illustrate actual cases in which the pedicle was used.

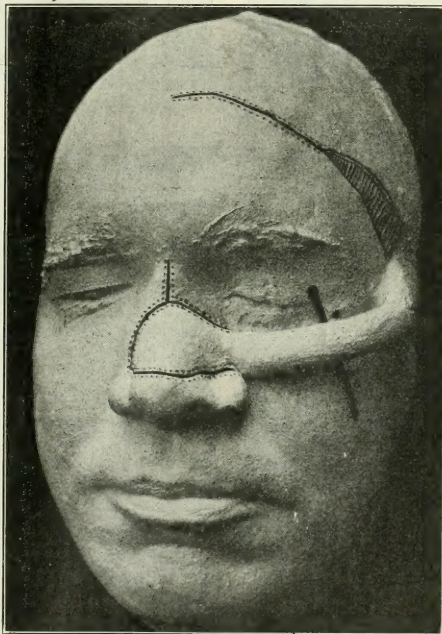


FIG. 1.—Photo of plaster cast illustrating the use of tubed pedicle flap carrying the superficial temporal artery, to close the flap and repair the deformity of the nose.

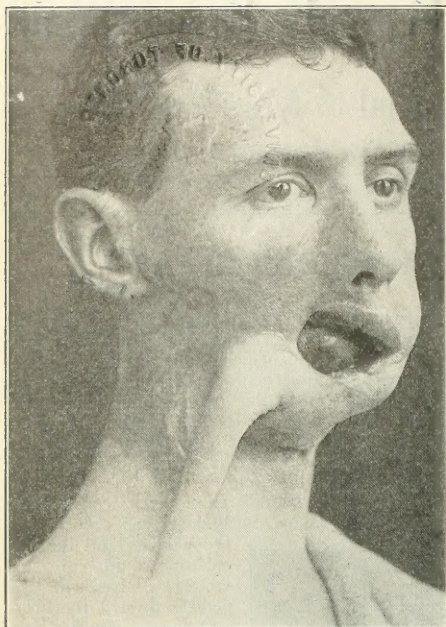


FIG. 2.—Facial gap partly closed by flap. Pedicle still attached to chest.

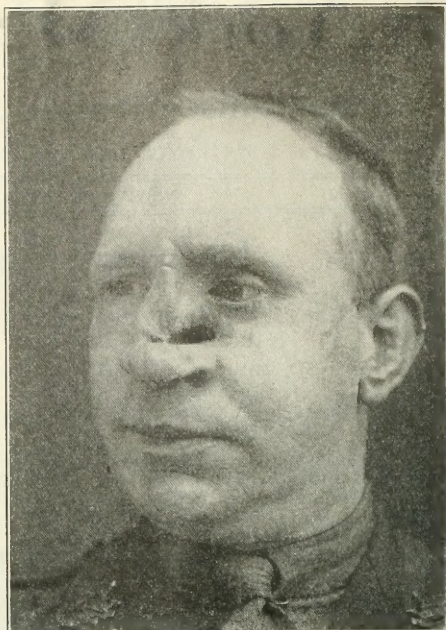


FIG. 4.—Showing gap resulting from gunshot wound.

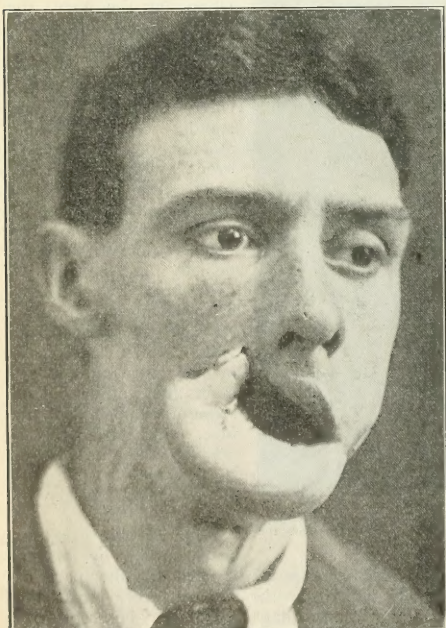


FIG. 3.—Pedicle severed from chest; and, its blood supply now being driven from its facial attachment, the pedicle is being used as a flap to complete the closure. (Early stage.)

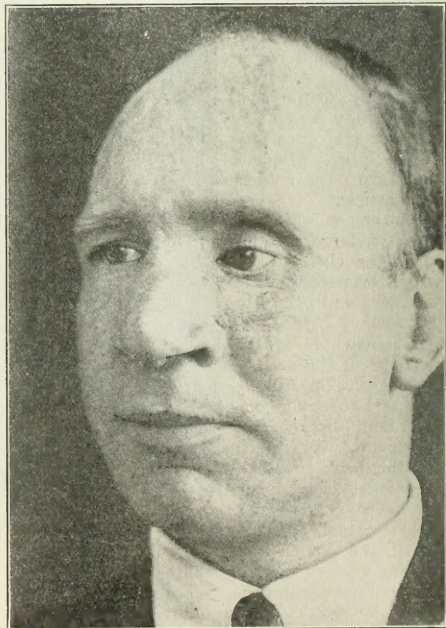


FIG. 5.—The gap closed, and the pedicle returned to its normal position. (Note the lack of secondary deformity.)

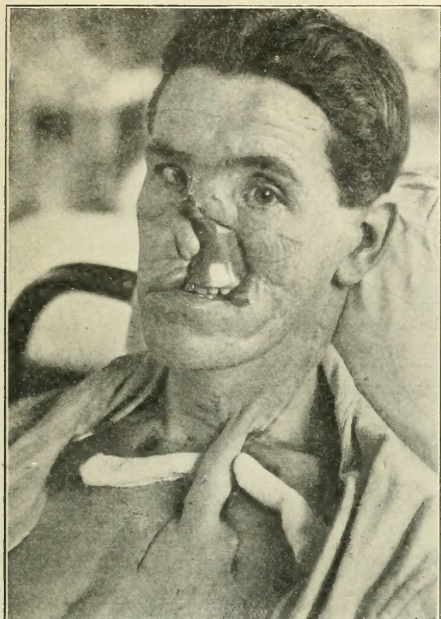


FIG. 6.—A chest flap, destined for use on the face, with its pedicle tubed.

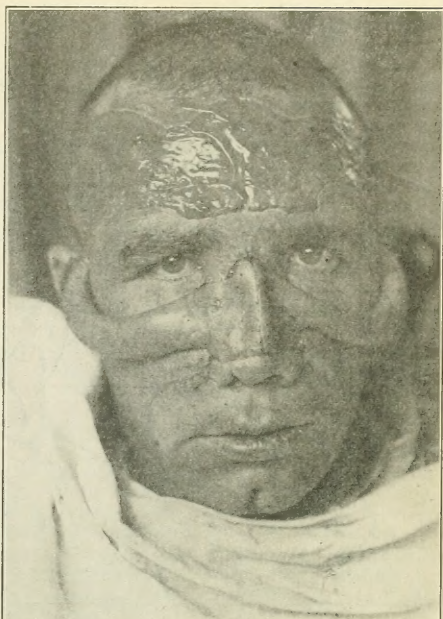


FIG. 8.—Showing use of double temporal artery flaps in rhinoplasty. (A central frontal scar precluded the use of a single flap.)

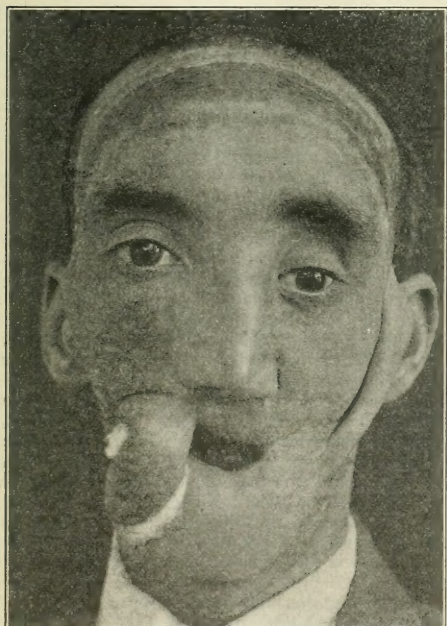


FIG. 7.—The skin of the upper part of the forehead has been swung down on a double temporal artery pedicle to form the covering of the new chin.

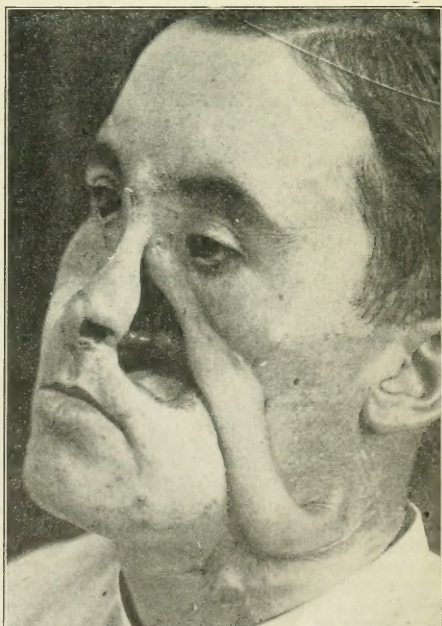


FIG. 9.—A flap has been brought up from the chest on a tubed pedicle and used to begin the closure of the facial flap. The pedicle will later be severed from the neck to complete the closure.

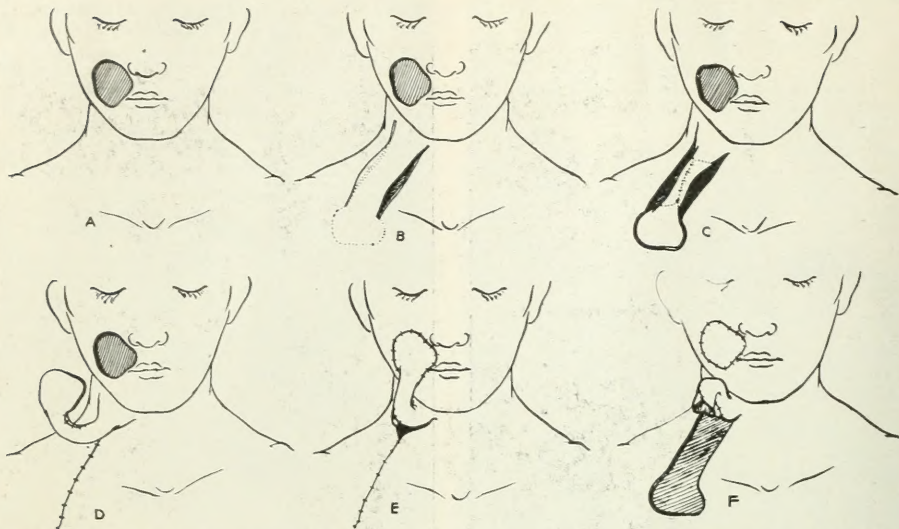


FIG. 10.—Diagrams illustrating the method of forming the tubed pedicle, according to the author's method. a. Shows defect. b. The incision. c. Tubed flap pedicle. d. Flap swinging upon pedicle. e. Flap sutured. f. Pedicle being returned and unrolled.

THE PALLIATIVE TREATMENT OF URETHRAL STRICTURE.*

BY MAXIMILIAN STERN, M. D.,
New York,

Attending Urological Surgeon, Broad Street Hospital; Associate Urological Surgeon, Post-Graduate Hospital; Consulting Surgeon, Manhattan State Hospital.

It is my opinion that the end results of the palliative treatment of urethral stricture, in cases in which that is possible, are in many respects better than those in which external urethrotomy has been performed, and that we should therefore make every effort to treat these cases palliatively along definite lines with a well planned technic. I have reached this conclusion in consequence of three striking facts: First, that patients who have been previously operated upon (external urethrotomy) and after a period of neglect require further treatment, are catheterized with great difficulty and often must submit to another external urethrotomy; second, that in these cases, even if catheterization is possible, dilatation is extremely difficult and softening even with the aid of heat is impossible; and, third, that more frequent treatment is required to keep the urethra patent than in cases treated palliatively. These patients are not able to remain without catheterization for nearly so long.

These facts seem incontrovertible, and it is only logical that a urethra which has been cut and traumatized in its entire membranous and prostatic extent should be sufficiently cicatrized to account for these added difficulties. For patients who have never had an attack of acute retention, operation, of course is not considered either by him or by his

physician. The increasing difficulty of micturition and the progressive diminution in the size of the urinary stream are the symptoms for which relief is sought. It is at this time that the importance of palliative measures is greatest. The responsibility for the subsequent course of the disease lies in a great measure with the physician who sees the patient at this time. It is incumbent upon him to inform such a patient of the importance of treatment and of the imminence of acute retention with its concurrent bladder and renal complications.

In spite of these facts, it is surprising how many patients do go on to complete or nearly complete retention. In a number of instances upon inquiring into the reasons for this seeming neglect I have learned several things of much interest. Treatment was described by most of the patients as causing so much pain, bleeding, and increased difficulty of micturition that they were better without it. This leads to the thought that there has been an error in the method of treatment, and I am of the opinion that in most instances this is true. The error seems to lie in the fact that most of us are tempted to make efforts to dilate the area involved much too early. Inflammation of the strictured area and an engorged edema are in all cases the cause of the symptoms, and it is these which should receive our attention, not the stricture itself. This fact is certain that if we are to believe the generally accepted theory as to the so regular incidence of stricture at the bulbomembranous junction. This theory is that the urinary stream expends its force at the angulation in the bulb of the urethra and that a chronic inflammation is maintained by the constant repetition of the irritating factor. While it is perfectly true that a productive inflammation arises

*Read at a meeting of the Harlem Medical Association, April 2, 1919.

from this chronic state, it is equally true that upon the surface of the infiltrated area there is a thick layer of spongy edematous tissue which can be quite easily recognized in the urethroscope and in the wound when external urethrotomy is performed (Fig. 1). It is extremely soft and bleeds easily. It is responsible for the arrest of filiforms and other pliable instruments in efforts to dilate. It is this tissue which so often arrests the urinary stream, even when it is possible to pass a large catheter with ease.

We should approach a urethral stricture with this picture in mind, for it is only occasionally that we see a stricture in its anemic state, for even in rather long standing cases there is so little difficulty that the patients are quite comfortable. After the subsidence of symptoms referable to the inflammation, efforts at softening or facilitating the absorption of the infiltrates are quite gratifying, as I intend to show. Considerable patience is required to refrain from instituting these measures too early; and even later, overactive measures are prone to result in numerous setbacks.

Cases requiring operation.—In a certain number of stricture cases temporizing is not only useless but is even dangerous. These patients are divided into five classes, as follows:

1. Patients who come to us in an anxious and desperate state from days and nights of exhausting efforts to void. These are bad risks for ether narcosis, and should be regarded in the same light as those in whom prostatectomy is contemplated. Suprapubic puncture is often thought of for these patients, but I am averse to this procedure on the ground that extravasation of urine occasionally occurs in consequence of the stretching of the puncture when the bladder subsequently becomes distended, and also because it does not afford the patient sufficient respite from his harassing symptoms, which are resumed when the bladder fills again. Four cases of this variety came under my care during the past year, at the Broad Street Hospital, in which I did suprapubic drainage under gas oxygen narcosis. The results were extremely gratifying, in that none of the patients required any other operative measure. It was found that after the patients had rested about ten days, during which time suprapubic drainage was maintained, it was possible to penetrate the strictured area with an instillation tube and later to pass sounds.

2. Patients with extravasation of urine or other acute lesions, such as periurethral abscess, must be operated upon promptly and radically.

3. Traumatic stricture resulting from external violence or following a previous external urethrotomy. These cases resist all efforts directed to the dilatation or absorption of the cicatricial tissues.

4. Patients suffering from recent traumatism following instrumentation, in whom there are false passages and much bleeding, must be given relief. This must be immediate, as the retention is often complete.

5. The irresponsible patient who, either because of ignorance or carelessness, absents himself from treatment until forced to return with frequent recurrences of retention.

Choice of operation.—In the foregoing list, there are instances in which the operation of choice is obviously cystotomy. External urethrotomy is too often regarded as the only operative measure in urinary retention, even when the life of the patient is in the balance. A rapid cystotomy under gas oxygen narcosis will frequently be all that is necessary, especially if retrograde dilatation or internal urethrotomy accompanies it. Strictures anywhere anterior to the bulb do not, as a rule, lend themselves to dilatation, and contract very readily. Internal urethrotomy is indicated in these cases. The strictures which concern us most are those at the bulbomembranous junction.

Clinical types of stricture at the bulb.—Before entering upon the discussion of the nonoperative method of caring for these patients, it is important that we appreciate the difference in the symptoms of a simple anemic infiltrate and one on which there is an engrafted inflammation. In the former there may be nothing but a mucoid discharge, urinary shreds, and an attenuated urinary stream. These symptoms may go on for years or, after slight exposure, alcoholic or sexual excess, or following exertion, they may be augmented by a slightly increased frequency of micturition with an increased dysuria. The element of inflammation is added to the stricture, and it is this which is invariably the cause of the ultimate closure of the urethral lumen.

Palliative or nonoperative treatment.—In cases not presenting any of the contraindications already alluded to, it is quite possible to obtain by palliative measures end results which are far superior to those obtained by external urethrotomy. This applies to patients presenting stricture at the bulb, with or without engrafted inflammation, since it is certain that the inflammation can be alleviated and the infiltration afterward so handled as to yield to full dilatation.

Inflammatory stricture with occlusion of urethra.—In inflammatory stricture with complete or almost complete occlusion of the urethra, much harm is done by persistent and energetic efforts to pass sounds, catheters, or filiform bougies. In the first instance it should be mentioned that these patients should not be treated as office patients but should be sent immediately to the hospital where they can receive the necessary local and constitutional treatment and be under observation for operative indications, should they arise. The immediate indication must, of course, be met and the bladder either emptied or be allowed to empty slowly. A hypodermic injection of morphine sulphate should be administered before any urethral manipulation is essayed. This will do much to relieve the patient's anxious state and nervous tension. Upon being placed upon the table, he will immediately be given a urethral injection of two drams of novocaine solution, one per cent., containing three drops of adrenalin solution. Spasms of the constrictor is thus eliminated and at the same time a reduction of the edema is accomplished by the adrenalin. This solution should be allowed to remain within the urethra about ten minutes, for it is the time it is allowed to remain in contact with the tissues

rather than the strength of the solution which determines its efficacy. Following these two sedative procedures, it is frequently possible for the patient to void voluntarily. He can then be put to bed with no further treatment, or a few drops of five per cent. argyrol solution can be instilled into the stricture by means of a small metal instillation tube, no effort being made to make the tube enter the stricture. Should the patient be unable to void, however, the best instrument to try first will be a No. 16 blunt ended metal or soft rubber catheter; either of these may enter, even in cases of complete retention. Again failing, a ureter catheter with a probe end of about No. 3 size should be tried.

In my estimation, it is a mistake to make many efforts with instruments gradually decreasing in size, and in the event of the ureter catheter not finding its way into the stricture it becomes necessary to pass it under the direct guidance of the eye. To have at hand an instrument with which this operation becomes certain of accomplishment, is a great comfort. I have devised a urethroscope of the Guerlinger type, with which it is possible to catheterize strictures with great ease.

The operating urethroscope.—This consists of an ordinary endoscopic tube, slightly longer than those in ordinary use, into which the three essential working parts are inserted in one compact bundle (1). This bundle comprises the telescope, which is of the direct vision type, the light carrier, and the cannula or instrument channel. The bundle fits into the tube accurately by means of a water tight sleeve, so as to permit of focusing backward or forward with the telescope and also the rotation of the inner bundle in efforts to catheterize a stricture from various angles without the loss of water at the ocular end. This is an important feature, water pressure within the tube being essential. Dilatation of the stricture orifice with water renders it easy of identification and instrumentation, especially when bands or a cribriform opening are present.

The cannula is so constructed that the catheter or filiform is always directed toward the centre of the field, so that by revolving the inner bundle while holding the tube firmly against the face of the stricture a catheter can be made to approach it from any angle. This is an advantage, because the lumen may be tortuous and the orifice eccentric. All the moving parts being included in the inner bundle the necessary manipulations are possible without changing the position of the tube against the face of the stricture. I have found in several cases that slender bands were accountable for the difficulty, and with my instrument armed with a fulgurating electrode I have succeeded in destroying them, after which it was quite easy to pass small sounds.

In the class of cases under discussion—the inflammatory stricture—a catheter is introduced into the bladder and, after withdrawing the urethroscope is fastened in place. The urine is allowed to dribble away while the patient is in bed and nothing further is done for him during a period of twenty-four hours. At the expiration of that time the catheter is removed when it will be found that

the patient can void. From this time on he is treated as a patient with incomplete retention.

Inflammatory stricture with partial retention.—This condition is characterized by all the harassing symptoms of the more acutely inflamed strictures in which there is complete obstruction, except that there is no vesical distention. The patients are able to void and empty the bladder completely but only with the greatest effort, the urine coming away in either a fine stream or in drops. It is my experience that excellent results are produced by a hypodermic injection of morphine, a hot hip bath, and continued rest with treatment of the stricture through an instillation syringe filled with argyrol solution, alternating with warm urethral irrigations of boric acid solution. Bleeding occurs on the slightest provocation, indicating the degree of inflammation, and gentleness is an important element in the treatment. Irritating solutions which increase the desire to micturate are strongly contraindicated, and for this reason I feel that silver nitrate should never be employed in these cases. The installation of argyrol into the stricture orifice will be found sedative and astringent to the inflamed tissues, and should be employed once a day until finally it is found that the tube penetrates the stricture without difficulty and without causing the slightest bleeding. In my opinion the symptom of bleeding is a very useful index as to the condition within, and I am guided by it in determining the time when the patient may leave the bed and when I can best pass solid instruments. When instruments are admitted without this symptom appearing and the urine is clear, I regard the case as one of simple, anemic stricture and efforts to dilate it can be instituted.

Anemic stricture.—An effort is made in these cases to soften and cause absorption of the infiltration with the aid of heat hyperemia and dilatation with the aid of hot water. These measures, however, cannot be instituted early. During the initial stage of the treatment, before a No. 21 F. sound can be introduced, it is necessary to proceed cautiously lest traumatism retard progress. Soft bougies, well lubricated and properly bent, introduced every second or third day, serve admirably. Steel sounds of low calibre are apt to cause injury and are not recommended by the best authorities. Irrigations for the prevention of cystitis or urethritis should proceed in the intervals. For the application of heat and dilatation I employ the instrument which I have described in a previous communication and which has given good results (2).

The irrigating dilator (Figs. 2, 3, and 4).—This instrument because of its light weight is selfretaining and can be employed for protracted treatments without discomfort. It measures 21 F., with blades retracted. The central tube supplies water and the blades stand well away from it to allow for its escape at the meatus. This tube is perforated in several places so that any part of the urethra may receive irrigation. Tubes of smaller calibre can be inserted so as to shut off any of these perforations, thus irrigating only the desired area. The irrigator is provided with a sliding shield at the meatal end, to catch and direct the return flow into a receptacle.

At the distal end either a straight or a curved tip may be used for either anterior or posterior urethral application.

This instrument has proved more valuable in my hands that the dilators of Kollman, even though it has no dial upon which the degree of dilatation is

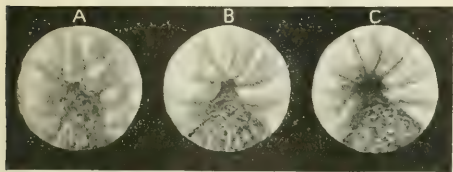


FIG. 1.—Urethroscopic view of the stricture: A. Cystic and spongy edema, orifice barely visible; B. less edema and orifice more patent as instrument is drawn forward; C. ditto.

registered, the tactile sense serving this purpose. Moreover, it is light and selfretaining and is not so rigid, the blades having considerable resiliency. An advantage lies in the fact that when the curved tip is employed and the instrument inserted all the way to the bladder, dilatation occurs only to that part of the urethra lying anterior to the compressor and not all the way back, as with the Kollman instrument. Finally, there is a distinct advantage in being able to irrigate only the part of the urethra requiring it. Thus A permits irrigation of the membranous and prostatic urethra and trigone; B, of all the urethra excepting the trigone; C, of the prostatic urethra exclusively; and D, of the trigone exclusively.

Technic.—Irrigations of hot water in order to be of any value should be continued for at least fifteen minutes. The temperature tolerated for this length of time will be found to average about 120 degrees F.

In a previous communication I described an electrically heated water container, in which the stream was actuated by air pressure to take the place of gravity. (3). This container had advantages, but any irrigator elevated to the proper height and filled with water at about 140 degrees F. (to allow for radiation) can be made to serve the purpose very well. It is only necessary to increase or diminish the rapidity of the flow in order to change the temperature delivered to the patient, for after all the patient's tolerance is the best index of temperature desired. After the dilator is introduced and the desired inner tube inserted, the irrigator is connect-



FIG. 2.—Inner tubes for controlling irrigation.

ed and the warm water allowed to flow. Several times during the course of the treatment the dilator is screwed up slightly until distinct resistance is felt. The dilator should then be allowed to remain thus, and the irrigation continued for about

five minutes thereafter. In all, the treatment will not usually require more than fifteen or twenty minutes because of the slight feeling of uneasiness and general warmth experienced by the patient. There is a natural tendency to administer the water too hot, which causes sweating and bodily discomfort, even when there is no local pain. These treatments can ordinarily be given once a week without irritability becoming marked. In the interval a sound should be introduced, and it will be observed that it is not so tightly grasped by the stricture as ordinarily. It will also be observed that the size can be augmented at shorter intervals. When a No. 30 F., can be inserted easily without causing bleeding, the patient is discharged.

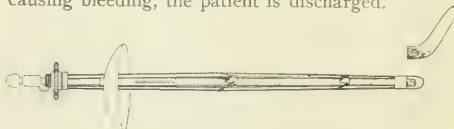


FIG. 3.—Dilator collapsed, blunt end attached.

Results obtained.—While I do not assert that permanent cures are obtained by this method of treatment in even the majority of cases I do believe that in a few months the patients are put in such a condition that they require no treatment for at least a year and some seem to be actually cured. In this communication I cannot go into the matter of case histories, but it will suffice if I give in a general way the subsequent history of the patient so treated. These results are fairly reliable, containing information derived from patients thus treated for the past eight years. They are instructed to present themselves for subsequent treatment when the slightest diminution in the size of the stream occurs. In most of my cases this has occurred in about a year. I have observed that after the second series of treatments, which usually is a short one, the interval is lengthened to nearly two years. I have one case in which there has been no contraction in four years, and I am inclined to regard this as a cure. It was the case of a patient who

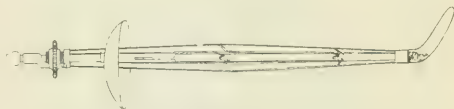


FIG. 4.—Dilator expanded, curved end attached.

came with filiform stricture and almost complete retention.

These results are better than I have been able to obtain in the cases in which I performed external urethrotomy and I am of the opinion that in patients not presenting positive contraindications palliative treatment is the method of choice.

CONCLUSIONS.

1. That external urethrotomy is not the operation of choice for the cure of urethral stricture at the bulb.
2. That in complicated cases requiring immediate operative interference, cystotomy alone is frequently to be preferred, lowering mortality and yielding

better end results in so far as the urethra is concerned.

3. That in uncomplicated cases of acute urinary retention, a ureter catheter inserted into the bladder with the operating urethroscope, followed by rest and other palliative measures, offers better possibilities than surgical procedures.

4. That hyperemia and dilatation as herein described are valuable adjuncts to the absorption of urethral infiltrates.

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219 WEST EIGHTY-FIRST STREET.

DIVERTICULUM OF THE ESOPHAGUS*

Report of two cases, one double.

By HUBERT ARROWSMITH, M. D., F. A. C. S.,
Brooklyn, N. Y.

Pulsion diverticulum of the esophagus is of sufficiently rare occurrence to justify the presentation of the following case histories. No previous observation of a distinct double diverticulum has, as far as I know, been recorded in literature.

The first patient was a man seventy-six years of age, apparently in unusually good physical condition, who for several years had suffered from gradually increasing difficulty in swallowing and latterly from regurgitation of the ingested food and evidences of malnutrition. He came to me for esophagoscopy examination at the suggestion of Dr. George K. Meynen, of Jamaica, L. I.

X ray plates by Dr. Charles Eastmond showed a pouch of the esophagus which measured two inches transversely and one and one half inches in a vertical direction; a diverticulum of rather unusual size. (Figs. 3 and 4.) Under local cocaine anesthesia, a number three Mosher ballooning esophagoscope was passed and the appearance is graphically portrayed by the sketch made, *ad naturam*, by Dr. Henry L. Lynah, who was present. (Fig. 1). The distinct patulous opening leads to the pouch, the shaded furrow above it indicates the remaining lumen of the esophagus. The tube readily passed to the bottom of the diverticulum, but it was impossible to enter the esophagus itself, the circumference of the opening being contracted and unyielding.

A few days later, at his hospital, Doctor Meynen did most beautifully a Jackson-Gaub operation, under esophagoscopy control by myself, Doctor Lynah being with us. This procedure is readily understood from the schema, which Doctor Jackson has kindly placed at my disposal. (Fig. 7.)

As, before stated, there was no difficulty in passing the tube to the bottom of the diverticulum, but on withdrawing it, I was unable to pass it into the true lumen of the esophagus. The end of the tube was placed on the esophageal opening, and through it I inserted a small elastic bougie into the stomach;

after withdrawing the esophagoscope, over the bougie as a guide, I passed successively several bronchoscopes commencing with the 5 mm. and eventually reaching the 10 mm., which enabled Doctor Meynen to complete his operation in exact accordance with Jackson's schematic description. The skin incision was made on the left side of the neck.

When the operation was finished, Doctor Lynah

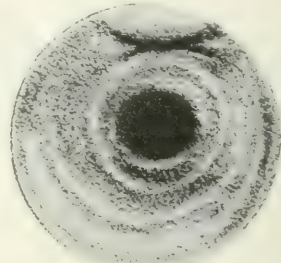


FIG. 1.—The shaded furrow indicates the remaining lumen of the esophagus.

again sketched the esophagoscopy picture. (Fig. 2.) The line of suture is distinctly seen and the dark area above is the entrance to an unobstructed esophagus.

The patient was nourished through a pernasal tube and was out of bed on the third day, afebrile and very comfortable. On the fifth day he had a sudden rise of temperature to 106° and a swelling developed in the supraclavicular on the side opposite to the operation wound. I was summoned on the sixth day and found him moribund. Immediately after death, I passed the esophagoscope and found the esophageal wound intact and healed; this was confirmed on subsequent removal and examination. The external wound had healed *per primam*. Cultures were made from the right side of the neck which, according to the pathologist, showed no

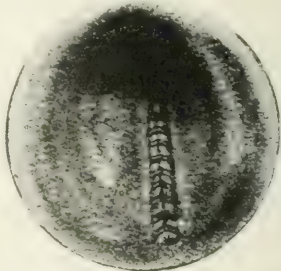


FIG. 2.—The esophagoscopy picture after the completion of the operation, showing the line of suture.

growth. I am at a loss for an explanation of this sudden and overwhelming infection.

The second patient was sent to me for examination by Dr. Calvin F. Barber, of Brooklyn. A man, forty-four years of age "had always had difficulty in swallowing." During the preceding two years this symptom had grown progressively worse; there

*Presented at the first meeting of the Association of American Personal Endoscopists, Philadelphia, May 31, 1928.



FIG. 3.—Anteroposterior view of x ray photograph, showing large sized diverticulum. The pouch measured two inches transversely and one and a half inches in the vertical direction.



FIG. 4.—Lateral x ray view of the large diverticulum shown in Fig. 3. The shadow of the pouch, which has been lined with an opaque material, is clearly shown.



FIG. 5.—Anteroposterior view showing two distinct pouches and an extreme narrowing of the upper part of the thoracic esophagus. The esophagus is almost obliterated for some distance below the second pouch.



FIG. 6.—Lateral view showing the excursion of part of a bismuth meal in one of the pyriform sinuses. The extremely small passage between the upper and lower diverticula is shown.

had been regurgitation of food, failure of nutrition and loss of weight.

Under local cocaine anesthesia, I passed the esophagoscope and found a well defined diverticulum. Preliminary to a more detailed examination, he was sent to Doctor Eastmond for radiography. The pictures show a remarkable and unique condition. (Figs. 5 and 6.)

The anteroposterior view shows the two distinct pouches and the extreme narrowing of the upper

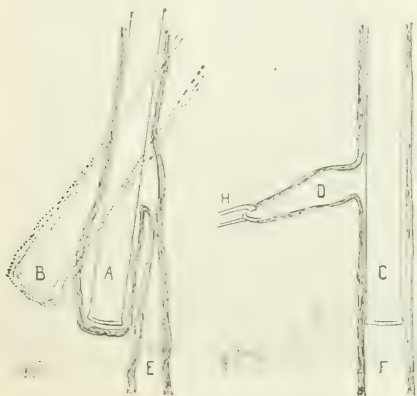


FIG. 7.—Schematic representation of esophagoscopy aid in the excision of a diverticulum. Jackson-Gaub operation. At A the esophagoscope is in the bottom of the pouch after the surgeon has cut down to where he can feel the esophagoscope. Then the esophagoscopist causes the pouch to protrude, as shown by the dotted line B. After the surgeon has dissected the sac entirely loose from its surroundings, traction is made on the sac as shown at H and the esophagoscope is inserted down the lumen of the esophagus as shown at C. The esophagoscope now occupies the lumen which the patient will need for swallowing. It only remains for the surgeon to remove the redundancy, without risk of removing any of the normal wall. (Courtesy of Dr. Jackson.)

part of the thoracic esophagus. In the lateral view, the uppermost shadow is evidently due to the sojourn of part of the bismuth meal in one of the pyriform sinuses. Note the extremely small passage between the upper and lower diverticula and the almost complete obliteration of the esophagus for some distance below the second pouch. This patient declined operation and his subsequent history is unknown to me.

These two observations have made me, if possible, an even greater enthusiast about the value of Mosher's ballooning esophagoscope. The first has convinced me that the Jackson-Gaub procedure is almost mathematically accurate.

170 CLINTON STREET.

Contraindications to Operation for Stone of the Kidney and Ureter.—Carlos Morales Macedo (*La Cronica Medica de Lima, Peru*, October, 1919) enumerates the contraindications as follows: active luetic or tuberculous infection, gonorrheal rheumatism, high blood pressure, or cardiac incompetency. Hepatic or pancreatic insufficiency should be carefully investigated, as well as focal infection such as pyorrhœa alveolaris; finally gastrointestinal intoxications. Acute bronchitis or derangements of the general nervous system may at least delay, if not prevent, surgical intervention.

ASEPTIC CATHETERIZATION OF THE URINARY BLADDER.

BY A. L. SORESI, M. D.,
New York.

Catheterization of the urinary bladder is one of the most frequent and serious causes of infection of the bladder and upper urinary tract. Some authors state that the use of the catheter is the first step toward the grave. Infection of the bladder and upper urinary tract does occur, not because it is not possible to catheterize the bladder aseptically, but because the occasional or repeated use of the catheter is done without an observation of all the aseptic rules that would make for aseptic catheterization. These rules are not observed because they are too complicated and too little importance is given to the possible infection caused by the catheter. We hope, therefore, that the simple technic that we recommend and that can be followed even by the patient himself or can be applied by the most inexperienced nurse or intern will be welcome. The only requirements are the instruments shown in Fig. 1 and care in performing the catheterization. The articles shown are: A pair of thumb forceps, a; catheter, b; and container and a flame, c; a jar containing a solution of about fifteen per cent. of tragacanth, d. The catheter is rolled upon itself, if the container in which it is going to be sterilized is very small, and is put in the container c filled with the solution of tragacanth and boiled for about two minutes.

The person who is going to do the catheterization takes the catheter from the container with the thumb forceps which have been sterilized, either by putting them into the container with the ends pointing downward or by passing the ends over the flame; the catheter is held between the index finger and thumb of the left hand (Fig. 2) and unrolled with the help of the thumb forceps. The patient is instructed to hold his glans penis as shown in Fig. 3. He is told to compress the glans between the thumb and index fingers so as to open the meatus. If the patient is unable to do this it may be held by an assistant as described. When the meatus is well opened as shown in Fig. 3 the person who performs the catheterization holds the end of the catheter between the thumb and index finger of the left hand, seizes the other end of the catheter with the thumb forceps about two centimeters from the tip and introduces the tip into the meatus and, with the help of the thumb forceps, pushes the catheter into the urethra until the bladder is reached and urine appears. The introduction of the catheter by means of the thumb forceps is extremely easy when this simple technic is followed. The catheter is seized by the thumb forceps at about two centimeters from its tip and then introduced into the meatus. The catheter is pushed into the urethra until the forceps almost touch the meatus, then the forceps again take hold of the catheter at about two or three centimeters from the meatus and introduce the catheter into the urethra until the thumb forceps almost touch the meatus and this manoeuvre is repeated until the entire catheter has been introduced. In introducing the catheter

attention should be given to see that the tip is put into the urethra without touching the meatus, and when the catheter is being pushed into the urethra the forceps should never touch the meatus. And to avoid touching it it should always stop three or four millimetres from the meatus.

If the technic we have described is followed it

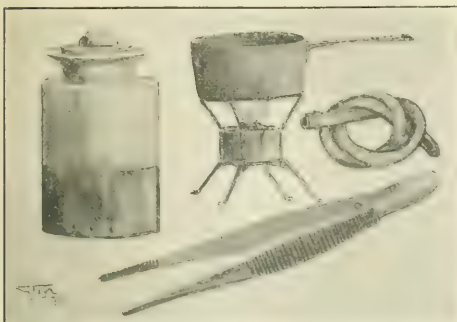


FIG. 1.—Implements necessary for aseptic catheterization of the urinary bladder: A, Thumb forceps; B, catheter; C, any container and a flame; D, lubricant.

is evident that an aseptic catheterization of the urinary bladder is obtained and it is obtained by the simplest means and with a technic that can be employed by any one having a little common sense. We were gratified by the results we obtained during the war, when catheterization had to be resorted to frequently, especially in cases of injury to the spine. Catheterization was frequently done by nurses, who, previous to service in the medical corps, were masons, bootmakers and farmers, none of them having had real training.

We deprecate the so-called disinfection of the meatus, because as it is generally performed, by

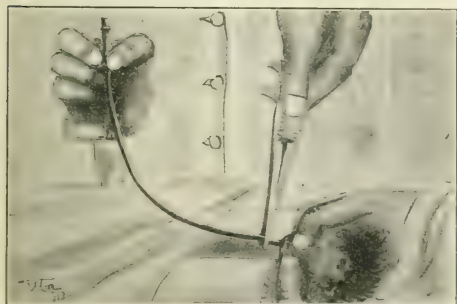


FIG. 2.—Manner of holding the catheter between the left thumb and index fingers and of introducing the catheter into the urethra by means of thumb forceps while the meatus is kept open.

rubbing the glans with antiseptics. It does not disinfect it, but irritates it and carries infection into the urethra; we also deprecate the smearing of the meatus with any lubricant which is carried into the urethra during the introduction of the catheter. It is obvious that so long as the meatus and the glans are not properly disinfected infected material is

introduced into the urethra and into the bladder. Holding the catheter with the bare hand which has been cleansed by washing with soap and water and then dipped into some antiseptic is a bad practice. In this way complete asepsis is not obtained and we introduce some of the antiseptic, with a consequent irritation of the urethra. If there is a complete surgical outfit at our disposal the catheter can be sterilized as in any other surgical procedure. If a sufficiently large container is used for the sterilization of the implements is at hand, the catheter may be introduced into the jar that contains the lubricant. The jar is placed into the sterilizer and the whole sterilized by ebullition for about five minutes. In this manner there is great



FIG. 3.—Manner of holding the glans penis in order to open the meatus and expose the urethra.

saving of lubricant, for it does not evaporate. We recommend, however, that the catheter always be sterilized by boiling in the lubricant, because in this manner we obtain lubrication of the entire catheter, which is then easily introduced. The excess of lubricant found on the outside of the catheter may be rubbed off at the meatus and the urethra is well lubricated by the lubricant which drips continuously into it from the inside of the catheter. There is no necessity for cleaning the meatus, because by opening it with the fingers, as described, about a half centimetre of urethra is well exposed and if a catheter proportionate to the opening of the meatus is used, the meatus is not touched and therefore there is no possibility of infection. We ad-

vise the use of a lubricant made from tragacanth, because it can be boiled as frequently as desired, without undergoing alteration. It is simple to prepare and can be kept indefinitely, it lubricates well and does not stain or grease the linen. It is cheap and does not irritate the urethra. The lubricant is prepared by soaking a small amount of tragacanth in water over night and then boiling it for a few minutes after the addition of a proportionate quantity of boric acid. One part of tragacanth to fifteen parts of water are used. Obviously if tragacanth is not at hand any other lubricant such as glycerine, oil or petrolatum may be used. The catheter should be boiled in the lubricant always immediately before use. We do not pretend that the technic we have described is the only one that allows for an aseptic catheterization of the urinary bladder, but we believe that it is the simplest and easiest and the one that can be applied under all circumstances.

220 WEST FIFTY-NINTH STREET.

CLINICAL EXPERIENCE WITH THE FEEDING OF SOLIDS TO SUCKLINGS.

A Study of 128 Cases.

BY HARRY LOWENBURG, A. M., M. D.,
Philadelphia,

Pediatricist to the Mount Sinai, and the Jewish Hospitals.

Sucklings who have been denied the natural fluid provided for them, together with that large number (by far the majority) who, by reason of social conditions, geographical situation, accident of birth, etc. (the very poor, those born in remote and isolated regions of the earth, beyond the ken and reach of scientific men and milk commissions), thrive either in spite of or on account of the aliment supplied, have been fed by such a multiplicity of methods that one pauses before ascribing special value to any particular system of feeding. On the other hand, realization of the foregoing facts suggests that the last word has not been said and provides the necessary courage to question the wisdom and verity of at least some of the conclusions accepted as correct by scientific authority and custom. To this end the availability of solid foods to the suckling, a procedure commonly regarded as dangerous and unscientific, will be discussed.

It is not intended to minimize the importance of the work done by those American and European pioneers in infantile dietetics, each of whom in his field focused the medical mind upon obscured or unnoticed medical facts. Granting that, within a brief space, the conclusions of any one of them were proved to be incorrect and were replaced by other data, nevertheless the profession and babyhood are indebted to all for stimulating progress and proper medical thinking. Therefore, while gratefully acknowledging our debt to these and to the spirit which they represent, we need not appear to be, nor indeed in fact are we, less appreciative by taking heed of the vast amount of important knowledge to be gained by painstaking clinical observation, at the bedside, in the dispensary, and in even

the humble abode of the slum mother. Indeed, I wish to pause here before detailing an experience from which conclusions of the simplest kind and yet of far-reaching importance have been culled, to render tribute and credit to the foresight and wisdom which are born of maternal instinct, which, unaided and unguided, must find a way for the preservation of the species. In method it may err, in application it may be crude, but in principle it is seldom at fault. My first lessons which caused me to adopt, with success, the ideas about to be detailed were learned by observing the mothers of the poor.

Who of us, trained along the stereotyped lines of the so-called percentage method or the caloric method of feeding would have dared to admit, even to himself, that it was not heresy to say that an infant could or would thrive on a mixture that had not previously been accurately determined by either one or both of these methods. Even the infant himself might have been stamped heretical if he dared live or thrive in spite of our supposedly fixed and immutable laws. These methods are only of value when applied intelligently as a check upon our food prescription and when used in conjunction with a full valued estimation of clinical phenomena as found in the individual case. To this extent and no more am I a believer in them. Unless we are willing to employ them in this fashion they had better be thrown into the discard, inasmuch as, even today, they are still responsible for much confusion and for the ignorant and indiscriminate use of patented foods by both physicians and laymen. More principles and less figures, more facts and less fancies, more physics and less chemistry, are sorely needed when considering problems of infant nutrition.

It is true that an infant requires and receives and must digest and oxidize fats, proteins, sugars, minerals and water, but the form in which he receives them determines his ability to accomplish all of this; in a word to metabolize these substances, just as much as the amount of each of these substances and perhaps it has a greater influence. This fact is of outstanding importance and cannot be too greatly emphasized and yet it is almost totally ignored by the profession. Chapin years ago, and even yet more recently, at the meeting of the American Pediatric Society held in Atlantic City in June, 1919, strongly urged a full appreciation of this view. An infant may succumb when fed, for example, its so-called proper amount of proteins, if they are given in say the form of horn or cow's hide, while it may thrive if given say either a deficiency or an excessive amount of this same protein in the shape of properly curdled human or cow's milk or comminuted vegetable protein. One can even imagine this same but properly prepared keratin or hide to be made digestible. It is to be admitted that the example is somewhat exaggerated and crude. Nevertheless it is true in principle and accurately illustrative.

Foods and compounds exist in the allotrophic state as well as clements do. This has been ignored to the ultimate disadvantage of the practitioner and his charge. To most physicians who handle babies,

fat means cream, carbohydrate means sugar (usually milk sugar), protein means curd and lactalbumin and lactoglobulin. To consider that anyone or all of these may at times become veritable poisons when obtained from cow's milk, is usually far from the physician's conscious mind. If he does realize it he is at a loss how to proceed and how to find substitutes which are equally as good and frequently better. That these substances, as found in cereals, vegetables and animal foods, may, with proper preparation, be employed with many decided advantages in the early months, and perhaps in the early weeks of life, rarely if ever occurs to him.

On the other hand, if it does he is wanting in courage and initiative to employ these valuable agents so near at hand. The result is that he flounders around helplessly in a sea of confusion trying and retrying little understood hit or miss milk mixtures or patented combinations recommended by the last detail man who visited his office. His patient remains in *statu quo*, or becomes progressively worse, the mother becomes impatient, his reputation suffers, and his patient either succumbs or he is dismissed. The sequel to this story is common knowledge and needs no further collaboration here.

There is, however, one who has courage—the humble mother, she of the slums, she of the subtle instinct. She transcends the medical man and his profession. She will not see her baby die without a struggle and we may all do well to observe and follow her more and deride her less. From close contact with her I first came to realize (even to my horror, be it said) that many infants whom I attempted to feed by a so-called scientific rule of thumb could and did thrive, in spite of my objections and protestations, upon foods upon which, according to my teachings, they should have died.

I wish, therefore, to relate my experience for what it is worth solely on its merits, to ask for its adoption or rejection as a recognized means of alimentation after thorough trial. I believe that it provides us, not only with that much needed something in acute disturbances of the alimentary tract which will bridge that chasm of uncertainty and danger between the period of starvation and the period when feeding with milk is to be resumed, but likewise that under conditions of digestive normality and in the so-called deficiency diseases, the proteins, fats, carbohydrates and mineral substances, derived from ordinary cereals, vegetables and animal substances, other than milk, when properly prepared to insure their digestion and assimilation may, with advantage, replace those of this substance in the diet of the suckling.

In a communication published in the NEW YORK MEDICAL JOURNAL (1) I stated my views as to the availability of comminuted vegetable and animal substances in the management of the acute alimentary disturbances of children and ventured the opinion that these same substances would perhaps be of service with sucklings as well and in the management of extraalimentary but nevertheless nutritional problems.

The histories of one hundred and twenty eight

infants up to one year of age, taken alphabetically from the office records of my private cases, were studied with the object of determining at what ages solids were first fed and of noting the effect upon alimentary function and nutrition. Some interesting and, to me, important data were revealed. Some of these babies presented purely dietetic and alimentary problems and had been brought to the office for these reasons; others were types of the so-called deficiency diseases; others parenteral infections, and yet others were surgical cases. All, however, exhibited a nutritional side that could not and should not be ignored. Some were acutely ill, others chronically so. In brief, they represented the ordinary run of patients who are brought to the practitioner who treats infants. The sources of nourishment, the most prominent symptom or symptoms encountered, and the character of the artificial nourishment employed, are detailed in the table which follows. If any patient exhibited more than one prominent symptom this was recorded; hence the number of symptoms may exceed the total number of cases. So, too, in those patients artificially fed on more than one kind of food, each type of nourishment is noted if given over a period of time thought to be sufficient to give it consideration. Hence the number of substances detailed may exceed the total number of cases recorded in which the infants were fed artificially.

Source of nourishment.	Number of cases.	Normal.	Vomiting.	Diarrhea.	Constipated.	Under weight.	Buttermilk.	Cow milk.	Malt soup extract.	Milk and water.	Skimmed milk.
Breast fed	21	9	6	3	5	7	..	..	..	..	..
Artificially fed . .	91	13	12	21	14	33	12	2	10	47	31
Mixed feeding . .	11	4	..	1	..	..	..	..	..	..	..
Milk free diet . .	5	4	..	..	..	..	..	..	..	..	..

Arrowroot, flour ball, sodium citrate, pancreatication were variously employed in about twenty-four of the cases in which the infants were artificially fed.

The following conditions were represented, aside from the alimentary or nutritional problems which were encountered: Amaurotic idiocy, two; anemia, one; bronchitis, two; exudative diathesis—eczema, twenty and lingua geographica, two; empyema, one; furunculosis, three; imbecility, one; intussusception, two; inguinal hernia, two; mitral regurgitation, two; otitis media, seven; postmeningeal hydrocephalus, three; pyloric obstruction, eight; perineal abscess, one; rhinitis, one; rickets, eleven; spasmodic, three; scurvy, two; strophulus, one, and umbilical hernia, ten.

Under two months.	Two months.	Three months.	Four months.	Five months.	Six months.	Seven months.	Eight months.	Nine months.	Ten months.	Eleven months.	Twelve months.	Total.
2	3	3	4	5	6	7	8	9	10	11	12	128

Of the ten patients up to three months of age eight had pyloric obstruction in which the thick cereal treatment of Sauer was employed before the cases were properly classified as surgical or non-

surgical. It may be noted in passing that even if this method does not accomplish all that its enthusiastic supporters and originators claim for it, it nevertheless emphasizes the fact that these sucklings can and do digest foods other than milk, when in a more or less solid state.

Of these one hundred and twenty-eight patients, seventy-six, or over one half, received solid food between six and eight months and thirty or about twenty five per cent. at six months. After eight months the number suddenly dropped because most infants at this age had already received solids when brought to the physician and only those cases are here recorded in which the infants were ordered to receive solids as a therapeutic procedure for the first time when they came under my care. It must be borne in mind that none of these infants, except those suffering from severe diarrhea, received these prepared solids exclusively, i. e., milk in some form, as noted in the table, either human or properly adapted cow's milk or both, was simultaneously fed. It is demonstrable, however, that the addition of these substances to the diet in early infancy is not only harmless but decidedly advantageous and that less dependence need be placed upon milk as an exclusive article of sustenance during this period of existence.

EFFECTS UPON GASTROINTESTINAL FUNCTION AND NUTRITIONAL BALANCE.

Vomiting.—In no case did vomiting occur as the direct result of beginning the administration of prepared solids. In many instances where it existed prior to the inauguration of treatment it was lessened or ceased entirely. In others it appeared to be uninfluenced.

Diarrhea.—This can be controlled absolutely and cured by the withdrawal of milk and milk foods and the substitution of properly prepared solids. This may appear to be a bold statement. It is made advisedly and cautiously, however, and represents an opinion originating from many convincing experiences. For me it has robbed summer diarrhea of its terrors, providing the infant is not too exhausted to withstand a hunger period of from twenty-four to thirty-six hours. The effect of milk withdrawal, the administration of saccharated tea and, after twenty-four hours or so, properly prepared solids, is practically instantaneous and may be predicted with almost mathematical accuracy.

In this connection it may not be inappropriate to present in some detail the procedure which has been followed in the management of acute diarrheal disease. All milk feedings are immediately withdrawn, fluid alone is supplied for twenty-four to forty-eight hours (hunger period) in the form of weak saccharated tea. If toxemia is evidenced by vomiting and high fever the stomach is washed once or twice with a warm solution of bicarbonate of soda and a single (rarely a second) dose of not less than one half ounce of castor oil, irrespective of age, is ordered. If the temperature is normal no purgative is allowed. After the appearance of the tea stool (greenish black stained mucus) immediate feeding with comminuted solids is commenced. Four to six feedings in twenty-four hours

are allowed. Fat free broth is the main fluid allowed with each meal. Saccharated tea is plentifully supplied *ad interim* if fluids are craved. The animal broth is thickened with powdered arrowroot, wheat flour (two drams to the pint) and cooked ten minutes, or cooked farina or cream of wheat or mashed sieved rice may be substituted. All these are examples of the less fermentable (comparable to sugars) carbohydrate. The broth is given in varying amounts according to age and appetite. The following substances, properly comminuted, are likewise added in varying amounts and in various combinations: baked potato, lima beans, spinach, squash, in fact any available green, fresh, dried, or properly conserved. In older children beyond a year or eighteen months, comminuted steak, chicken, chops, fish, etc., are added once daily. The following preparation is employed over a considerable period of time every two to three hours:

Calcium carbonate,	gr. x-xx
Fuller's earth,	gr. v-x
Oil of anise,	min. 1/20
Sac. albæ,	gr. i

As soon as the stools become constipated a fifty per cent. dilution of skimmed milk, thickened with one to two drams of powdered arrowroot and cooked ten minutes is substituted for broth and the effect is noted. Should the bowel movements remain normal another feeding with broth is thus replaced every other day until all broth feedings, except the midday one, which is never replaced, are discontinued and their place substituted by the diluted skimmed milk. The strength of the skimmed milk is gradually increased until it is no longer diluted. The arrowroot is gradually eliminated and then the skimmed milk is slowly increased in strength until undiluted whole milk is reached. The milk, however, is always boiled. Throughout this treatment sugar should be only cautiously employed with the greatest caution in the milk dilutions and where sugar seems to increase diarrhea saccharin must be substituted. Cane sugar and glucose are perhaps the best preparations. Karo syrup (Marriott) may be employed as a good representative of the latter.

As a substitute for diluted skimmed milk, Larosan, *Eiweissmilch*, buttermilk, or skimmed milk prepared with pulverized flour ball alone or with extract of pancreatin and bicarbonate of soda may be advantageously employed. Larosan is dry powder of calcium casein and is particularly valuable. Unfortunately it cannot now be secured. These substances, especially in the very young, may be substituted immediately following the hunger period or may gradually replace the broth instead of the skimmed milk.

Constipation.—Paradoxical as it may appear from the foregoing it is nevertheless a fact that constipation is invariably relieved when the greater portion of the solid material fed is represented by green vegetables. By way of explanation it may be said that these substances do not cure diarrhea by producing constipation, but they induce normality as to function of the gastrointestinal tract, i. e., proper glandular secretion and muscular movement

are induced. Hence, movements of normal consistency, proper moisture and correct frequency, but sometimes stained by the particular vegetable employed, result.

Weight and general tone.—The weight usually falls where milk is withdrawn entirely. A comparison of records, however, shows that the loss of weight is decidedly less when this method of treatment is employed in diarrhea, than when these babies are fed cereal decoctions over a long period of time, to be followed gradually by weak milk mixtures which frequently initiate relapses. On the other hand, in many cases of diarrhea, especially in older infants, when handled promptly the patients recover with their original weight maintained or with a slight gain.

In some cases of asthma or eczema, where milk has been withheld for a considerable period, while the patients exhibit a normal digestive function a slightly lessened or stationary weight is noted, especially in younger infants. They may refuse to gain until milk feedings are resumed in connection with the other substances or until starches are increased. The latter are usually well borne and in these cases form a valuable substitute for milk, inasmuch as one has heretofore been compelled to choose between a fat baby with eczema or a thin one without it. All this, however, is no argument against the use of solid foods, either alone or with milk feedings, inasmuch as it has been proved that these substances can be digested and assimilated at an early age, and furthermore a great loss in weight due to diarrheal discharges where milk is actually acting as a poison, is certainly a far less desirable state of affairs than is a slightly lessened or stationary weight due to temporary inadequate feeding.

Where diarrhea did not exist but the digestive function was normal and the chief complaint was underweight and lack of tone and vigor, as seen, for instance, in rickets and scurvy, the nutritional balance immediately improved under the stimulating effect upon appetite and general well being. The flesh assumes an elasticity and solidity that cannot be passed unnoticed. In no instance, except the two cases of scurvy, already fully developed when the patients were brought for treatment, was orange juice or an uncooked milk preparation employed. In several cases the milk preparation was boiled for ten minutes to cook its contained starch thoroughly. Not a single case of scurvy developed. Neither did rickets develop in any patient under treatment. As previously stated all cases of rickets, on the contrary, were materially benefited and in the incipient and very mildest cases the earmarks of this disease disappeared with amazing rapidity.

These splendid effects can only be ascribed to the antiscorbutic and antirachitic properties of the foods, other than milk, which were used. Especially does this apply to potatoes and the green vegetables. The agents existing in these substances, aside from the usual food elements, proteins, fat, carbohydrate, water, and mineral substances, which induce this wholesome stimulating effect upon growth and nutrition and tissue tone, are but little understood and, for the want of a better term, they have

been called vitamins. Their nature up to the present is more or less indeterminable; their existence is absolutely evidenced, however, by their effects. They are especially abundant in green vegetables. The following quotation is taken from an editorial on this subject which appeared recently in a prominent medical journal: "Fortunately, the vitamins are by no means confined in their occurrence to milk and eggs. . . . Although green vegetables have long been popular in the dietary in every part of the world where they are available, the real significance of their inclusion and the almost universal desire for them has been difficult to explain on the basis of the limited conception of food values that prevailed a generation ago. Latterly a new rôle has been given to many of the vegetables as 'protective' foods because of the demonstration that like milk, they are carriers of indispensable vitamins. Carrots, cabbage, spinach, tomatoes, etc., are thus brought into new prominence. . . . Osborne and Mendel, in connection with their studies of vitamins in green leaves, aver far less dry spinach supplies sufficient water soluble vitamin to promote normal growth than do whole wheat, soya beans, dried egg, meat. . . . Spinach leaves are much richer in fat soluble vitamin than are most of the products used in our ordinary rations. So far as the limited data now available permit deductions of a general nature, it seems, according to Osborne and Mendel, that green vegetables supply an important addition to the diet of man because the staples furnish too small an amount of either of these vitamins to meet fully the requirements of an adequate dietary. . . . There is in fruits and vegetables an apparent safeguard to health."

Blood, urine, and feces.—No detailed studies were made. They are, however, being undertaken at present and the results will be presented when sufficient data are available. In a general way, however, it may be stated that the color of all these babies improved. The urine lost its ammoniacal odor, where this had existed. Whether this depended upon a readjustment of the fat and sugar content of the formula or whether it was due to the greens fed was not determined. As stated previously the feces were frequently stained by the vegetable fed and particles of nondigested fibre were visible but apparently did no harm.

VARIETIES OF FOODS EMPLOYED.

These embraced all available and edible solids from either the vegetable or animal kingdom. Semisolids, such as cereals and soft eggs, were also included. So far no infant under one year was fed meat or fish. Theoretically there can be no valid objection thereto if these substances are properly prepared. All varieties of cereals, eggs, potatoes, lima and string beans, spinach, peas, squash, carrots, beets, beet tops, swiss chard, boiled lettuce, stewed celery, baked apples, prune pulp, practically formed the group from which selection was made. Although this paper deals with infants a year old or younger, it may be remarked that meats and fish have been used with good effect between one year and eighteen months.

PREPARATION OF FOODS.

The fundamental principle which permits the feeding of these substances to sucklings is fine mechanical subdivision or comminution. Animal substances, such as meat or fish, after thorough roasting or broiling are treated in a similar manner with the sieve after thorough chopping. These in my experience are especially serviceable in the diarrheas of older children. Nearly always animal broths are cooked for ten minutes with one dram of arrowroot or wheat flour added to the pint. Details as to the cooking and preparation of these foods may be found in my article published in the *NEW YORK MEDICAL JOURNAL*, July 6, 1918 (2).

OBJECTIONS AND DISADVANTAGES.

Parental objection is sometimes encountered. It is, however, short lived. Mothers at first manifest surprise, then a tolerant obedience to instructions, which is shortly replaced by enthusiastic support. Most of them become irrepressible propagandists. In most instances they seize the idea with delight from the beginning because their infants are receiving something substantial to eat.

Professional objection is usually stronger and more enduring, being born of a natural prejudice, derived from previous and in my judgment, erroneous teaching. Fearing parental censure, should unpleasant incidents arise, even if they are independent of the diet employed, many physicians lack the courage to feed solids thus early to the suckling. Some of those, however, who are now enthusiastically supporting my views, to their credit be it said, permitted the use of these substances first with their own infants.

The appearance of the excess of vegetables in the stool is often responsible for alarm, which may speedily be allayed by truthfully informing the mother that this is no abnormality and is merely the excessive residue of normally stained vegetable fibre.

Eggs, in many instances, appear really to be a source of trouble, many mothers reporting that vomiting ensues, or that the bowels become diarrhetic or that the infant refuses to take the egg at all. Rarely urticaria has been noted. Whether the objections to egg are well founded or not is difficult to say. The fact, however, cannot be entirely ignored that many mothers report trouble and when they do it is usually identical in nature.

In but two of the one hundred and twenty-eight cases was the addition of solids abandoned by the mother as useless, disturbing, troublesome, and without value.

Many infants refuse broth but will greedily take solids. Others require the exercise of the greatest tact and patience. It is often a matter of educating these young babies to the custom of receiving their food in a different way. The very young or the very weak may be fed through a bottle, the comminuted solids being mixed with broth which acts as a carrier. In one instance of a wasted infant I witnessed remarkable improvement in the stools and general condition when the infant received these substances by the way of the bottle.

CONCLUSIONS.

1. The food elements, protein, fat, carbohydrate, water and mineral salts, exist in all foods in varying amounts.

2. There is no reason why these materials as they exist in the vegetable and the animal kingdom, as represented by substances other than milk, when properly prepared, may not be fed to sucklings.

3. Thorough cooking and fine mechanical subdivision provide the means whereby foods (solids) other than milk may be made acceptable to the digestive apparatus of the suckling.

4. Sucklings under one year bear well a mixed diet containing comminuted solids.

5. The best age at which to commence their use is probably six months, although further clinical experience will probably demonstrate that it can be accomplished earlier. This has already been noted in malnutrition in either breast or bottle fed infants. Even in very young infants (two to three months) an immediate gain occurs following the use of gradually increasing amounts of well cooked farina, cream of wheat, corn meal mush, etc.

6. The total elimination of milk, a twenty-four to thirty-six hour hunger period, the use of weak saccharated tea, followed by the use of the least fermentable carbohydrates (starches) and finely comminuted solids, constitute the correct treatment for diarrhea. Alkalies, such as calcium carbonate and fuller's earth, are useful additions in that they check fermentation, favor putrefaction, and are excellent thickening agents.

7. More important than the influence on weight are the beneficial effects noted with reference to mental and physical development and vigor, the increase of tissue tone, and the prevention and cure of rickets and scurvy.

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2011 CHESTNUT STREET.

WOOD ALCOHOL POISONING.

By S. DANA HUBBARD, M. D.,
New York.

Superintendent, Division of Industrial Hygiene, Department of Health
of the City of New York.

Probably no subject in modern medicine has received so much attention in so short a space of time as has the substitution of methyl alcohol for ethyl alcohol in beverages, particularly since the advent of prohibition. There are those accustomed by habit and years of indulgence in alcohol who refuse to abide by the law and are willing to take a chance as well as pay handsomely for the goods—one thousand dollars a barrel had been paid for the substitute. This has created opportunities for the unscrupulous to cause havoc to life and sight. Prohibition has acutely focussed attention on the subject of alcoholic indulgence. The unrest and the desire to get rich quickly and get something for nothing has never been better demonstrated than during the present period of reaction.

Prohibition has its advocates and its opponents and of this question we are not acutely or gravely

concerned. But scientifically speaking it is a question to be seriously and carefully considered. If you take away something which the people have been accustomed to for years, what will they take as a substitute? From a meat to a vegetarian diet is a change often made, but when you take liquor away from a chronic alcoholic he is not going to rest supinely and do nothing about it. Whether the substitute will be drugs or some other "spiritual" indulgence we do not know.

When the temperament of these individuals is considered it is absolutely certain that they are not going to accept the cure prescribed by the law but are going to do some thing for themselves. We learn through the press and the statements of our public authorities that the alcoholic is being preyed upon by an adulterator who is substituting and selling a brew composed mainly of wood alcohol, this, as is well known and generally appreciated, is a deadly poison and where it does not kill it renders its victim sightless.¹ The number of cases of poisoning by methyl alcohol has suddenly greatly increased. In the past few years there were cases occurring from time to time, yet never before, so far as we know, have so many cases occurred as at present. Formerly many of these cases were incident to the substitution of wood alcohol for grain alcohol in certain preparations, but which today on account of regulation do not occur. Formerly in the arts alcohol was used until a cheaper product was found. This cheaper product was also used in some medicinal and toilet preparations and in flavoring extracts until it was expressly forbidden by statute.

Section 124 of the sanitary code regulates the sale and distribution of wood alcohol in this vicinity. This section forbids the use of wood alcohol in any article of food or drink or any medicine or toilet preparation intended for human use internally or externally. This section also requires the containers of wood alcohol to be labeled with the word poison in large letters with an emblem of the skull and crossbones together with the following warning: *It is unlawful to use this fluid in any article of food, beverage or medicinal or toilet preparation intended for internal or external human use.*

The use of methyl alcohol in place of ethyl alcohol has attracted more than usual attention recently owing to the rather large number of persons poisoned—some died and many were blinded—in this and nearby cities by hand made whiskey. Medical examiner Dr. Charles Norris informs us that up to December 20th of this year there were fifty-two fatalities from wood alcohol as against eight during the same period of the previous year.

The Department of Health, bureau of food and drugs, appreciating that there would be some effort to make this substitution, has been making many inspections of hotels, restaurants, and cafés to detect this substitution and have seized many samples, but so far they have not detected any of these establishments resorting to such violations of the law. However, the Federal authorities are

informed that certain persons are perpetrating this dangerous fraud and expect to make several arrests shortly of those suspected.

ACUTE POISONING WITH WOOD ALCOHOL.

No doubt the cause of many unexpected deaths, particularly of persons in middle life, especially among those known or suspected to be alcoholic, may easily escape attention unless the condition is carefully considered by medical and institutional authorities. Wood alcohol, taken even in small quantities—a teaspoonful or two—has been known to be followed by blindness and in several instances by death. Dr. Reid Hunt, professor of pharmacology, at Harvard University, in an admirable monograph, *The Toxicity of Methyl Alcohol*, tells of experiments with rabbits where he found, in several instances, that small doses killed the animals.

The symptoms of acute wood alcohol poisoning, in general, are similar to those observed in cases of poisoning by grain alcohol and other alcohols of this series. For convenience we may divide wood alcohol poisoning in the acute form into three degrees as follows:

1. An ordinary mild intoxication, with some dizziness, nausea, and mild gastrointestinal disturbances, terminating in recovery within a few days, but occasionally followed by more or less serious damage to vision.
2. A more pronounced effect with the following conspicuous symptoms: marked dizziness, pronounced and persistent nausea, vomiting, and more or less severe gastroenteritis, dimness of vision, often increasing to blindness.
3. An overwhelming prostration, which terminates in coma and death.

These clinical pictures of wood alcohol poisoning depend considerably on the quantity consumed, modified, of course, by the resisting power of the individual. Generally there will be witnessed the ordinary inflation from the effects of alcoholic intoxication, vertigo, nausea, gastric discomfort, muscular incoordination, cloudiness of mental functions, exaltation of ideas, general malaise, followed by disturbances of vision. The more pronounced the ill effects the more marked the clinical phenomena and the dimness of sight. This often progresses rapidly from dimness to complete loss. Greater intoxication is indicated by exaggeration of these clinical phenomena and in addition the patient may suddenly become blind or nearly so, with widely dilated reactionless pupils, rather slow respiration, weak pulse, delirium, unconsciousness passing into coma, and frequently terminating in death. It rarely happens that a patient suffering from wood alcohol intoxication to this degree recovers, especially if he reaches the state of coma. He invariably dies in an unconscious condition, or, having regained consciousness, suffers a relapse and death follows shortly.

The characteristic feature in most of the severe cases of wood alcohol poisoning, which do not terminate fatally, is total blindness, coming on in a few hours or perhaps not for several days; then a partial restoration of vision, which again in a few

¹Physicians may aid the authorities in this city by reporting promptly their cases of wood alcohol poisoning as is required by section 93 of the sanitary code.

days or weeks gives place to more or less complete and permanent blindness with atrophy of the optic nerve. Surely this is a picture entirely different from any other known form of intoxication, and the sudden amaurosis observed over a widespread area in a number of cases creates the conclusion that it is a picture which wood alcohol alone can create.

CHRONIC POISONING WITH WOOD ALCOHOL.

The fact that the effects of a single dose of wood alcohol are long continued suggests that it would be especially dangerous to repeat it at short intervals for any length of time. A form of cumulative action results. Investigation in the lower animals has demonstrated that such is not a fact. In dogs (Pohl) it was demonstrated that small doses of wood alcohol, given every other day, were tolerated for but a few weeks, the animals becoming comatose, did not eat and soon died. Servieux, an experienced French investigator, placed great emphasis upon the extraordinary toxicity of wood alcohol in chronic poisoning.

Birsch-Hirschfeld experimented upon monkeys, and this is of especial interest since these animals react toward narcotic poisons in much the same way as man, and also because the effect upon the eye can be studied to far better advantage. The first monkey succumbed in eight days, the second on the fifteenth day, and none lived beyond twenty days. The doses were from three to seven c. c. diluted in water every one or two days.

Doctor Hunt observed several cases of subacute poisoning, in which death or blindness resulted from a prolonged spree, and repeated doses of wood alcohol on dogs showed that in addition to the stupor there was an eye affection, resulting in fibrinopurulent conjunctivitis with hazy cornea. The animals acted as if they could not see. Death occurred on the ninth day.

The long continued effects of wood alcohol and the ease with which the effects produce chronic poisoning from small doses, depends upon the slowness with which the poison and its oxidation products are eliminated. There are but few cases of incipient poisoning from ingestion of wood alcohol reported.

FATE OF METHYL ALCOHOL IN THE HUMAN BODY.

The difference between the toxicity of wood and grain alcohol in subacute and chronic poisoning is to be found in the splendid work of Pohl and others upon the fate of methyl alcohol in the body. The interesting and highly important discovery has been made that wood alcohol differs markedly from grain alcohol in that it is but partially oxidized in the body and that its administration leads to the formation within the body of formic acid, which is markedly poisonous. It is undeniable that in some of the crude commercial preparations of wood alcohol certain impurities are present in large amounts and the toxicity of these preparations is markedly increased by their presence. The experiments on the physiological action of methyl alcohol conclusively show that however pure the preparation may be it is totally unfit for use in any preparation which is to be taken internally and espe-

cially when they are to be used for any length of time.

DIFFERENTIAL DIAGNOSIS OF WOOD ALCOHOL POISONING.

The picture presented by wood alcohol poisoning is so clear and characteristic that there can hardly be any difficulty in recognizing any of the several stages of this condition. However, as it is likely to escape detection, it is thought desirable to call the attention of the medical profession, especially ambulance surgeons, to the symptoms. I hope I may be pardoned for repeating what has been so splendidly written and rewritten ever since the initial case was reported by Viger in 1877.

When dilated pupils, and total or partial blindness, temporary or permanent, accompany or follow shortly after a spree or debauch, the presumption is that the intoxication has been incident to the ingestion of wood alcohol. The necessity for accessible knowledge on the part of the medical profession is indicated by my personal experience later reported.

CASE.—Not long ago a gentleman called me to see his brother, a chronic alcoholic, who had recently been on a three day spree and who had turned up at home in a distressing condition. His wife reported that it looked as if he could not see, but he was so stupidly drunk she was not sure as to the eyesight. The patient was a young man aged twenty-nine years, married, no children; engineer by profession, but owing to an independent income did not work. He spent his time sleeping most of the day and carousing in hotels, theatres, and moving picture theatres, and spent his nights eating and drinking, retiring about five a. m., and arising in the early afternoon to repeat the performance of the day before. The patient was found in bed, stupidly intoxicated; his face was pallid, the skin damp and cold. The pulse was feeble and slow, heart action labored, sighing and slowed respiration, pupils widely dilated. He was aroused with difficulty, and on awakening complained of pain in the stomach and dimness of sight.

He stated that on account of the holiday season he had been "going some," but that since prohibition had set in he had noticed that what they were passing out was not like the old stuff, but it did not set well with him. On leaving the gang he said he felt ill and noticed that his sight, which had heretofore always been good—he was a clever amateur trap shot—was so poor he could not read the headlines of the papers, and on entering the house he had difficulty in placing his clothes on the chairs. His wife ascribed his inability to do so to his drunkenness, but that while he had a "stew," as he called it, he was conscious of all that was going on. On retiring he was uncomfortable. His stomach was irritable and vomiting was frequent. After the vomiting the pain and burning in the stomach was severe. He complained of a distressing top headache; kept his arms up and hands pressing down on his head. His stomach was washed out, he was given olive oil and enemas of coffee and later some salt solution. He was warmly covered and given a little whiskey, but this time we were sure of the brand. This, he noticed, was

not so bad as that he had been taking. The patient is recovering slowly, but I have grave concern for his eyesight, which is still considerably below normal.

Out of curiosity, I have presented my case hypothetically to several of my professional friends—one of them the oculist whom I had to consult later—and not one of them guessed the nature of the case. Concluding from this experience, I feel that many others may be similarly taken off their guard, and if so may not a number of deaths have occurred without recognition of the causation? If this is true, then many persons may be imbibing home brews made of alcohol obtained from unscrupulous dealers, and instead of inflation and stimulation may not these imbibers be flirting with blindness or death? The fact that death follows a drunken debauch may, from now on, indicate that some of this antiprohibition drought annihilator is only methyl alcohol disguised. When blindness supervenes after symptoms of intoxication, surely every one should be on his guard and suspect wood alcohol as the cause.

Of course it may be incident to other conditions, tobacco or quinine, but the history of excessive and continued indulgence should aid us, or in case of quinine amaurosis, we have definite clinical phenomena, viz., deafness, ringing in ears, as well as the intense anemia of the fundus oculi, and almost total obliteration of the retinal vessels. It has been said, "That the diagnosis of wood alcohol poisoning can hardly be in error, the picture of such poisoning is unlike that of any other intoxication," but when you know a certain thing and your mind is centred upon it, of course it is easy, but otherwise the simplest of cases often escape detection even by the most erudite. Given a case, therefore, of alcoholic indulgence, followed by abdominal distress, followed by blindness, partial or complete, we should immediately suspect wood alcohol.

TREATMENT OF WOOD ALCOHOL POISONING.

There is no antidote for this form of poisoning. The treatment of many of these cases is entirely symptomatic. If seen early the poison from the alimentary tract should be eliminated so as to prevent absorption. Induce vomiting, syphonage of the stomach and purge; croton oil is rather severe, but when possible I use it. Soothe the stomach with an oily emulsion.

I see no objection to the use of grain alcohol, in order to combat collapse and sustain the patient's vitality. This, with speedy elimination of the poison from the bowels, should ordinarily suffice.

Dr. A. H. Brundage, who has reported several cases, and who appears to have exceptional experience, make the following general therapeutic recommendations: Syphonage of stomach, cold affusions to head, cardiac stimulants, inhalations of oxygen, pilocarpin injections, external heat to body, and extremities, moist heat over kidneys, rectal enemata of hot coffee and normal salt solution. The treatment of the optic atrophy is not very satisfactory. In the early stages he recommends pilocarpine and iodide of potassium, later strychnine by hypodermic injections and by mouth.

CONCLUSIONS.

Physicians, especially ambulance surgeons, in the present emergency should be on the lookout for these cases. Physicians should, under the present and unpopular prohibition regulation, inform their families regarding the danger of promiscuous drinking and especially of brews made by persons not familiar with compounding beverages. They should especially caution all those, inclined to seek information as to home made preparations, not to purchase alcohol from paint stores and the like.

The authorities should strenuously prosecute all persons adulterating food or drink with wood alcohol. Our judges should make no exception of these offenders, as an example, causing them to know that special consideration will not be given them. The danger is grave. The remedy must be severe.

The public must appreciate that violators of the prohibition law cannot be trusted, and if they aid or abet its violation there is a danger not only serious but disabling if not fatal in its initial performance.

Trade names, columbian spirits, cologne spirits, colonial spirits, standard wood spirits, union spirits, eagle spirits, green wood spirits, Hastings spirits, bloom, and acetone alcohol, purified alcohol, and others, are names for methyl alcohol or wood alcohol in common parlance.

The public must see that users of wood alcohol observe the regulations, see that packages are properly marked, labeled with skull and cross bones, and that the warning notice is conspicuous on the package. It might also be fittingly suggested that the following might be added: *This fluid, taken internally, is likely to produce blindness.*

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143 WEST 103RD STREET.

NASAL OBSTRUCTION DUE TO ABNORMAL ACTION OF NASAL MUCOSA.

By M. S. ITTELSON, M. D.,
Brooklyn, N. Y.,

Assistant Surgeon, Manhattan Eye, Ear, and Throat Hospital.

Of all the complaints for which the patient comes for relief to the nose and throat man, none is so frequent as nasal obstruction. This may occur alone or in connection with other symptoms. The causes that produce this condition are numerous and varied. In this article one form of nasal obstruction will be discussed and that is, obstruction due to faulty action of the mucous membranes covering the septum and turbinates. This factor is responsible for many cases of defective nasal breathing, common colds and catarrh, and perhaps for other less frequent and more annoying conditions, such as vasomotor rhinitis or hay fever.

It may be well to consider the anatomy and physiology of the normal nose. The mucous membrane of the nose has a peculiar structure. It consists of an erectile tissue which covers the

septum and turbinates. This tissue is extremely susceptible to many influences, among them being changes in the atmospheric condition, chemical and mechanical irritants, and mental emotions. It is subject constantly to extreme variation in dimensions under these and other less known causes. Now the function of this mucous membrane, besides olfaction, is to warm, moisten and filter the inspired air. This it can do by virtue of its expanding and contracting power. When the mucous membrane is expanded the lumen of the nose is narrowed and the air as it goes through the nostril is more thoroughly warmed, moistened and finely filtered than when the membrane is contracted and the nasal passage is larger.

As various influences are constantly working upon the susceptible mucous membrane, we must consider the lumen of the nose, theoretically at least, not as a fixed but as a variable quantity, depending upon the work that has to be performed. It is the abnormal action of the erectile nasal mucosa that is responsible for most of the common cases of nasal obstruction. This faulty action may exist alone or it may be associated with other pathological conditions, such as a deviated septum or a general chronic sinusitis. In view of the fact that so many cases of deviated septum or chronic sinusitis present no symptoms, it is essential in each individual case to determine how much of the trouble is due to the conditions mentioned above and how much to the abnormal action of the nasal mucous membrane. It is this lack of differentiation that is the cause of many unsuccessful operations.

An important subjective symptom of this type of obstruction is that it is not fixed or constant, but occurs irregularly and disappears as irregularly as it comes, without apparent reason. The obstruction may occur in both nostrils, more often it alternates from one side to the other, and here too the patient experiences a sudden change from opening to closure, from no apparent cause. It is well to verify the statement of the patient by asking him to breathe with each nostril closed. The side complained of is often the one that is least or not at all affected. Some patients complain of nasal obstruction when it does not exist, and others fail to note even an extreme grade of nasal obstruction. It might be mentioned that nasal turgescence is only one manifestation of impaired function. The nasal mucous membrane may be contracted or more often atrophied. In that case it produces another group of symptoms which need not be discussed in this paper.

Inspection of the nose may reveal nothing abnormal, or the mucous membrane may have undergone fibroid changes, or the turbinates and the mucous membrane covering them are hypertrophied. This hypertrophy is a secondary and probably a conservative process on the part of nature to make up this deficiency of normal function. The statement that "nature abhors a vacuum" might be paraphrased to read "nature abhors too much room in the nose." Large turbinates are always seen in roomy noses and on the concave side of a deviated septum.

From a surgical viewpoint, these hypertrophies should not be condemned for their size alone. The possibility of a large turbinate bone being covered by a normal mucous membrane should not be overlooked. Even if the mucous membrane itself is hypertrophied, it performs some function, or at least prevents symptoms of too much patency.

In view of the difficulty of determining the cause of this nasal priapism, the treatment is naturally not satisfactory. As might be expected operators at first attempted to relieve this obstruction by partial or complete removal of the turbinate. It did not take them long to discover that this method had several disadvantages. If too much of the tissue was removed, the patient was worse off from the annoying symptoms due to too much room in the nose, such as dryness and scabbing; if too little was removed, the relief was temporary or the symptoms persistent. The happy medium was rarely reached, and the operation naturally failed to make the remaining portion of the mucous membrane functionate properly. Outside of snaring off an enlarged posterior tip, nasal obstruction is the least important indication for operation on the turbinates. Even if other conditions require surgical interference, an effort is now made to preserve this mucous membrane. Thus the ethmoid is sometimes opened without the removal of the middle turbinate (Halle operation). Faulkner devised a chisel which permits the opening of the antrum without destruction of inferior turbinate, and Yankauer suggests the removal of the turbinate submucously. Fracture and resetting of the turbinates to a more advantageous position is another example of this conservative trend. The submucous operation on the septum owes its popularity to the fact that it does not destroy the mucous membrane. When even moderate deviation exists, it is indicated in preference to operation on turbinates. To judge fairly the results of operation, it is well to note that many of these patients are extremely susceptible to mental suggestion. An intranasal operation often acts as a surgical placebo. Local applications of argyrol or silver nitrate, as well as douching and irrigation with saline or mild antiseptics, occasionally relieve this condition. In some, an oily preparation or a ten per cent. ichthyl ointment works best.

The general treatment is really more important. Many patients are neurasthenics or suffer from constipation or like disorders. Many require the correction of faulty hygiene or a change in diet and climate. Vaccines and glandular therapy might be tried. Often it is best to tell the patient that this condition is not dangerous or important and it is best to leave it alone, a conclusion they themselves arrive at after repeated visits to different rhinologists.

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458 FIFTIETH STREET.

RESPIRATORY GYMNASTICS IN TUBERCULOSIS.

BY HAROLD C. LANE, M. D.,
Denver.

For years consumptives have been admonished to breathe deeply, on the theory that the air, the oxygen, the ozone, had a specific curative power over the tuberculous lung. Now we know it is questionable whether the improvement in the pulmonary circulation and the increased supply of oxygen to the lungs are actually beneficial. An increase of oxygen favors the growth of tubercle bacilli and it is possible that the improvement in the pulmonary circulation brought about by deep breathing is likely rather to increase the absorption of the proteins of the tubercle bacilli and to do harm by impeding the formation of a zone of healed tissue. The rise of temperature which follows upon forced breathing and muscular exertion may be regarded as evidence of this increased absorption. It has also been proved that pleuritic exudates, which lower the nutrition of the lung and the rate of absorption of proteins, bring about improvement.

Cornet said that no surgeon advocated exercise of a tuberculous joint, especially forced exercise. The same principle must hold good for the lung. Forced breathing and muscular exercise cause increased absorption of the products thrown off from the microorganisms in the lung. Furthermore, forcible and particularly sudden inspirations, such as form a part of some respiratory gymnastics, may occasion the aspiration of sputum into healthy parts of the lung and so set up a chain of vicious symptoms and secondary pneumonias. If there is no sputum, and the focus has become walled off, then it is possible to allow deeper breathing.

In tuberculosis the expiratory phase of breathing is of longer duration than the inspiratory phase. If respiration is reversed, that is, if the patient prolongs the inspiratory phase and shortens the expiratory phase in a gentle manner, râles which have been heard in various areas will become quieter and in some cases disappear entirely during this method of breathing. The ideal respiratory exercise consists of breathing in slowly and not too deeply, prolonging the inspiratory phase, and then breathing the air out again without effort.

Coughing is a forcible expiration and sometimes can be controlled by merely prolonging inspiration and shortening expiration. If we physicians would advise our patients to breathe naturally, but to be on the alert to prolong inspiration, always in a gentle manner, then we could reverse a pathological condition in the lungs in pulmonary tuberculosis. The writer believes that by changing respiration so it will conform to these suggestions and as breathing approaches the normal antibodies are formed in the lung tissue which are very beneficial to the tuberculous subject. Many lungs are damaged and new foci of infection established by improper breathing, either too shallow or too deep. In connection with the breathing exercises a good posture should be maintained. If the patient is up and about he should take these exercises in the fresh

air, never before breakfast, but a half hour after the morning meal, and just before bedtime. If the patient is in bed he should remove the pillows and lie flat on his back during the exercises.

A tuberculous subject at times is living off his own tissues and metabolism is at low ebb. A good way to overcome this is to have the patient eat a piece of ice cold butter one inch square three times a day. It is important that the butter should be chilled. One hundred grams of butter contain about 807 calories of food value and many patients get to really like it if it is cold and fresh. This is a simple thing to do and sometimes produces striking results. Patients who seem to be unable to put on weight begin to put on flesh rapidly under this treatment. Butter is easy to procure and the writer has had success with this method. It should be added to the regular diet three times a day between meals, or any way which pleases the patient. This is mentioned in conjunction with the breathing exercises as the results obtained are superior when a proper diet is added to any form of treatment.

The respiratory pressure should be kept as near normal as possible. In quiet breathing the respiratory pressure is slightly negative during inspiration and slightly positive during expiration but during coughing the positive pressure of expiration may be very high and this high pressure is injurious to the lung tissue. Proper breathing, diet and rest in connection with fresh air will do much to keep the respiratory pressure normal.

Static exercises, that is, exercises taken at rest, preferably in bed, are good and should be recommended in certain cases. The muscles get flabby and the patient loses strength rapidly in bed so that after a rest period of several weeks sometimes it is a real advantage to institute a series of simple exercises to be taken morning and evening lying flat on the back. These exercises are even good for patients up on their feet, as they improve the circulation in the morning and oftentimes ward off cynosis which some patients have in the morning even after the disease has been arrested. The writer has found this a convenient method of combating cynosis. Any physician can outline these exercises, at first they may be made very simple and easy, and a little later if the physical condition warrants it the patient can use some resistance. It is surprising how in some cases the appetite, strength and weight of the patient improve under this simple treatment, especially when the exercises are combined with prolonged inspiration. For one thing this will take the patient's mind off himself, as he will have no time to think of anything else if he concentrates his mind on the prolonged inspirations and exercises.

Prolonged inspirations and static exercises, if cautiously used, in some cases seem to be a distinct help to the patient. It opens up a new avenue of thought for the patient and stimulates new hope. It has a tendency to correct imperfect breathing. The patient should never use forcible inspirations but should always breathe naturally aiming to prolong inspiration a shade over expiration. Forcible breathing exercises as sometimes prescribed may be dangerous and harmful.

GONOCOCCEMIA AND METASTATIC
GONORRHEA.*

BY HYMAN I. GOLDSTEIN, M. D.,

Camden, N. J.

(Received for publication May 1, 1919)

CASE I.—Mr. S. P., aged twenty-one, white. Merchant. Single. Had measles when a child; influenza during October, 1918; received an injury to chest (left) and contusion of left hip in an automobile accident, December, 1918. He had his first attack of gonorrhea, September, 1918. The second attack (\bar{r}) began January 2, 1919, two or three days after exposure. During the third week of the specific urethritis he had pain in the left hip and some pain in right wrist. There was no difficulty on urination or dribbling. A urethral discharge was present. He had been treated for two weeks for this condition by a Philadelphia physician. During this period, and about a week ago, he was out all night and exposed to sexual excitement and intercourse (while having an active discharge). A few days later the arthritis began in the wrist and hip. He denied ever having had a chancre or rash. He never had rheumatism, malaria, typhoid fever, nor any trouble with joints, teeth, eyes, ears or sinuses; did have sore throat when younger.

Family history.—His father died of carcinoma of the breast. His mother, brothers, and sisters living and well. No tuberculosis or lues traceable in family.

General condition.—The temperature varied from 99.5° to 103° F. with increased pulse and respiration. Has had chills and chilly sensation; insomnia; dry coated tongue, parched lips, crying with pain; restless, nervous, and slightly delirious at night during sleep. Patient was septic in appearance.

Laboratory findings.—The gonorrhea blood complement fixation tests were all positive from various laboratory reports. The urethral smear was positive for gonococci. The blood Wassermann and Noguchi tests were negative from three different laboratory reports. Negative blood smears for malaria. Negative Widal reaction (several times). On early blood cultures, no growth was obtained. Recent blood cultures have not yet been reported. Secondary anemia of mild grade present, due to the general gonorrheal infection and metastatic involvement. Hemoglobin, 75 per cent.; white blood cells, 16,400; Polymorphonuclear, 84; small mononuclear, 13; large mononuclear, 1; eosinophile, 2; red blood cells, 4,160,000. January 27, 1919: trace of albumin found in the urine. All qualitative tests for indican, sugar, diacetic acid, and acetone negative. A few red blood cells; a few pus cells; ammonium urates; total solids, thirty-five grams to the litre; urea, 1.4 per cent.; specific gravity, 1.05; no casts; some squamous cells. The reaction of the urine was alkaline (due to the medication) on February 3, 1919, p. m., amber, 1.015 specific gravity; some indican, very faint trace albumin; some white blood cells; some bladder epithelial cells; many cylindroids; few uric acid crystals. Febru-

ary 4, 1919, a. m., amber; 1.013 specific gravity; acid; trace of albumin; indican; many white blood cells; few red blood cells; some bladder epithelial cells; very few hyaline casts and many cylindroids; some amorphous urates. The blood pressure: Systolic, 110; diastolic, 74.

Physical examination.—The heart sounds were weakened in tone, and at times a faint murmur was heard, especially after deep breathing and then holding breath: possibly due to the anemia or a beginning acute endocardial or myocardial involvement. Except for a few scattered râles, the lung condition was negative. A slight cough existed which was due to an associated tracheobronchitis, or myocardial weakness.

Treatment.—Dial,² cibi, or barbitol, and M. S. one eighth to a quarter of a grain, given on several occasions as required. The patient has received complete and absolute rest in bed for three weeks with Blaud's pills for the anemia. Pure santal oil in capsules and argyrol injections for the local condition, which was improving nicely. Plenty of water to drink. An aperient water for the bowels. Also heavy mineral oil and alkaline rectal enemas—both evacuating and irrigating; polyvalent antigenococcic serum intramuscularly and intravenously; gonococcus vaccine hypodermically and intramuscularly; small doses of mercury and large doses of syrup. Ferric iodide for varying periods. The most satisfactory and most rapid relief from pain and improvement was noticed after the combined use of the vaccine and one large intravenous injection of the antigenococcic serum (fifty c.c.), given when he was in a very septic condition and suffering greatly. The relief and improvement were almost as though by magic. Dr. Alfred C. Wood, of the University of Pennsylvania, saw the patient with me and believed that cause and effect in this case would indicate the further use of specific serum vaccine therapy. No other medication received at the time could possibly have had such beneficial effect.

A few days ago x ray examination was advised to decide whether there is an arthritis, an osteoarthritis, or effusion in the joint, and his removal to the hospital was urged for this purpose and for the possible relief of pain by Buck's extension or plaster of paris splint, or any possible operative interference that may later be necessary, in the opinion of the surgeon.

About a week after the initial administration of the polyvalent antigenococcic serum, the patient had some urticaria with marked itching, which passed away after a few days. Before he received the large serum doses, he had received a small injection of the serum as a desensitizing dose. This prevented any marked anaphylactic serum reaction. After the large intravenous injection of the serum, he received fifteen minims of adrenalin solution and a very small dose of atropine, to ward off any possible aftereffects. However, the patient took the specific therapy without any untoward results and with considerable improvement until lately, when his pain returned after the specific treatment had

*Read before New Jersey State Medical Society, Spring Lake, N. J., June 11, 1919.

²Dial—diallylbarbituric acid. Sedative and hypnotic but not narcotic. Dose, one and one half to four and one half grains.

been discarded for several days, and he was advised to go to the hospital for the x ray studies. A later report showed that after the antigonococcic serum and mixed gonococcus vaccine were stopped, and while he was in the hospital, there developed a marked inflammation of the knee, which I believe could have been prevented by the continued use of the vaccine and serum.

Careful measurement was made of the urine output and of the intake of all fluids. The urinary output was satisfactory and his kidneys at no time gave us any concern. Locally for the relief of pain in the joint I ordered a hot water bottle, hot turpentine stupes, tincture of iodine painted on the affected area, and the old reliable ointment containing belladonna, mercury, and ichthyol at different times. I did not use calcium sulphide nor any of the other supposedly efficient internal remedies. Early in the treatment he did receive some urinary antiseptic (urotropine) and mild alkaline diuretics. It is very important to know whether there is an arthritis or an osteoarthritis with bone and cartilage destruction or rarefaction, because the second type will demand longer rest and more careful fixation of the affected joint, whereas in the first, earlier massage and passive motion will help to prevent formation of adhesions and give him early use of his leg. Brier's hyperemia or hot air baking may be tried if the joint is involved; this also does good where the soft tissues only are involved. Leeches at times give considerable relief. Dr. B. C. Corbus, of Chicago, reported a series of twenty-four cases treated with antigonococcus serum. He recommends thirty-six to forty-five c.c. as the dose. He administered the serum intramuscularly but believes that intravenous administration would be followed by more rapid recovery with a possibility of using less serum. Block saw improvement in gonococcal arthritis following the injection of typhoid vaccine as well as following gonococcal vaccine and suggests that the improvement may be due to the nonspecific effects of the reaction on gonococcus infection.

CASE II.—M. C., girl, three years old, seen June 7, 1917. Her father had acute gonorrhea; her mother gave positive smears. Father's Wassermann was negative. Shortly after their return from a vacation there developed in the child a yellowish vaginal discharge and this was quickly followed by enlargement and painful swelling of joints of wrist and right little finger. There was a slight rise in temperature. The condition existed for several weeks when the child was first seen by me. I found gonococci in the smears and ordered argyrol in solution and ten per cent. ointment for the local condition. The injection of a polyvalent gonococcus vaccine gave rapid relief which was followed by a cure of the arthritis and the vulvovaginitis.

CASE III.—Mr. B., suffering from acute gonorrhea. At the beginning of the third week, a marked swelling of the wrist and ankle joints developed, later the elbow and knee became affected. He attempted to treat the urethritis himself, with various remedies purchased at drug stores, and when he came to me the urethral discharge had ceased and

his wrist and ankle joints were badly inflamed. After a long and stormy convalescence, he finally recovered. The treatment consisted chiefly of the injection of argyrol solution for the urethritis, prostatic massage, and the use of huge doses of vaccine. No serum was used in this case. I now believe that had large doses of antigonococcic serum also been given, he would have improved more rapidly, and it is possible that the later involvement of knee and elbow joints would have been prevented.

CASE IV.—G. L., January, 1918. Aged forty-three. He had had gonorrhea twice. At present complained of pains in the head and joints. The Wassermann was negative; prostate enlarged and tender; complement fixation for gonorrhea—two plus; protoscopic examination showed an anal fissure; blood pressure, systolic 128, diastolic 76; urine, negative. The heart and lungs were negative, x ray of the head, negative. Prostatic massage and vaccine gave prompt relief and ultimate cure, after he had gone about without a correct diagnosis and without obtaining any relief for over two years. In this case the examination of the prostate and the blood complement fixation test for gonorrhea established the diagnosis. His prostatic condition was no doubt the focus of the infection which caused his trouble. The complement fixation test is most valuable in systemic gonococcus infections; the result is positive in all such cases. If there is a history of gonococcal infection no matter how remote, employ this test when the diagnosis is in doubt.

TREATMENT.

Now as to the treatment itself, I cannot add much more than I have already stated in the case reports. William H. Park and Charles Krumwiede state that all types of gonorrheal infection, paraproctitis, and similar conditions have been most successfully influenced by vaccine therapy. In the subacute cases which have not gone on to fibroid changes, the majority of patients have been benefited, and in some the results have been startlingly good. I believe some failures have been due to inadequate doses of vaccine, as the patients rapidly improve with larger doses. The polyvalent serum should be given in doses of not less than ten c.c. and up to fifty c.c., depending on the severity of the case and repeated as necessary. Miller and Lusk have reported good results with intravenous injection of typhoid vaccine.

Muller and Weiss assert that the intramuscular injection of nonspecific substances—as sodium nucleinate or milk—are as beneficial as the intravenous injection of gonococcus vaccine. Bruck and Schindler have used arthigon, a preparation, one c.c. of which contains eighty million gonococci. Pearce, in 1915, emphasized the important point that the strains of gonococci from vaginitis in children differ immunologically from those found in adult infections, and since the usual vaccines are from strains isolated from adult sources, this may account for some of the failures in the results obtained from the use of vaccines in cases of vulvovaginitis (with or without arthritis). Orville Horwitz, of Philadelphia, has stated that he has never seen any serious complications arise from either

vaccination or injection of serum. Neither vaccine nor serum renders the patient immune. Relapses after treatment are common and reinfections frequently occur.

Louis E. Schmidt and Horwitz state that small doses of vaccine of from ten to fifty million at short intervals are preferable to large doses. The largest dose of serum that Schmidt had administered was 165 c.c. of the serum and one and a half billion of the gonococcus vaccine. Horwitz in 1910 and 1911 gave the serum in very small doses of two to five c.c. daily for a week, then after an interval of five days, for another week. In some cases he used doses of from six to ten c.c. of the serum. He concludes that in acute and subacute arthritis, antigonococcal serum should always be used as a routine treatment, and that serum is of service occasionally in severe cases of epididymo-orchitis and gonorrheal myoendocarditis, and that serum is invaluable in those rarer cases of pure gonorrheal toxemia. In the three cases in which it was used all the patients were benefited and one was cured. In twenty cases of acute and chronic arthritis rapid improvement occurred in ten patients and slight improvement in six, following serum injections.

The use of vaccines is far inferior to gonococcal sera, according to Horwitz. In six cases of myoendocarditis with valvular lesions, there was rapid recovery in one desperate case and marked benefit in and rapid improvement in two, following the use of antigonococcal serum.

William H. Park, New York, emphasizes the marked variation in cultural and biochemical features of different strains of *Micrococcus gonorrhoeae* and the importance of using autogenous vaccines in these infections. He states, further, that the results of Cole and Meakins, Eyre and Stewart, Irons and Hartwell not only justify the use of vaccines in gonorrheal arthritis, but attest their value as therapeutic agents in many of these obstinate joint infections. Cole and Meakins employed injections of stock vaccine 300 million to one and a half billion at intervals of seven days. Hamilton, Hamilton and Cook, Butler and Long, and Churchill and Soper report most encouraging results from the use of vaccines.

DIAGNOSIS BY USE OF VACCINE.

In gonorrheal arthritis a temporary focal reaction may be expected which consists of increased pain, tenderness, and swelling of the joint. Since such focal reaction is specific—that is, it results only when the gonococcus is present both in the lesion and vaccine—Irons suggested the use of vaccine in the diagnosis of obscure cases of arthritis of suspected gonorrheal origin.

William H. Park, of New York, in a personal communication, states that he has used antigonococcal serum in joint infections which were acute. He has used doses of 250 to 500 million, repeated every two or three days. Dr. Edward L. Keyes, Jr., in a personal communication, states that vaccines and sera appear to be of value in proportion to the reaction they cause. In other words, the reaction is not a specific one. He advises immobilization of the joint as essential and adds that vesi-

culotomy is often beneficial, especially in the more chronic cases. Fuller performed seminal vesiculotomy with good effect.

Thomas C. Stellwagon used the serum very effectively in the treatment of these conditions, and maintains it is also a valuable adjunct in treatment in orchitis, prostatitis, and epididymitis, but is of distinct value and of great preference in arthritis and other synovial infections. He obtained gratifying results. Dr. D. Hayes Agnew thought well of blisters, leeches, and absolute rest. H. H. Morton recommends large doses of potassium iodide, and oil of wintergreen and salol. Chiari tabulated 443 cases in which vaccine therapy was used with 367 cures. Ramond and Maillet have also reported encouraging results from vaccine treatment.

Bier and Baetzner in their article assert that the Bier's hyperemia method is especially effective in gonorrheal rheumatism, no matter how severe in type. Salicylates, salicin, and aspirin were useless. Friedrich and Binnie have obtained good results with Bier's hyperemia method. As soon as the acute symptoms subside and pain is relieved active and passive motion must be begun to prevent the formation of adhesions. Binnie advises rest, by the use of a splint and elevation. He considers ointments as placebos. When pain and swelling are very great, multiple small incisions or punctures give great relief by permitting the escape of the inflammatory effusion.

James P. Warbasse advises the use of injections of oil for the prevention of ankylosis. Adhesions forming between synovial surfaces in joints after inflammatory processes may often be prevented by the injection into the joint of sterilized olive oil. He advises this especially after the breaking up of fibrous adhesions in order to prevent their reformation. Baer has found this useful and also found passive motion less painful after its use. Rovsing employs sterilized yellow petrolatum; he finds the hip joint holds from twenty to twenty-five c.c. without difficulty, the knee ten to fifteen c.c. and the shoulder fifteen c.c. Care must be taken that the lubricant enters the joint; if a vessel is punctured embolism may result. Of course, if infection is present and the synovial fluid is turbid the injection is not made.

R. W. Allen, Guy's Hospital, England, recommends the routine practice of giving every case of acute specific urethritis one or two injections of from seventy-five to 150 million gonococci as soon as the more acute symptoms begin to subside and the discharge to diminish. In his cases convalescence was complete in two or three weeks, and no secondary complications or backward extensions occurred in any of his series of cases treated in this manner. The acute urethral cases do not require as large doses of vaccines as do the chronic cases; also, the arthritic cases require much larger doses than do the urethral cases.

Keyes obtained the best results from stock polyvalent vaccines in the treatment of systemic gonorrhea. Seventy-five per cent. of the acute joint lesions were markedly improved after six or eight injections. In most cases relief is

marked after every injection and is realized within six or eight hours. Keyes has used vaccines to abort and prevent threatened complications in many cases; he succeeded in aborting epididymitis in about thirty per cent. of his cases. Rogers, Herbst, and Swinburne have obtained good results with serum in chronic joint cases, epididymitis, and in eighty-five per cent. of their early joint cases. Corbus obtained excellent results with the serum. I have not used methylene blue injections or intravenous injections of methylphenol horse serum or any other antiseptics intravenously or intramuscularly, or radium salts, or radioactive mud or emanations.

A. Recio reports favorably on the diagnostic value of vaccines in cases of gonorrhea. Of 211 collected cases of vaginitis in children, with and without arthritis, etc., treated by Ohlmacher, Hamilton, Butler, Churchill, Ladd and Russ, and Thomas and reported in various journals, 100 were promptly cured and 100 were greatly improved. Morrow and Bridgeman reported 300 cases of gonorrhea in girls treated by various methods, and the best results were obtained in 118 cases treated by means of vaccines.

Roark treated gonorrheal keratosis with good results by the use of vaccines. Of the 211 cases mentioned above I included eighteen cases treated by Dieulafoy, thirty-nine by Irons, twenty-six by Eyre and Stewart, fifty-one by Hartwell, sixteen by Schultz, four by Mainini, fourteen by MacDonald, fifteen by Cole and Meakins, and eleven by Ladd and Russ.

Weinstein reports a cure in every case of vaginitis in fifteen little girls treated with vaccine. Shropshire reported treating 111 cases of acute gonorrhea with vaccine, 100 of which were cured, also thirty cases of arthritis with twenty-eight cases and five cases of gonococcemia, all of which were cured. Thomas states that the essential point to be carried out in immunizing, whether by sera or vaccines, is progressive increase in doses, until tolerance is established. Bruck holds that a strong reaction and rise of temperature are necessary for active immunization. He uses his arthigon. Ramond and Maillet have tried autoserotherapy in cases of gonorrheal arthritis. D. B. Falgeyrolle, Debove, and Albert Robin have made use of radium emanations, injections of radium salts, and the application of radioactive mud. Claude and Renault, Bertoloki, and Bader and Dominici have tried radioactive mud and baths in the more chronic forms of gonorrheal arthritis.

Cano used methylphenol horse serum intravenously and by intraprostatic injections, in ten c.c. ampoules, injected by means of a platinum iridium needle. He worked with this antiseptic at the Rosales Hospital, Salvador, C. A. It is a combination of methylene blue and phenol in human or horse serum. Each ten c.c. ampoule contains the equivalent of 0.5 gram phenol. According to Cano, an intravenous injection of ten c.c. of methyl phenol serum or an intraprostatic injection of normal phenol horse serum is nontoxic. Bernard, of Chicago, used borophenylic acid and sodium benzoate intravenously, in gonorrheal conditions.

CONCLUSIONS.

In regard to gonorrheal arthritis, it should first be ascertained if the arthritis is of gonorrheal origin. This can be ascertained by the history, the age, and the sex of the patient, by the complement fixation test for gonorrhea, and smears from the urethra and smears after prostatic massage will help. All of these cases have a focus of infection some place and this is usually in the prostate or the seminal vesicle in the male and in the tubes and ovaries of the female. The gonorrhea cannot be eliminated unless you treat these foci of infection. The best method of treatment other than the rest and local treatment is the administration of large doses of antigonococcic serum, say up to fifty c.c. This is given best in doses of ten or fifteen c.c. on successive days. The action of the serum is enhanced by the combined administration of mixed polyvalent vaccines in doses varying from a quarter of a billion to two, three, or even four billion. In the more subacute or chronic cases, the careful administration of fresh vaccine in large doses seems to do more good than the serum alone.

The preferred method of treatment is a combination of the two. Occasionally on the eighth or tenth day following the administration of the serum there is an anaphylactic reaction. This can best be controlled by the administration of adrenalin, 1 to 1,000 in fifteen minim doses every four to five hours, and 1/100 to 1/500 of a grain of atropine hypodermically. Large doses of alkaline remedies, lemonade, and kalak water, can be given until the reaction subsides. If the gonorrheal rheumatism does not then improve, one must keep on with the local treatment, prostatic and vesicle massage. Then again, failure in improvement may be due to inadequate doses of antigonococcic serum and antigonococcic stock vaccine; the intravenous administration of the serum may act more promptly in severe cases.

Finally, do not forget that tonsils, bad teeth, and infected sinuses are the most frequent cause of an arthritis, and that this source of infection may be overlooked even if there is a urethritis present.

Hemato-ethyroidin in Dyscrasic Menorrhagia.—

P. Emile-Weil (*Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris*, July 10, 1919), reports the case of a woman of thirty in whom profuse menorrhagia in the absence of uterine or ovarian disease, but in the presence of goitre, was not influenced by thyroid or other gland products, but yielded to persistent treatment with hemato-ethyroidin, a glycerin preparation of the blood of goats subjected to thyroidectomy more than a month before. Thyroid substance in doses of five to ten milligrams a day in alternate weeks is known to be beneficial in genital hemorrhages in women. Hemato-ethyroidin, on the other hand, is a preparation supposed to reduce thyroid activity, and from which good results in exophthalmic goitre have been reported by Ballet and Enriquez. The dose is three teaspoonfuls a day, discontinued for a few days after a week's treatment, and continued in smaller doses after the bleeding has been overcome.

LONDON LETTER.

(From Our Own Correspondent.)

The Treatment of Malaria.—The Prevention of Venereal Disease.—Causes of Infant Mortality.—Hospitals in Great Britain.—Lecture by Sir A. Conan Doyle.

LONDON, December 17, 1919.

A good deal of experience has been gained during the war concerning malaria and its treatment. In Macedonia the allied army of occupation was rife with it and the medical men with the British and French Forces have acquired new views regarding the disease and have revised some of those they already held. A symposium on malaria took place before the Medical Society of London on November 24th, when the matter was thoroughly discussed and the opinions of those who had had the opportunity recently of studying the malady at close range were heard. Among the contributors to the discussion was Lieutenant Colonel S. P. James, I. M. S., who spoke on the treatment of malaria in England. He pointed out that cases of malaria were now distributed almost everywhere in England and Wales, and a thorough knowledge of the diagnosis and treatment of the disease was not a matter which could be left in the hands of a few specially qualified officers, but must be communicated as widely as possible to medical practitioners throughout the country. Considering the notified cases, from the point of view of treatment by far the most important were certain cases in which the treatment of an acute relapse had not been successful in preventing a fatal issue. The number of deaths registered as due to malaria in England was usually between fifty and sixty per annum, but in 1917 the number rose to 126, in 1918 to 197, and in the present year if the rate of mortality continued the number would be 280.

Colonel James is convinced that the quinine treatment usually given for malaria is quite inadequate. Moreover, he thinks that a good many of the cases termed "quinine fever" should be called rather "quinine resisting fever." Adequate quinine treatment carried on in a systematic manner is, according to Colonel James, the most certain mode of getting rid of the malaria parasites from the system.

Dr. G. Newton Pitt holds that the intravenous injection of quinine is a simple and valuable method of administering quinine. He believes that the intravenous injection of quinine in fifteen c.c. of liquid might be much more generally adopted in all serious cases and especially in hospitals.

Dr. Aldo Castellani thinks that the sole treatment for malaria is quinine, which should be given in considerable doses. He uses thirty grains daily for adults, often forty-five grains, and occasionally sixty grains. Possibly in temperate climates smaller doses may bring down the temperature. Children require more quinine than may generally be supposed. As a rule, he advises the administration of eight to ten grains daily for a child one year old. The drug should be given by the mouth in ordinary cases, intramuscularly in severe cases, and both intramuscularly and intravenously in pernicious cases. He prefers the bisulphate for oral administration. The time for giving quinine in malaria in the tropics and

malarial regions is "at once." The noxious effects have been too much emphasized. Idiosyncrasy to quinine is very rare.

Dr. Andrew Balfour laid stress on the importance of early treatment, that is, before the gametocytes are found. He is also strongly of the opinion that sufficient emphasis has not been laid on tonic measures and it is frequently forgotten how often the liver is affected.

Dr. Gordon Ward deprecated the ignorance that prevailed regarding the diagnosis and treatment of malaria. Nowhere can authoritative information be found as to the nature of the disease or as to the part which was really played by quinine in its treatment. He urged the desirability of forming a committee charged with the duty of summarizing our knowledge of the nature of malaria in a form suitable for the consumption of the general practitioner. It should be read as a continuous story so that symptoms fall into their proper place and seem to call naturally for the treatment which is appropriate. By time alone we shall arrive at a more rational mode of treatment than we have at present. The treatment should give its proper place to quinine, but should not therefore deny the efficiency of auxiliary modes of treatment.

Major H. W. Acton pointed out that it is often not realized, that malaria constitutes a group of three fevers, each with its own parasite. In order of frequency of relapses, quartan came first, benign tertian next, and malignant tertian last. Malignant tertian does not relapse after quinine treatment, but there seems to be an accidental character about the action of this drug in the benign tertian form. It has been suggested that the malignant tertian parasite is attacked because the drug becomes fixed in the internal organs, while the parasites of quartan and benign tertian malaria, circulating in the peripheral blood, may escape for the same reason. Attempts are being made to find another cinchona alkaloid which will have the action of quinine and yet remained unfixed.

It is perfectly true that little is known of the nature of malaria, nor of the manner in which quinine acts. It is to be hoped that more light may be thrown on the subject by the investigations which have been and are being made in malarious districts in the near and far East. The problem of malaria is one which affects the entire world. The real solution undoubtedly lies in preventive anti-malarial measures: The draining of the breeding places of mosquitoes, the destruction of the larvæ, and, to lesser extent, the protection of people living in malarial districts from the bites of mosquitoes.

* * *

The question of selfdisinfection as a means of getting rid of syphilis and gonorrhea is still being discussed warmly in Great Britain. Lord Willoughby de Broke, who is chairman of the Society for the Prevention of Venereal Disease, recently asked in the House of Commons for information as to the prevalence of venereal disease in the Portsmouth area, where there are large numbers of soldiers and sailors, as compared with the rest of England, and for reports and records giving infor-

mation as to the relative frequency in hospital of men who had used immediate and delayed disinfection respectively. He said that venereal disease has increased greatly in England of late and he was bringing forward his motion with the object of insuring that the general public might know the truth in regard to immediate selfdisinfection at the time of exposure to venereal disease. According to persons who had had experience of immediate selfdisinfection with troops it had been remarkably effective and he considered that scientifically the case for immediate selfdisinfection had been proved up to the hilt. Lord Sydenham, who answered Lord de Broke, said that medical opinion was agreed that selfdisinfection might be effective when applied by exceptional people in exceptional circumstances but there had been a complete breakdown of pure selfdisinfection among troops. It was impossible to carry out a selfdisinfection policy among the civil population as it was carried out among soldiers, though even there it had been a failure. Very marked success, where found, had been due entirely to the work of skilled attendants. As it had not proved satisfactory among troops where the conditions were favorable, statements as to the contrary did harm because they gave a false sense of security. It was not only contrary to the moral law but dangerous to hold out a promise of immunity from disease. The promise was illusory, even when selfdisinfection was practised.

In Great Britain there is a conflict of views as to the value of immediate selfdisinfection as a means of preventing venereal disease. There are those who assert that these prophylactic measures have acted with extraordinary efficacy when properly employed and there are others who declare that they have been ineffective. There is no doubt that it would be extremely difficult to apply measures of selfdisinfection to or to allow such measures to be used by the civilian population. But, on the other hand, if it can be conclusively demonstrated that they have been in a high degree successful, difficulties may be overcome. It is not possible to obtain absolutely reliable statistics on the subject.

* * *

There have been several dinners recently in aid of London Hospitals. During last week the Prince of Wales presided at two dinners given for the purpose of raising funds for two hospitals. The first was to help the Middlesex Hospital, which required \$1,000,000 to set it on its feet. The second dinner over which he presided was that given in aid of the Great Northern Hospital which also required \$1,000,000 to take it out of debt. A third dinner was given with the view of raising funds for King's College Hospital, which is heavily in debt and is in need of a large amount at once to enable it to continue its good work. It is gratifying to state that the response of the public to these appeals has been most generous, but at the same time it draws attention to the anomalous and critical situation of the hospitals of Great Britain. Owing to a variety of causes, some of which are

at once obvious, their expenses during the past few years have increased immensely while subscriptions have lagged. Being all charitable institutions, most of them without endowment, it is no wonder that they have fallen into financial straits. The problem is, What is to be done to put them on a sound footing? Is the voluntary system to be abolished and State control to be instituted or can the existing system be reformed in such a way that they will serve the public needs efficiently? The matter is being discussed and grappled with and the probability is that a compromise will be reached. At any rate, it seems certain that the Ministry of Health will be unable to take steps to solve the problem at present. Doctor Addison and colleagues are overwhelmed with public health matters, the most pressing of which is the provision of adequate and sanitary housing accommodation.

* * *

At a Chadwick public lecture given at the Hampstead Town Hall on December 4th, Dr. H. J. Cates stated that insanitation was probably the most potent influence in the destruction of child life. Unhealthy homes lowered the vitality of parents and endangered child life at the most susceptible period, the first five years of life. The survey of housing carried out recently throughout Great Britain revealed an appalling state of affairs. Since 1914 little work had been done in remedying defects, and as a result cottage property had fallen into disrepair. The cessation of building had led to overcrowding: in one industrial area alone it was estimated that twenty-four per cent. of the houses were overcrowded. Little or nothing can be done to remove the present insanitary conditions and to check the waste of life until there is an adequate supply of new houses.

Doctor Cates then referred to an increase of venereal disease as one of the expected results of the war. Ophthalmia in the newborn, bringing with it the risk of life long blindness, was increasing. In one district with a population of 100,000 persons, there had been an increase of ophthalmia during the year of seventy per cent. over the previous year. Ophthalmia can be prevented by cleanliness and by the skilful use of appropriate lotions at the time of birth, but unfortunately the supply of trained midwives is not sufficient for the occasion.

* * *

On December 3rd, Sir Conan Doyle addressed a medical audience at a meeting of St. Mary's Hospital Medical Society on the subject of the material side of the psychic movement. Speaking as a medical man, he said there was no objection which could occur to the most sceptical which had not in the past occurred to him. But he could not believe that such men as Crookes and others could be mistaken in the evidence adduced by themselves. Spiritualism was too big a thing to be a religion; it was a part of the common heritage of mankind. He asserted that he was at one with the churches in combating materialism.

Editorial Notes and Comments

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THE NEW YEAR.

Medicine and surgery have kept step with the progress that has been made in every field of science during recent years. Old teachings have been boldly swept aside and new teachings, once their advantage was demonstrated, have been accepted and utilized. The war reorganized hospitals and permitted of the scientific handling of large groups of men in medical and surgical wards, to the consequent advantage of both patient and physician. Many men will find it difficult to go back to private practice, knowing so well that their patients would be benefited by group handling. But many of the lessons so expensively learned will be carried over, and further progress will result. The seed has been sown and it is sure to grow—more rapidly in some localities than in others, to be sure, but it will grow.

Contact with other men from various parts of the country and with European colleagues has been responsible for considerable progress, and if immediate results were not secured, at least the interest shown will have a bearing on future medical research. Our worshipful attitude toward the German schools of medicine has been changed to a great extent during the war, when our eyes were focused on the work done by our allies. The findings did not disappoint us, and in every case we saw that the medical work of England, France, Belgium, Italy, and Russia equaled that done in the Central Empires. The

difficulty prior to the war was to secure the writings of European medical men in readable form.

With the realization of this fact in mind, we have made our program for the coming year. For some time we have been working to establish contact with the best men in Europe so that we could present to our readers translations of original articles. Readers have noticed this and we have received many letters of approval. Furthermore, we have made extensive translations and abstracts of the important writings appearing in foreign medical journals. In the meanwhile we have not neglected the men at home. A careful study of the work of the best American medical men in comparison with the work done abroad is encouraging. Our men have proved themselves to be original in their work, quickly grasping and acknowledging the offerings of their European colleagues and utilizing them to the best advantage—and frequently improving on them.

Many topics not strictly clinical are of interest to medical men. Questions of social change, facts which have a bearing on physical and mental health, shortage of certain commodities, daylight saving, prohibition, famine in Europe and its relation to disease—these and many others are of vital interest to the physician. We strive to procure information of value on these current events and editorial articles by authorities on topics which have this value for the medical men.

Our aim is to provide our readers with material which will prove of value to them. We have made a careful study of the situation and have had the cooperation of many of our readers and contributors. In this way we avoid falling into a rut, and we anticipate the wants of the medical practitioners of the country. You may be assured of our cooperation for the ensuing year. May we expect yours?

INSANITY LAWS.

By means of a well known novel Charles Reade brought about a much needed reform in the insanity laws of England. Since then it has been the ambition of nearly every striving novelist to find some corresponding abuse and by picturing it bring about a parallel reformation. A few years ago a book which presumed to tell the story of the experiences of a mind that had found itself received much attention. The only criticism that a physician would make with regard to the book was that a great many of the impres-

sions that were detailed in the volume had been made at the time when the mind had not yet found itself. The hardest thing in the world to differentiate is between the delusions of a wandering intellect and the same intelligence coming to itself. The borderland between truth and self-deception in such cases is an extremely shadowy area in which basic observations are supremely difficult to make and in which allowance of all kinds must be made for personal tendencies quite apart from truth.

The most recent attempt in periodical literature to suggest the need of a reform in insanity laws is a story told by Mr. Irvin Cobb in the *Saturday Evening Post*. In this a marvelously acute female detective figures as the savior of a young and, almost needless to say, handsome woman from incarceration in a private insane asylum. The young woman was perfectly sane, but her mother had delusions of persecution which had become centred on her daughter and she brought them to the attention of physicians, accused her daughter of attempts to kill her, secured the testimony of two physicians who agreed with her, brought the matter before the court, and had the commitment papers made out. An amateur detective discovered her on the train on the way to an asylum, and became so much interested that she went to the governor and had the entire case looked into and the lady released. The governor in giving the pardon said: "In the name of the State of New York and on behalf of it I ask your forgiveness for the great and cruel wrong which unintentionally was done to you." The young lady then explained that she realized when her mother accused her of trying to kill her that the mother was going insane, so she decided to keep silent (for the love of her mother) and went to the asylum herself.

It would be hard to say how many absurdities there are in this story. It may be possible for a daughter, out of sympathy for her mother, to go to an asylum rather than send her mother there, but any alienist brought into the case would be sure to suspect that a daughter who did it probably inherited, and was already exhibiting, some of her mother's instability of mind. Nothing else would quite explain the action of leaving her insane mother absolutely alone in the world to get on as best she might.

The sentimental reason for not sending her mother to an asylum is that she would spare her contact with the insane. There is a tendency for many people to believe that when a person is put with other insane people the contact disturbs their minds. On the contrary, as a rule the in-

sane are benefited by this association. The insane grow impatient and unsettled when they are constantly associated with those who are rational because, being irrational themselves, the constant disagreements irritate them. On the other hand, when the insane are brought in contact with those who are more irrational than themselves they derive some consolation from that fact, for even for them contentment is the feeling that things might be worse. They are often stimulated by the example of the irrationality of those around them to realize their delusions and to use their own reasoning powers to a better advantage.

All those who set about fostering sympathy for patients committed to an asylum emphasize the depressing effects that association with the insane must have on those compelled to spend much time with them. They seem to forget that there are many thousands of physicians and nurses who deliberately choose to spend most of their time with the insane. Another thing that escapes consideration is the fact that the majority of the patients in hospitals for the insane are benefited by the treatment they receive in the institutions. Whether these benefits would be more marked with the same kind and amount of treatment in another environment is problematical.

As to the possibility of the commitment of a perfectly sane person under the conditions described by Mr. Cobb, physicians familiar with insane commitments in New York might be permitted to doubt. Persons who suffer from delusions of persecution rarely fail to present other symptoms by which the irrationality is revealed.

The insanity laws in New York and in other states are not perfect, but when they are properly administered they serve to protect against commitment to insane asylums unless there is good reason for it. The only trouble about them is that they are a little too lax in allowing people to be at liberty who are or may readily be a danger to society. Morbid sentimentality that would create further difficulties to the securing of early treatment for such patients is a serious mistake. Insanity is much more frequent than it used to be and is responsible for not a few of the suicides and homicides which have come to make such a blot on our vital statistics. It is better that some slight wrong should be done occasionally in order to prevent such awful results, but there is really very little danger now of the commitment of sane people to asylums. The illustrator of Mr. Cobb's story, however, seems to have read the underlying truth in the story and he gives the girl a vacuous look that would send any one to an asylum.

A NOTE ON THE HISTORY OF INFECTIOUS ENDOCARDITIS.

Allan Burns in 1809 was the first to describe fibrinous masses and flaky lymph on the internal surface of the auricles. Three years later Wells noted the presence of vegetations in the left heart, and in 1815 Matthew Baillie declared that he had seen the venous valves, the seat of true inflammatory processes, covered with plastic lymph. In spite of these attempts, the history of endocarditis—which is still none too clear—was not actually separated from other morbid processes of the heart until many years later. The description of the endocarditides really began with Bertin and Bouillaud in 1824, who in their work, *Traité des maladies du cœur et des vaisseaux*, mention inflammation of the internal lining of the heart found in serious types of fever, but they did not mention the word endocarditis. In 1836, Bouillaud in his work on rheumatism formally indicates the correlation of acute rheumatism and cardiopathies and at the same time establishes two types of endocarditis, first a simple inflammatory endocarditis of rheumatic origin with a mild evolution, and the second he terms infectious endocarditis, which is found in typhoid fever. But Bouillaud does not recognize the relationship between the lesions of the endocardium and the general symptoms.

It is to Senhouse Kirkes that the honor is due for noting the relationship between certain serious general adynamic conditions and the presence of ulcerations on the endocardium. This was in 1858. According to Kirkes the endocardial lesion is the primary one; the general phenomena are secondary and due to infection of the blood in the general circulation from the products of concretions detached from the involved valves.

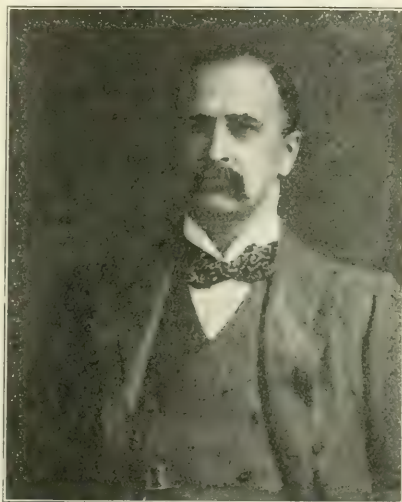
In 1865, Hardy and Behier, and afterwards Dugué and Hayem, denied the correctness of Kirkes's contention and endeavored to show that the morbid changes of the valves were merely the local manifestation of a general infectious disease. The microbic theory appears with Lancereaux, who, in 1862, noted the presence of small rods at the bottom of an ulceration on the endocardium. In 1870, Winge, of Christiana, published the history of a case where the man died from an endocarditis following suppuration of a corn on the foot and described microscopic organisms in the endocardial lesions. This permanently established the fact that infectious endocarditis was not a specific affection, but was due to the action of various bacteria producing variable anatomical changes.

Finally, the experiments of Rosenbach in 1881, in which he was able to reproduce vegetating endocarditis by traumatizing the cardiac valves with a probe carrying the septic products, and those of Orth and Wyssokowitsch, who by injecting intravenously a bacterial culture into rabbits whose cardiac valves had been injured, also reproduced vegetating endocarditis, thus confirmed the infectious nature of endocarditis. Of recent years the researches of Perret and Rodet, of Ribbert, and, last of all, Lion show that it is not necessary to first injure the endocardium in order to experimentally reproduce the process. Other writers have studied the clinical side of the subject, so that at the present time the majority of the textbooks describe four types of endocarditis, viz., the pyemic, the typhoid, the cardiac, and the meningitic. There is yet a fifth form whose description is of too recent date to have become classic; we refer to malignant endocarditis with a prolonged evolution described by Brunon and Née, of Rouen, and by Jean Baré in his recent thesis (Paris, 1913).

THE PROPOSED MEDICAL SERVICE CORPS.

After a hearing before the house committee on military affairs, the Surgeon General of the Army has formulated a bill providing for a medical service corps including all the enlisted men in the medical department, the veterinary corps, and a group of commissioned officers who shall be charged with performing the nonmedical duties required of officers of the medical department. Apparently with a view to rewarding the enlisted men and noncommissioned officers who have served or may serve acceptably in the medical department, the bill provides that commissions shall be granted in this corps *only* to men who have served five years as enlisted men and three years as noncommissioned officers. While this bill falls short of what the pharmacists desire, that is, the organization of a distinctive pharmaceutical corps, it is the first movement on the part of the medical department to give any recognition whatever to the nonmedical men in the department. The specific limitation of the appointments to those who have served for five years as enlisted men effectually bars from appointment the highest type of specialists in pharmacy, psychiatry, dietetics, and other special branches of the service, for it is not at all likely that there will be found among the enlisted men of the medical department men of university training and of the special qualifications. This

should be required of at least the senior officers in the service corps. Efforts have been made to induce the Surgeon General to agree to a modification of the bill so as to provide that not less than fifty per cent. of the commissioned officers shall be appointed from the ranks of enlisted men. The argument has been put forward that the Surgeon General has unnecessarily tied his own hands by requiring that *all* the commissioned officers in the corps shall have served for five years as enlisted men. With a view to holding out encouragement to the enlisted men in the department it will be sufficient to specify that a certain proportion of the commissions shall be issued to enlisted men. As a matter of fact, the phraseology proposed would still leave the Surgeon General at liberty to restrict his appointments to men who had served in the ranks. As the measure was originally drafted, even those men who had served as officers in the sanitary corps during the great war would be excluded from appointment in the regular army. It is not probable that many of these men would care to enter the regular army, but, if they should, it is certainly most unfortunate that they be barred by this particular provision, for many of them have had a broad and valuable experience which would prove helpful to the service should they receive appointments in the medical service corps.



SIR WILLIAM OSLER.

Obituary.

SIR WILLIAM OSLER, M. D.,
London.

The close of the year 1919 witnessed also the close of a life that was great because it was warm and radiant with the spirit of service, of human sympathy, of a progress which found its way through diligent research of every sort and sought the always opening and deepening of avenues of advance for this same humanity. Language sometimes defeats its purpose. There is no close to such a life any more than there is to these pathways of practical and serviceable knowledge which this man pursued and which he continually broadened. Sir William Osler's life and words and work expressed an immortality which links him inseparably with

his fellowmen still actively pursuing such paths and with all those who toiled along them in the past.

Osler was a man of many lands, the "peripatetic" physician as he characterized himself. He was born in Canada, in Ontario, seventy years ago; he studied in his native land, in England, in Germany, and in Austria. He spent his early professional years in Canada, a generous portion of them in the United States, and ended his life in England, where he had been called in 1905 to take the Regius professorship of medicine at Oxford University.

Osler is so well known to the general public as well as to his own profession that an extensive notice of his work is scarcely necessary. Moreover, an adequate eulogy of this deep hearted and manysided man, an impossible task, may be left to the many who have fallen under the influence of his teaching, his professional care or inspiration, or the fascination of his many writings on many subjects. Besides his work is too vast, both in its published volume and in his practical medical experience, to receive more than a

mere indication of its extent. When a student at McGill University a special prize was created for him because of the original and practical character of the work he produced for his thesis. This character has followed his work. He kept himself from the distractions of the ordinary practicing physician because he felt he had a deeper task to fulfill, one which justly deserved his close application and attention.

Yet this was a several sided task. His interest and his method were to get close to facts as they stood and make them always the starting point of his work. The result was that as a teacher, as a clinician, as an effective worker in the newly organized regimen

at Johns Hopkins Hospital, which it was his privilege to bring to success, he came himself and he brought his students into an active realm of observation, recording, judging of facts and basing all practical and theoretical work upon them. His hospital clinics were crowded and of his autopsies it was said that it needed a skillful surgeon to restore the body for burial.

The same spirit of thoroughness controlled and brooded over by a desire for the deeper and broader meanings characterized his literary work. No one who heard or read his address last May before the Classical Association of Oxford on The Old Humanities and the New Sciences could fail to appreciate that here was a mind which was of the ages and which worked at whatever came in his chosen pathway because it was part of the continuity which has been touched in many ways

through all times and awaited the touch of the men of today only that there might be a firmer and surer touch for the men of the future with ever greater opportunities for knowledge making for physical and mental health and power.

Our country can boast of having had five years of his service at the University of Pennsylvania and sixteen most fruitful years in the organization and development of the higher standards of medical training at Johns Hopkins University, with all the mature power of his work in many other directions. None the least of these has been his earnest constructive work in the health campaigns and the social betterment in Baltimore and Maryland, which city and State he made his own and served loyally.

News Items.

Influenza in Japan.—An epidemic of influenza similar to that which swept around the world last year is reported to have broken out in Japan and the government has taken measures to check the spread of the disease.

Requests to Hospitals.—The will of the late William Salomon, of New York, leaves \$10,000 to Mt. Sinai Hospital and \$5,000 each to the Presbyterian Hospital, Roosevelt Hospital, New York Throat, Nose and Lung Hospital, and the Herman Knapp Memorial Eye Hospital.

Plague in Argentina.—Bubonic plague is reported to have attained grave proportions at Las Rosas, Santa Fe Province, Argentina, where the business houses have been ordered closed for forty-eight hours owing to bad hygienic conditions. The national department of hygiene has begun a war on the rats infesting warehouses.

Health Appropriation Rescinded.—The New York city board of estimate has rescinded the appropriation of \$1,000,000 for the construction of a new building for the Department of Health on West Thirtieth street. The Hallenbeck Building, a part of the new Court House site, will be repaired so as to house the department.

Hospital Patients in A. E. F.—A total of 1,397 soldier patients were received at Hoboken from November 1st to 20th. This leaves only 156 hospital patients in France and 568 in Germany. On November 21st there were in general hospitals and at Hoboken 17,210 patients, with 3,112 empty beds. The last report from General Hospital No. 43 at Hampton, Va., showed only 476 neuropsychiatric cases remaining.

Ohio Valley Medical Association.—The twentieth annual convention of the Ohio Valley Medical Association was held November 11th and 12th at Evansville, Ind. The following officers were elected to serve for the ensuing year: President, Dr. Virgil Moon, of Indianapolis; first vice-president, Dr. Charles T. W. Southard, of Cincinnati; second vice-president, Dr. L. W. Bremerman, of Chicago; third vice-president, Dr. Sidney L. Eichel, of Evansville; secretary-treasurer, Dr. B. L. W. Floyd, of Evansville.

Doctor Brush Ends Service as Mayor.—Dr. Edward F. Brush has retired from office after having served eight terms as mayor of Mount Vernon, N. Y.

Smallpox Cases in Montclair.—Two negroes suffering from smallpox were sent to the Soho Isolation Hospital from Montclair, N. J., and the town health authorities have established quarantine in the district where the men lived.

Yellow Fever in Mexico.—An epidemic of yellow fever is reported in many cities and towns of the Mexican States of Yucatan, Campeche, Chiapas, and Oaxaca. Quarantine has been established against Salina Cruz, Progreso, Frontera, and other ports. It is stated that Vera Cruz is free of the disease.

Doctor Flies to Patient.—An aviator from the Middletown, Pa., aviation reserve depot took a doctor by airplane to give medical aid to a family on Duffy's Island, in the Susquehanna, cut off from the shore by ice. Word had reached the depot that three children in the family were ill with pneumonia.

Aid for Tuberculous German Children.—More than 2,000 tuberculous and undernourished German children will be given a chance of attaining health by means of a gift of 2,500,000 marks donated to the American Section of the German Red Cross by relief committees in the United States. Children in advanced stages of tuberculosis will be sent to Switzerland.

Paris Birth Rate Increases.—The birth rate in Paris for the month of December has greatly increased over that in the beginning of the year, according to a press dispatch. Last January the birth rate was 9.5 in 1,000 of population, while for December, 1919, the rate exceeded eighteen in 1,000. Deaths have decreased from eighteen in 1,000 in January to fourteen in 1,000 in December.

U. S. Hospital to Be Destroyed.—U. S. General Hospital No. 8, at Otisville, N. Y., built during the war at a cost of more than \$1,000,000, is to be wrecked by fire under the supervision of Dr. Royal S. Copeland, commissioner of health of New York. The hospital until recently has had patients under care for wounds and diseases contracted overseas. The buildings are to be burned at the time of their abandonment because some of them have been used for housing tuberculous patients. No date has been fixed for the closing of the hospital and the destruction of the buildings.

Health of U. S. Troops Abroad.—Mild epidemics of diphtheria and measles are stated by the War Department to prevail among American forces on the Rhine. A number of influenza cases have developed into pneumonia. Eleven cases of diphtheria, eleven of measles, twelve of influenza, and four of pneumonia are reported for the week ended December 19th. An influenza epidemic among the American troops in Siberia began during the week of November 14th, when 117 patients were admitted to the hospital. The highest death rate was for the week ended December 5th, when twenty-three out of forty soldiers stricken with pneumonia during that week died.

England Gets Radium by "Boiling Down" Guns.—A press dispatch from London states that England has been obtaining a large quantity of radium by "boiling down" guns used in the war. Guns were boiled down to produce five grams of radium salt, which at present is at the Middlesex Hospital and is kept in a container invented by Dr. Huss. This is said to be the largest amount of radium available in one place for research work.

Cancer Facts.—The U. S. Public Health Service and the American Society for the Control of Cancer are each calling attention to a booklet issued by the Public Health Service and entitled *Cancer—Facts Which Every Adult Should Know*. The booklet treats of the essential facts known to be effective in the control of cancer and is written especially to acquaint lay readers with the early symptoms and seriousness of this disease. Copies of this publication may be secured by addressing Dr. Charles F. Bolduan, chief of the section on public health education, U. S. Public Health Service, Washington, D. C.

Vacancies in Medical Corps.—At the present time there are approximately 730 vacancies in the Medical Corps, Regular Army, to endeavor to fill which it is contemplated to hold examinations on March 15th. The examinations, which will be both physical and professional, will be held at various points throughout the United States, in the Philippines, Hawaii, Panama Canal Zone, and Porto Rico, and in France, Germany, and Siberia, of applicants in the military service. Applicants must be citizens of the United States, between twenty-two and thirty-two years of age, a graduate of a medical school legally authorized to confer the degree of doctor of medicine, and shall have had at least one year's graduate hospital internship. Further information may be obtained from the office of the Surgeon General, United States Army, Washington, D. C.

Mary Putnam Jacobi Fellowship.—The Women's Medical Association of New York city offers the Mary Putnam Jacobi Fellowship of \$800, available for postgraduate study. It is open to any woman physician for work in any of the medical sciences. The fellowship will not be awarded by competitive examination but upon proof of ability and promise of success in the chosen line of work.

Applications for the year 1920-1921 must be in the hands of the committee on award by April 1, 1920, and must be accompanied by: 1, Testimonials as to thoroughly good health; 2, letters as to ability and character; 3, a detailed account of educational qualifications; 4, a statement of the work in which the applicant proposes to engage while holding the fellowship; 5, examples, if any, of her work, in the form of articles or accounts of investigations which she has carried out. Two reports will be expected from the holder of the fellowship, one to be presented about the middle of the work and a detailed report for publication upon its completion.

Applications for this fellowship should be forwarded to the secretary, Dr. Rose Cohen, 151 West Seventy-eight Street, New York.

Gift to Vanderbilt Medical School.—An appropriation of \$4,000,000 has been made by the General Education Board for the purpose of enabling Vanderbilt University to reorganize its medical school in accordance with the standards of modern medical education. A new school of medicine will be established in Nashville as an integral department of Vanderbilt, and it is probable that future development will include the completion of the present Galloway Memorial Hospital.

Spanish Hospital in New York Suburb.—Plans are under way for the establishment of a Spanish hospital and nurses' school on the outskirts of New York city, where Spanish patients will be treated by a staff of Spanish doctors and attended by Spanish nurses. The movement was set in motion before the war, halted during hostilities, and resumed recently. The Spanish Society, originator of the project, is seeking a fund of \$200,000, part of which will be collected in Spain. The sum of \$17,000 has already been raised among Spanish speaking people in this country.

Scabies in New York City.—A slight increase in the prevalence of scabies in certain sections is reported by the Department of Health of New York city. The type of the disease is apparently mild, and it yields more quickly to treatment than is usual. Investigation shows that in a number of the families where cases have been found there have been returned soldiers. The number of cases reported for the year 1918 is 1,795, a figure much lower than the average for the preceding five years, while the total for the first three quarters of 1919 is 1,601, within 194 cases of the 1918 total.

Army Medical Museum.—The *Army and Navy Journal* states that from April 7, 1918, to July 1, 1919, a total of 9,960 specimens, illustrating diseases of soldiers and the effects of wounds and missiles on the body, were received by the Army Medical Museum in Washington, D. C., of which 2,922 were from overseas. Eighty-five wax models were made showing conditions arising from wounds, gassing, and accidents connected with the war. There have also been produced about fifty painted illustrations of pathological conditions observed in specimens, and also a large number of drawings showing the various steps in surgical operations at Walter Reed Hospital, and other places. A total of 900,000 feet of moving picture film was produced, which was used for the instruction of officers and men in medical subjects. Because of lack of funds this department was closed March 1.

It is planned to include in the exhibit open to the public models of sanitary apparatus used in the Army and in the prevention of infectious diseases in civil communities. Models, paintings, photographs, and diagrams illustrating diseases in military and civil communities, such as typhoid fever, dysentery, tuberculosis, influenza, etc., will be shown, accompanied by explanatory legends which will enable the public to understand and appreciate the importance of the prevention of these diseases. For the use of physicians, dentists, sanitarians, and research workers, it is planned to have type collections of specimens, instruments, and apparatus, arranged so that they can be easily studied.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

(Continued from page 1085, vol. cx.)

In discussions of myalgic conditions such as were met with among soldiers in active service during the late war, considerable attention has been paid to the question whether these conditions arose mainly because of exposure to cold and moisture or mainly because of the strenuous exertion undergone. According to Schmidt, 1916, myalgia from cold occurs only in predisposed individuals, while myalgia after exertion develops regularly in persons not in a state of physical training at the time. Since men in active military service are physically trained for the task, it would seem rather that their myalgia should be due to exposure than to exertion. Granting the truth of Schmidt's assertion, one might expect the condition to be confined largely to certain predisposed persons, and this seems in some degree supported by the observation that myalgia among the combatants ran a chronic course, recurring repeatedly in the same individuals when exposed to unfavorable conditions of weather and temperature.

Chavasse, 1917, became dissatisfied with the snap diagnoses of "myalgia" with which men were brought to the field ambulances and casualty clearing stations, and analyzing a series of 200 cases with care—much as did Deaderick in the 100 cases labelled "rheumatism," referred to at the beginning of this series of articles—found that no less than 108 had been incorrectly diagnosed, these cases including forty-six more properly termed neuralgia; sixteen, arthritis; nineteen, pyrexial conditions; nineteen, postpyrexial conditions, and four, sciatica. In the true myalgic cases the pain was in a majority of instances in the lumbosacral region, passing down along the lower limbs for some distance, and was usually symmetrical. A definite distinction could be established between the myalgic cases, in which pain disappeared when the subject was recumbent, warm, and quiet, and the neuralgic, pyrexial, and postpyrexial cases, in which pain was made worse by recumbency in a warm bed. Stiffness followed rest in the myalgic cases, but passed off again upon motion, unless the latter was too severe. Sharp pain was experienced when the muscles concerned were actively contracted or subjected to rapid, passive hyperextension. The onset of the disturbance was, as a rule, sudden. In the successive myalgic attacks the region affected was in most instances the same as had been involved before. Either exposure to cold and moisture or continued exertion, as in marching or digging trenches, brought on or aggravated the disorder—a fact suggestive that the latter may be primarily due to not one, but two causes, acting either singly or in com-

bination. Whereas in the neuralgia cases the disturbance seemed at times to be related to previous febrile attacks, in myalgia no such relationship could be traced. Another differential feature elicited was that in neuralgia hyperesthesia of the skin was often present, while in myalgia it was absent.

In a somewhat similar study under war conditions, Schmidt, 1914, tried to ascertain the original cause in miscellaneous cases of myalgia, neuralgia, acute rheumatism, etc., and lays claim to having found a preexisting tonsillitis or rheumatic disturbance in nearly all cases. The joints mainly affected were those of the lower extremities. The author ascribes this fact to the exertions of the lower limbs involved in prolonged marching, but the men themselves thought it due rather to the cold and moisture in the trenches. Where the foot was the part complained of because of rheumatism, the actual condition usually proved to be either flatfoot or a fracture of one of the metatarsal bones—the so-called "march fracture." In some instances Schmidt traced joint enlargements to a septic state, secondary to the introduction of infection through wounds; such a condition occurred even after the wound had healed. Again, many instances of poly-articular swelling were found to result from dysentery or some other intestinal disturbance.

In the treatment of myalgia in soldiers Chavasse recommends particularly massage, which proved beneficial in twenty-one out of thirty-one cases, though painful in twenty-seven. Schmidt reports benefit from injections of saline solution or of a one half per cent. solution of novocaine (procaine). The injection is administered at the point of greatest pain.

Another somewhat similar rheumatic disturbance met with during the war was the localized chronic lumbar rheumatism described in detail by Léri, 1918, and attributed to resting the back against a damp trench wall and sleeping on damp earth or straw, coupled with long marches with full packs. The pain was usually unilateral in these cases, the main feature of which was a loss of the physiological lordosis in the lumbar region, with diminished ability to bend the body forward and downward. This condition seemed partly due to an almost continuous active contraction of the spinal muscles; when the patient was placed in bed, however, passive mobility of the spine was found completely preserved. Although at first sight seemingly a war condition alone, inquiry revealed that many of the men had had previous attacks, and x ray examination showed broadening of the apposed surfaces of the lumbar vertebrae, apparently with a tendency to decalcification and occasionally even osteophytic projections. The possibility that this condition was allied to true rheumatism is suggested by the fact that in its treatment, sodium salicylate and immobilization gave the best results.

(To be continued).

Reconstruction of Peripheral Nerve Injuries.

—Charles H. Frazier (*Annals of Surgery*, January, 1920) states that the surgical treatment of peripheral nerve injuries for the injured men of the A. E. F. did not begin until the men were returned to America. Up to the present time there have been over 3,000 cases of injury to the peripheral nerve centres. It is estimated that twenty-five to thirty per cent. was a conservative estimate of the proportion of cases in which operation was justifiable. The practice has been to wait three months from the date the wound healed, and in some instances six months, prior to attempting operation. If then, there are no signs of spontaneous recovery and substantial evidence of complete nerve interruption, whether from an anatomical division or a central neuroma, there are no grounds for further delay. Care should be taken that an error is not made, based on the action of the supplemental muscles. Some observers believe that better results follow suture after waiting for six months instead of waiting only four months, as then the degeneration is complete.

Regarding the technic, the tourniquet should not be used as routine, but when used should be removed prior to the resection or suture, the bleeding being controlled in the interval. Liberal incisions are indicated as the nerve should be exposed, and often liberated far above and below the lesion. Traumatism to the healthy nerve should be avoided, and to this end it is advantageous to operate under a constant spray of saline solution, using small, moist, cotton pledgets for sponging when necessary. The preliminary dissection may be carried out with a small, sharp scalpel, or with a small curved eye tenotomy scissors and fine fixation forceps. Unless a beginning is made well above and below the lesion, the identification of the different nerve trunks, from one another or from thrombosed vessels, particularly in the upper third of the arm, may be quite impossible.

No attempt has been made to use protective sheaths in neurolysis or nerve suture, as it was believed that devitalized tissue would tend to stimulate connective tissue formation and thus retard nerve regeneration at the line of suture. It was thought that the nerve sheath alone, if carefully approximated with sutures, offered adequate protection from the invasion of connective tissue. Lateral anastomosis had no merit whatever. It was thought desirable to coin another term for an operation, similar to lateral anastomosis, when the central or peripheral stump alone or combined were sutured into an adjacent nerve, but differing in that the adjacent nerve was sacrificed. The term suggested was implantation suture. This form of operation had a limited field of usefulness. Nerve stretching made it possible to lengthen the nerves from four to seven cm. when posture was added to the stretching. The nerve may be stretched after its liberation by a heavy silk suture through the bulbs and drawing them as closely together as possible and with the forearm or leg flexed. During the following four weeks the limb is gradually brought into a position of extension and by this process the nerve is stretched. At a second opera-

tion, by bringing the limb again into flexion, approximation of the segments after resection, is possible. This technic is of service when two or more nerves are involved.

Nerve transposition is an aid in bridging defects and is applied to the ulnar and musculospiral. With large defects advantage must be taken of favorable positions so as to secure apposition without tension, such as flexion of the forearm or knee, adduction of the arm, inclination of the head. Transplant should only be used as a last resort. Aftertreatment is a matter of importance; massage, galvanism and later faradism, with properly selected exercises, should be continued faithfully and persistently until voluntary movement has returned. In some instances secondary operations are inevitable.

Surgical Obliteration of Facial Wrinkles.—

Julien Bourguet (*Bulletin de l'Académie de médecine*, October 14, 1919) describes his procedures for eliminating wrinkles in women desirous of maintaining a youthful appearance in spite of advancing years. Obliteration of wrinkles in the forehead is effected by making a curved incision on either side, a few centimetres from the median line and at the junction of the forehead and hairy scalp, removing a crescentic piece of skin, convex above, and closing the wound with intradermal sutures. Wrinkles in the temporal region, starting at the outer palpebral commissure and extending outward in a fanshaped figure, are removed by spreading out the external margin or base of the triangle. An angular incision is made in the glabrous angular area forming the border of the temporal and frontal region, and resection of a corresponding angular piece of skin, followed by intradermal suturing, gives the desired result.

The nasolabial fold is due to sagging of the muscles of the cheek. To remove it, the skin of the cheek is drawn backward by making an incision behind the external ear, drawing upward the posterior margin of the wound, and suturing when the necessary amount of tension has been attained. Sometimes the skin has to be mobilized in the parotid region to permit of its sliding back toward the ear. In the neck, excess of tissue below the jaw sometimes gives the appearance of a double chin. An incision is made in the fold below the jaw, the excess of fat removed by means of a double edged scalpel, curved on the flat, and forceps, and the wound closed by intradermal suture. In thin persons there is formed a furrow in the midline of the neck flanked on either side by a triangular, raised mass of tissue. The excess of skin in such cases is removed by making a curved incision behind the external ear on either side, the incision curving above the mastoid and turning downward behind it. The skin being very adherent in this region it must be extensively mobilized forward and backward in order to permit of disappearance of the neck folds by traction. By drawing upward on both sides with hemostats the amount of skin to be removed is ascertained. All the procedures described above are carried out under local anesthesia. No dressing is applied. Excellent results are obtained, and the scars produced are invisible.

Repeated Small Blood Transfusions in Blood Stream Infections.—J. O. Polak (*American Journal of Obstetrics*, September, 1919) states that virulent bacteria with hemolytic powers rapidly destroy blood resistance, as shown by a very rapid reduction of the red cells and hemoglobin and an absence of leucocytosis, the heart, spleen, liver, and kidneys show pathological alterations, and acidosis develops. In the treatment of such cases Polak has the patient supported by means of fresh air on the roof. The Fowler position is employed day and night, and free exhibition of fluids is maintained by means of the Harris drip, which may be continued for days without irritation. The douche can half filled with sodium bicarbonate and glucose solution is placed with its bottom on a level with the pubis, and the fluid kept warm with an incandescent bulb. The fluid passes into the bowel until it reaches the same level as in the can; gas passes into the can, and the fluid is slowly absorbed from the rectum and colon. All medication is given hypodermically. Small transfusions—250 to 300 mls.—of citrated blood are given every third day, care being taken not to use the same donor for more than two transfusions. A hypodermic of one third grain of morphine before transfusion reduces the severity of the reaction. Leucocyte count, red cells, hemoglobin, and blood pressure are increased, at least temporarily, by each transfusion. The pulse in the favorable cases always improved in quality and rate. General resistance seems to be stimulated by the treatment. So far the author has treated four cases of thrombophlebitis by the method, with one death, and seven cases of bacteriemia, with one death. The treatment is considered a valuable addition to the therapeutic armamentarium in severely septic cases.

Elevation of Body Temperature.—E. P. Cumberbatch (*Archives of Radiology and Electrotherapy*, November, 1919) explains that when the current generated by the diathermy machine is passed through the body no sensation other than heat is produced. When a cylindrical electrode is held and the current is increased heat is felt first in the wrists and then throughout the body, particularly the face and chest. A rise in temperature of from one to six degrees was noted in various parts of the body. This difference in temperature is explained on the ground of the various pathways taken by the current in passing through the body. The temperature rise is also due to heating of the blood as it passes along the heated arms and forearms. The maximum heat is felt and recorded in the upper extremities along the narrowest parts. When a current of 0.65 ampere was passed from hand to hand the temperature increased twenty degrees in four minutes on the front of the wrist and sixteen degrees on the back of the wrist. The greater rise of temperature along the flexor is due to the path for the current being shorter and less resistance being encountered in the flexor region.

It is concluded that the experiments gave some indication of the position in which to place the electrodes when diathermy was to be applied for medicinal purposes. If it was desired to raise the temperature of the entire body, the easiest way was

to pass the current along the upper limbs by way of electrodes grasped in the hand. If an internal temperature higher than 100° was desired the wrists would become too hot if the electrodes were held in the hands. Plate electrodes should then be substituted and applied to the forearms. When the current passed along the upper limbs, the latter were heated directly and attained the highest temperature. The trunk and lower limbs were heated indirectly by means of the circulating fluids. If the current was then passed along the lower limbs, the latter would be heated directly. The tissues which were less vascular and therefore less easily heated by the blood, were traversed by the current and heated directly. When it was necessary to apply diathermy to a joint the electrodes should be placed on opposite aspects, one anterior and the other posterior, and afterward one on each side when possible. If the current was passed longitudinally along a limb, the major portion would pass along the better conducting tissue outside the joint. Regarding the feet and hands, one electrode should be placed on the sole or palm, the other on the dorsum of the foot or back of the hand.

Tuberculin.—S. Kleinberg (*Journal of Orthopedic Surgery*, December, 1919) states that recent literature shows that most observers consider tuberculin of great assistance in pulmonary tuberculosis. Some observers are more conservative in their estimate of the value of tuberculin. Tuberculin has not been used extensively in the treatment of bone and joint tuberculosis, and by few orthopedic surgeons. Some observers believe that tuberculin in small doses at proper intervals is of undoubted value in the treatment of selected cases of tuberculous bone and joint infections. Others consider it to be of decided value in the treatment of tuberculous joints and that it can be administered during any stage of the disease. Tuberculin has not been given a sufficiently long or extensive trial in orthopedic cases and criticism in such cases would be unfair. Furthermore, the orthopedists had used tuberculin in either single, fairly large doses, or had repeated the same dose at short intervals. In this way they frequently got severe constitutional reactions. The belief has grown that for therapeutic purposes tuberculin should be given in increasing doses and regulated so as to avoid a reaction. For the proper management and treatment of a case of bone and joint tuberculosis with tuberculin, there were three essential factors: First, a correct diagnosis; second, a thorough knowledge of the symptoms, course of the disease, and probable complications; third, an accurate knowledge of the dose of tuberculin and its action.

Tuberculin may be very toxic, and if unwisely or improperly administered harm may result. The patient may die. Great care must be exercised. In children operative treatment for tuberculous infection in the joints is contraindicated. It is argued that subcutaneous injections in increasing doses, beginning with small innocuous quantities, will cause the production of substances in the blood that will destroy or lysozyme the tubercle bacilli. If the tuberculin is given in increasing and properly regulated

doses the tubercle bacilli will gradually be killed and the patient will become resistant to tuberculous invasion through loss of hypersusceptibility to tubercle bacilli. Patients who receive tuberculin and do not receive orthopedic treatment are never cured. In a series of cases tuberculin was administered to the patients while they received orthopedic treatment. It was found that the patients were not cured by the administration of tuberculin. Not a single case was entirely successful. Tuberculin produced a tolerance for tuberculin and not for the tubercle bacillus or all of its toxins. The conclusions arrived at are: 1. Tuberculin does not cure tuberculosis of the bones and joints. 2. In the majority of cases, tuberculin therapy causes no noticeable beneficial influence upon the bone or joint lesion. 3. In a small proportion of cases there has been an improvement of the lesion. 4. In some cases there may be a distinct accentuation of the disease. 5. New abscesses may appear during and after completion of tuberculin treatment. 6. Relapses occur after apparent improvement.

Method of Feeding in High Intestinal Fistulas.

—Max Minor Peet (*American Journal of the Medical Sciences*, December, 1919) says that the problem of nutrition in high intestinal fistulas is a serious one. The loss of fluids and products of digestion steadily lowers the patient's resistance to infection, and so weakens his physical condition that operative intervention is extremely hazardous. The administration of small amounts of food by mouth does not materially improve the condition. Mechanical measures to conduct the fluids from the upper to the lower intestinal loop, or to occlude the fistulous tract, are successful in only a very small number of cases. Rectal alimentation has many limitations, chief of which are the failure of absorption of sufficient calories and the short time the colon will tolerate nutrient enemas. Enteric administration of foodstuffs through a small, soft catheter, inserted by way of the fistula into the efferent loop, is successful. By this method sufficient calories are utilized to maintain a good physical condition and to build up an emaciated patient so that he can withstand necessary operative treatment.

Elephantiasis and the Kondoleon Operation.—

Thomas M. Green (*Annals of Surgery*, January, 1920) states that elephantiasis is bought about by the mechanical obstruction of the lymphatics or veins of a dependent part added to the presence of microorganisms, filaria nocturna or streptococci; in the tropical countries by the nocturna but in the Gulf and South Atlantic States by the streptococci. The histopathological requirements for a complete picture of elephantiasis are: 1, a mechanical obstruction of the veins and lymphatics of the region, usually an obliterative thrombophlebitis, lymphangitis or adenitis; 2, hyperplasia of the collagenous connective tissue of the hypoderm; 3, gradual disappearance of the elastic fibres of the skin; 4, the existence of a coagulable dropsy or hard lymph edema; and 5, a chronic reticular lymphangitis caused by the secondary and repeated invasion of pathological microorganisms, usually of the streptococcus type. Kondoleon of Athens first published the method which gave prospects of a cure in 1912. The oldest

surgical treatment was proposed in 1851 by Cornochan. It consisted of the ligation of the main artery of the limb, with a view of diminishing the edema. Then followed the method of removing wedged shaped areas. Then in 1908 Sampson Hadley described a method known as lymphangioplasty, which consisted of passing along threads from the diseased area to healthy areas so as to establish new lymph channels along the silk or linen lines but the method failed. Lauty in 1906 attempted to establish drainage from the edematous area to healthy tissue by a long incision through the skin and fascia lata, by planting pedunculated strips of this fascia into trephined openings in the femur. Kondoleon excised a large strip of the fascia lata throughout the diseased area and stitched the edges of the aponeurosis to the underlying muscle, with excellent results. Scar tissue formed in the gap, but the newly forming anastomosing lymphatics and veins established themselves so abundantly and quickly in so large an area that they seemed to resist the constricting influence. There was a great change in the appearance of the limb following operation. There was some edema present when the patient walked about.

Heliotherapy in the Prevention of Pulmonary Tuberculosis after Pleurisy.—

P. F. Armand-Delille (*Bulletin de l'Académie de médecine*, October 7, 1919) calls attention to the marked value of sunlight treatment in preventing reinoculation of the system after a spontaneously curable attack of serofibrinous pleurisy. Heliotherapy is dangerous when once the lung has become involved, but if used earlier is of great prophylactic service. Having obtained good results from sunlight treatment in tuberculosis of other serous membranes, especially in peritonitis, sunlight baths were administered to adults or children convalescent from pleurisy. Several of these cases being now of six or seven years' standing, the author feels certain that the measure was of marked assistance in preventing secondary tuberculous manifestations both in the lungs and elsewhere. In applying the treatment to pleurisy convalescents, the whole body should be exposed to sunlight under careful medical supervision. The treatment should be kept up for several years, either continuously or intermittently. If a thorough "cure" is taken at the beginning, and subsequently a few months more of treatment undergone each year at some Southern or mountain resort—or even in urban districts where there is plenty of sunlight during the summer season—a patient who has had serofibrinous pleurisy may practically return to normal life during the intervals between "cures" without having to fear a later outbreak of lung tuberculosis.

Iodine in Varicella.—Charles Corben (*British Medical Journal*, August 2, 1919) paints every vesicle once or twice daily with tincture of iodine, limiting the application to the vesicles themselves and not including the surrounding skin. This treatment prevents secondary infection, and hence prevents scarring; it prevents the itching almost entirely; the vesicles heal more rapidly than normal, and by reason of this fact the duration of the disease and of the infectious period is shortened.

Miscellany from Home and Foreign Journals

Itching as a Symptom of Hydrophobia.—Léopold Robert (*Presse médicale*, October 11, 1919) states that too much attention is paid, in current descriptions of the symptomatology of rabies, to unimportant, inconstant symptoms and the cardinal manifestations not sufficiently brought in relief. In eight cases seen in four years in Siam, the symptomatology was remarkably simple and constant. Itching was constant during the prodromal period, and was at first localized, then general. The author considers it one of the most characteristic symptoms of the disease. It is often seen in animals. In six of the author's cases, itching was very pronounced; in the remaining two, in children, it was still more severe, the attending physician being even compelled in one instance to tie the patient's hands together. The symptom persisted until death occurred. There is in rabies a definite prodromal period characterized by mental depression, irritability, lachrymation, and itching at the site of injury. The second stage is marked by increased intensity of the foregoing symptoms, together with anxiety and emotionalism, general itching, localized spasms, aerophobia, hydrophobia, screams of terror, hypertonicity followed by paralysis of the vocal cords, general convulsions, and copious salivation. Fever, pain at the site of injury, vomiting, and paralysis are frequent, but not constant, symptoms.

Influence of Rest on the Blood Pressure of Aviators in Warfare.—Georges Ferry (*Bulletin de l'Académie de médecine*, October 14, 1919) recognizes two stages in the development of aviators' disease. The first is that witnessed during the training period of the aviator, and is marked by simple physiological reactions to the ever varying air pressure conditions to which he is subjected, as well as, in large measure, to the changes in urinary elimination caused by exposures to high altitudes. Rest in such cases, by removing the cause of the intoxication of renal origin, overcomes the tendency to a slight increase of diastolic pressure noted after flights, and the lowering of systolic pressure which follows flights and sometimes persists for a considerable time. By doing so it restores the systolic pressure to a level nearer to, and generally above, the normal. Along with the rest, artificial diuresis and an appropriate diet cause distinct improvement in these manifestations, which are very similar to the azotemic and uremic states observed in cases of renal fibrosis. The second stage is that reached when, after completion of training, an excess of airplane work is done or too little rest taken. The so-called aviator's asthenia then becomes insidiously established, in spite of apparent good health. The reactions then produced are of a distinctly abnormal nature, and are related to abnormal retention in the blood of urinary nitrogens and alkaloids secreted to excess at high altitudes as well as to the effects of these toxic products on the ductless glands, in particular the adrenals. The symptom-complex of adrenal insufficiency becomes established in a degree varying according to the amount of work done and of rest taken. In such cases a rest of six weeks

restores the diastolic pressure—often down to fifty or seventy millimetres in overworked aviators in active service—to a level nearer the normal and sometimes even above it. It also slightly raises the systolic pressure and improves its stability, and increases the force and frequency of the pulse. Coupled with diet, diuresis, and laxatives, prolonged rest remedies these conditions, though in the more severe cases adrenal medication, without or preferably with digitalis and strychnine, are necessary. General observation of cases of aviators' disease shows how readily war aviation may tend to induce depression and fibrous changes.

Studies in Bone Growth.—Fred H. Albee and Harold F. Morrison (*Annals of Surgery*, January, 1920) experimented on animals coincidentally with their clinical bone work at the hospital. The earlier experiments included the fusing of the vertebrae of dogs by means of inlay grafts, as well as investigation of the relative osteogenesis of bone secured from different portions of the anatomy of dogs and rabbits. Studies were also made which bore out the advisability of attempting transplantation of bone from one species to another, from the dog to the sheep, or sheep's bone into rabbit. Their conclusions were as follows:

1. Cases of fracture with loss of substance, showed a much more rapid bone growth and union when triple calcium phosphate was injected into the gap between the bone ends than did the controls in which this was not done.

2. Callus formation in the cases of fracture treated with triple calcium phosphate extended far into the soft parts, apparently following the penetration of the solution. In some cases the callus extended out into the skin.

3. For the entire series of experiments, the average length of time for union in cases of fracture treated with triple calcium phosphate was thirty-one days. The average length of time for union in control was forty-two days. In the total series of cases of fracture treated with triple calcium phosphate showed union at least eleven days earlier than the controls. For a smaller number of experiments, more striking results were obtained. The average number of days elapsing between the date of injection of triple calcium phosphate and the first radiographic evidence of union in these experiments was nineteen. Over fifty per cent. of these cases showed union by the fifteenth day after injection of the agent. In computing the length of time required for union, some error may arise owing to the impossibility of determining the precise time at which union of the fragments occurred. With due allowance for error the decided advantage in favor of cases treated with triple calcium was evident.

4. No appreciable bone growth was stimulated by an attempt to inject triple calcium phosphate beneath the periosteum of the radius in cases of the second type, in which the bone was not fractured. Undoubtedly the solution in such cases infiltrated the soft parts overlying the periosteum and did not come into contact with the bone growing tissues.

Osteogenesis was stimulated by triple calcium phosphate in conjunction with the fracture, or with trauma of sufficient severity to open up those bone surfaces containing active bone growing cells, the periosteum, compact bone, endosteum and marrow, allowing the intimate contact of the solution with these tissue layers.

5. It was demonstrated in the early portion of the experiments in which an attempt was made to inject triple calcium phosphate subcutaneously beneath the periosteum, that the solution itself did not produce an x ray shadow; since all the radiographs were entirely negative, any possible error in this respect was ruled out. Callus formation in all of the series treated with calcium phosphate seemed in no degree inhibited by frequent exposures to the x ray.

6. No toxic symptoms were noted in any of the cases treated with triple calcium phosphate. At no time did it act as a local irritant.

7. In the animal experimentations, only one injection of triple calcium phosphate was administered in each case treated. The suggestion was offered that the stimulating action of the agent might be increased by repeated injections at frequent intervals in unfavorable clinical cases of pseudarthrosis, whether or not preceded by a bone graft operation.

8. It was believed that the findings with triple calcium phosphate were of sufficient value to warrant their clinical application. The agent is now being tried on human subjects.

Detection of Pus Soaked Cloth in Animal Tissues.—Neil Macleod (*Archives of Radiology and Electrotherapy*, November, 1919) experimented with a view of detecting pus soaked cloth embedded in animal tissues. These were successful in fresh masses of beef and liver, but bismuth injection of fresh human wounds were too dangerous for such a purpose, for the injected material might be driven beyond the wound region into opened blood and lymphatic vessels and spaces between tissue planes. The experiments were limited to those cases where wounds were walled in by inflammatory reaction. The material for injection was made from one part of bismuth oxychloride, to five parts mucilage of acacia, diluted with water, a few drops of the emulsion being dropped on the gauze. When radiographed through the tissues the markings could be distinguished, whether the cloth or the limb was next to the plate. This degree of dilution failed to disclose the marking in pus soaked cloth embedded beef. To replace the inflammatory exudation limiting an abscess cavity and to prevent injection into neighboring tissues a membrane consisting of sausage skin was made into a sac, into the mouth of which a short wooden tube, representing a fistula, was tied. The artificial abscess, which was filled with pus and contained a piece of pus soaked cloth, was embedded into a mass of fresh beef. The pus and cloth were introduced into the sac under water to prevent the entrance of air into the sac and interfering with the experiment. It was found that a proportion of one part of the bismuth salt and three to six parts of mucilage of acacia succeeded.

A Case of Hirschsprung's Disease.—Enrique P. Manchego (*La Cronica Medica of Lima, Peru*, October, 1919) reports an interesting case of Hirschsprung's disease made out at operation in a man thirty-eight years of age with a diagnosis of intestinal obstruction. The patient gave a history of obstinate constipation from early infancy with periods of eight and ten days without a movement of the bowels, and attacks of acute abdominal distention with colicky pains in the entire abdomen. Colectomy was done in this case with a fatal result, although the writer considers this operation the treatment of choice. The rarity of the condition is evidenced by the fact that only three cases were seen in thirty thousand autopsies at the London Hospital.

The Initial Lesion of Pulmonary Tuberculosis in Infancy.—Ribadeau-Dumas and Henri Bécclère (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, July 10, 1919) reports the case of a child thirteen months old who contracted pulmonary tuberculosis from a tuberculous wet nurse. Dullness and disappearance of the breath sounds over the whole right lung took place and the temperature remained high for three weeks, thereafter very gradually subsiding. Diarrhea was noted and the tuberculin test was strongly positive. Subsequently definite signs of tracheobronchial adenopathy appeared. The child recovered, however, and six years after the onset there remained nothing but a small dark area, as shown by the x rays, in the central portion of the right lung. This is believed to be a residuum of the site of primary inoculation of the disease. About this point so intense a perituberculous congestion had developed that at first it suggested a right sided pleurisy.

Injection Medium for Radiography of Fistulae.—Neil Macleod (*Archives of Radiology and Electrotherapy*, November, 1919) presents a satisfactory injection medium for the radiography of fistulae. The purpose of injections is twofold: 1, to obtain a true estimate of their relations to bones and their extent, including those of branches and abscesses communicated with; 2, to detect the presence and nature of foreign bodies if they are preventing closure. Fistulae and their branches communicating with abscesses, contain pus which cannot be eliminated before injection. The experiments were made to detect pus soaked cloth embedded in animal tissues. The emulsion used consisted of oxychloride of bismuth, one part, and mucilage of acacia, two parts. The mucilage of acacia injection mixed with the purulent contents, furnished a comparatively transparent shadow which disclosed the extent of the pelvic abscesses and the position of the drainage tube, in relation to the pelvic bones and the empyema cavity, with particles of Beck's paste scattered over the surfaces of lung and chest wall as shown in stereoprojection. a radiograph of an empyema case had been made previously, after the injection of as much of the Beck's paste as could be introduced by the surgeon, but this only disclosed large discrete masses of paste, and failed to furnish an adequate idea of the extent of the cavity. Misleading deductions have frequently been made in these conditions.

Position of Arm in Blood Pressure Measurements.—Morris H. Kahn, (*American Journal of the Medical Sciences*, December, 1919) made tests in various groups of cases to note the effect of raising the arm upon auscultatory blood pressure readings, and came to the following conclusions: The normal effect is a progressive fall of the systolic and diastolic pressure readings as the arm is raised upward; the amount of fall increases with the elevation. The fall of pressure is more marked than normal in neurocirculatory asthenia and is most precipitate in cases of hyperthyroidism and exophthalmic goitre. The pressure yielding very little to elevation of the arm is a characteristic feature in nephritic hypertension. In aortic regurgitation the diastolic pressure falls more steeply than the systolic, and its main reduction occurs up to ninety degrees elevation. The graphic curves suggest a diagnostic import to the findings.

Effort Syndrome and Measured Work.—Thomas McC. Mabon (*American Journal of the Medical Sciences*, December, 1919) undertook a study of the changes in pulse rate and blood pressure taking place in fifty patients with effort syndrome after the hardest exercise which they could be induced to perform. These were for the most part patients with symptoms of many years' duration. The amount of work which they could do before becoming fatigued was much less than was done by normal controls. The pulse rate at rest was higher than in the normals, but the rise after exercise and the time for return of the pulse rate to its resting value were not definitely abnormal. No delayed rise of blood pressure suggesting myocardial inefficiency was observed. The amount of work which the subjects were able to perform usually corresponded closely to their physical strength as determined by tests of the skeletal muscles, and this indicates that lack of development of the skeletal muscular system is a factor to be considered in the cause of the fatigue following slight exertion in cases of effort syndrome.

Lethargic Encephalitis in the A. E. F.—A. Skversky (*American Journal of the Medical Sciences*, December, 1919) states that encephalitis may occur as a complication in any acute infection. With encephalitis, an elastic term, diffuse brain involvement is expected, and the naturally outstanding feature of lethargy. In nine of the ten cases described there was a definite febrile period, either preceding or concomitant, including bad colds, mumps, some form of bronchopneumonia, in one a possible paratyphoid-B. There was an eosinophilia in the blood and a lymphocytic spinal fluid in most cases, the bacteriological examinations made proved negative. While the majority of these cases resembled other well known diseases of the central nervous system, they were atypical in some form, either in onset, clinical course, or outcome; but clinically they were encephalitis with lethargy. The study of these cases, while bearing in mind the possibility of their being distinct infectious diseases of the nervous system, which may escape detection because of a general similarity in their clinical manifestations to well recognized entities, does not aid in establishing lethargic encephalitis as a definite clinical entity.

The Place of the Radiologist.—Francis Herniman-Johnson (*Archives of Radiology and Electrotherapy*, November, 1919) concludes that the ideals for which radiologists should strive are as follows: 1. They should seek a freedom of judgment and action equal to that of the best type of modern surgeons and justify it by a familiarity with all that pertains to the general progress of medicine. 2. They should gain the reputation for being fully acquainted with their limitations, as well as being cognizant of their powers, and seek to impress upon the public mind their belief that in cooperation and combined treatment the key to progress is to be found. 3. They should welcome lay assistance, and seek to organize and guide it.

Practical Principles for Protection against Cancer.—A. J. Ochsner (*Illinois Medical Journal*, November, 1919) points out the importance of this subject because 100,000 persons die annually from cancer. From statistics, scientific study, and personal observations, the following conclusions seem warranted: The medical profession and the lay public must be educated to appreciate the fact that cancer is primarily a local condition, and that unless recognized and removed early it is usually fatal. During the cancer age (over forty) in case of doubt a tumor should be immediately and thoroughly removed. Violent manipulations for diagnosis and treatment should be avoided, all sources of chronic irritation of tissues must be eliminated. Further, all articles which have come in contact with any form of manure should be boiled before eating; and sewage must be disposed of so as not to contaminate food or water.

Tumors of Mucous Membrane of Lip.—Joseph Colt Bloodgood (*Surgery, Gynecology and Obstetrics*, October, 1919) reported six cases of scar tissue tumors occurring on the mucous membrane of the lower lip. His records showed that the majority of surgeons were not familiar with the frequent occurrence of a painful induration in the scar after the excision of a lesion in the mucous membrane of the lower lip, and in some cases experienced pathologists have diagnosed sections as suspicious of malignancy, and in one case carcinoma. His experience included one case where the patient had seen many physicians and dermatologists and not one had expressed the opinion that it was simply a scar tissue tumor. The scar tissue tumors on the mucous membrane of the lower lip have apparently no relation to the nature of the primary lesion whether it is in the mucous membrane or in the submucous tissue. They are more likely to occur in the first instance when the primary lesion had been treated with caustics, or when the wound had healed by granulation. A comparison of the series of six cases of scar tissue tumors with the resultant scar in small groups of cases in which excision of the primary lesion of the mucous membrane had been done showed that the wound healed by primary intention. Indurations had always formed in the wound, and some had been painful. It is emphasized that it is important to subject even the most innocent lesion to a microscopic examination and keep the sections and some of the tissues for future study.

Proceedings of National and Local Societies

THE MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

*Sixty-ninth Annual Meeting, Held at Harrisburg,
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(Continued from page 1096.)

SECTION IN SURGERY.

Selfretaining Slide Bone Graft.—Dr. H. C. MASLAND, of Philadelphia, read this paper in which he said that the open operation for fractures should be used only when the older standard methods did not promise a good result. His experiments, using a bone plate and bone screws and either a surface contact or a partial inlay on the fractured bone, gave a good mechanical result and in selected cases should give a good final result. In plastic bone surgery the need of faultless aseptic surgery was absolute. This applied to the hands. It might be that a glove could be as sterile as an instrument, but if the operator trained himself not to touch the bone with his hands, it would have a salutary effect on other details. All traumatism should be eliminated as much as possible. This could be accomplished best by a power driven bone cutting equipment. All the bone cutting necessary was done without force, with accurate control, and minimum wastage. The bone should be held as rigidly as possible. Absorbable sutures, which were the only kind recommended for this purpose, would stretch and allow play in the jointing. Where bone pegs alone were used and held by virtue of being forced in, the pressure might cause atrophy and lessen the vitality of the region involved. In this method the advantages were: 1, The bones were brought into good alignment; 2, there were no sutures to slip; 3, no metallic material was present; 4, the bone grafts could not slip; 5, the strength of the graft plus its bracing was the index of the strength of the jointure; 6, the requirements laid down for the greatest likelihood of regeneration and union were adhered to.

Dr. WALTER LATHROP, of Hazleton, said that some two years or more ago he had reported a series of operations for fractures of long bones, especially the tibia, in which the sliding graft was the method of choice and this graft held in place by kangaroo tendon, as practised by Albee of New York. He had previously tried out the method of fastening the graft by means of autogenous bone pegs, made from one of the fragments and formed to fit by the dowel. This had not proved as useful as the kangaroo tendon, though possibly the bone screws, as described by Doctor Masland, might prove to be very satisfactory, but where time and asepsis count for so much, he thought the use of the tendon sutures was an ideal method. The great point to remember was that the final or fixed dressing meant much to the surgeon, for the degree of immobility one got often determined the success of the graft.

Dr. FRANCIS P. BALL, of Lock Haven, said that in his experience in all these cases where a metallic

substance had been introduced for the correction of fracture it sooner or later had to be taken out. In a recent conversation with Doctor Albee he was gratified to find this belief was confirmed by him. He believed that the coming, in fact the present, method of treating fractures, where the open method was advisable, was by the bone graft. He believed that a great many fractures could be treated without the open method if advantage was taken of common sense means of overcoming the deformity and frequent x ray of the progress of the case. He did not believe that the open method of treatment was required in every case of fracture by any means.

Dr. JOHN B. LOWMAN, of Johnstown, said that in regard to the bone graft he thought that it had certain indications and they were more particularly in cases of delayed union. During and since the war he had seen quite a number of failures from the use of the bone graft and he believed that most of these failures were due to faulty technic. A great many cases of delayed union in the army were due to infections. Operation was performed too soon and infection was stirred up. He thought that in these cases of delayed union operation should not be performed in less than three months. One should have a bone graft that would hold the fragments firmly so that they would not move and the ideal method was the inlay method of Albee. Another important factor was proper splinting. He thought that all these patients should be placed so they could not move at all, preferably in plaster of paris.

Dr. HERBERT B. GIBBY, of Wilkes-Barre, said that he thought a great deal of stress should be laid on carefully putting up the fracture so that there would be as little motion as possible.

SYMPOSIUM ON GOITRE.

Thyroid Disease.—Dr. HENRY S. PLUMMER, of Rochester, Minn., said that he felt perfectly confident that he knew when a patient was cured from an examination of the data, without seeing the patient. This came from a study of certain laws of pulse pressure and pulse rate. At the time that he became interested in the subject there had been a feeling in the profession that there were various forms of toxemia associated with the thyroid, that were not exophthalmic goitre. Wilson had reported, in 1908, that about twenty per cent. of the supposed exophthalmic goitres did not have the characteristic picture of hypertrophy. In 1910 he realized that the adenomata did not belong to the exophthalmic series at all. The mistake had been made of calling cases of exophthalmic goitre hyperthyroidism. The exophthalmic goitre was seldom overlooked by relatively good men. Adenomata and hyperthyroid were constantly missed by the best men in this country because there was considerable circulatory trouble that they attributed to myocardial degeneration, symptoms of essential hypertension. When there was a true hypertension

due to adenoma it endangered the patient's life and yet did not suggest hyperthyroidism. In regard to metabolism, thirty-nine calories to a square metre of body surface were burned an hour, when the body was at rest. This was for normal people, twelve hours after taking. He had had thirty-six cases of high grade myxedema in the last year and a half, patients in whom metabolism was below thirty; the entire series had been cured as far as you could see with one hypodermic dose of thyroid. The metabolic rate in hyperthyroidism was high. So when we were dealing with goitre we were dealing with a condition where it was a question of whether a person was burning food too fast, and the symptoms of exophthalmos were either symptoms of burning food too fast or too slowly. There were many people who had had exophthalmic goitre operations and were not well. This was due to the fact that they still had exophthalmic goitre. They still had it in a mild form and only a part of the disease had been removed.

Adrenalin Hypersensitiveness Test.—Dr. EMIL GOETSCH, of Baltimore, stated that it was his purpose to report the results of a clinical study of approximately 300 cases of thyroid disease in the human subject with especial reference to the sensitiveness of these patients to the hypodermic administration of adrenalin; to show that in clinical states of hyperthyroidism there was an increased constitutional sensitiveness to adrenalin and in states of hypothyroidism there was an increased tolerance for adrenalin hypodermically administered; and to indicate the practical application of this knowledge to the study, diagnosis, and treatment of thyroid disease in the human subject. With the abundant physiological evidence that increased thyroid secretion caused a hypersensitiveness of the sympathetic nervous system to the action of adrenalin, he thought it would be of interest to test the reaction of human patients suffering from hyperthyroidism to the subcutaneous administration of adrenalin. His thought was that if thyroid secretion sensitized the sympathetic endings to the action of adrenalin, it was reasonable to suppose that a sudden increase of adrenalin in the circulating blood should call forth active responses throughout the domain of distribution of the sympathetic nervous system. This result he had found to be remarkably constant. The work was begun five years ago while he was in the surgical clinic of Professor Cushing and continued during the past four years in the clinic of Professor Halsted at Johns Hopkins Hospital. To his great surprise and satisfaction the first patient exhibiting hyperthyroidism, a case of exophthalmic goitre, gave a sharp reaction to the injection of adrenalin, and since that time he had personally carried out or supervised the carrying out of the test in 300 cases of thyroid disease and in approximately 100 cases simulating in many respects hyperthyroidism. In a so-called positive reaction there was usually an early rise systolic and a fall in diastolic blood pressures. In a very mild reaction the fall in diastolic pressure might occur alone. There was a rise in pulse pressure of at least ten

and sometimes as much as fifty or more millimetres of mercury. In the course of thirty to thirty-five minutes there was a moderate fall of the pulse and blood pressure, then a characteristic secondary rise, followed by a second fall to the normal in about an hour and a half. Together with these changes one saw an exaggeration of the clinical picture of Graves's disease or hyperthyroidism brought out, especially the nervous manifestations.

The Treatment of Toxic Goitres.—Dr. CHARLES H. FRAZIER, of Philadelphia, said that to interpret competently the nature of the thyroid disturbance and to deal effectively with it one should carry in his mind the physiological basis for the symptoms of the toxic goitre. In a large measure the symptoms were traced to disturbances of the involuntary nervous system, with its dual representation into the autonomic and sympathetic system; in the former the third, seventh, ninth, tenth, and eleventh cranial nerves and the visceropelvic nerves, in the latter the cervical, thoracic, and sympathetic. Practically every organ except the brain was represented by this dual supply, the autonomic being stimulating in character and the sympathetic inhibitive to action. The discussion of treatment was restricted chiefly to the selection of cases for operation and to the choice of operation. The management of the toxic goitre did not belong solely to the domain of the surgeon. The instances of favorable response to therapy other than surgical were too numerous to warrant such an assumption. He confessed, with regard to agencies other than surgical, that his experience had in many instances been disappointing and this was particularly true of the x ray and radium, with such drugs as the hydrobromate of quinine and ergot, and with the glandular extracts, more particularly extracts of the thyroid, the thymus, and the suprarenals. A classification of all the patients seen with toxic goitre from the viewpoint of treatment would divide them into five groups: 1. The mildly toxic of the adolescent group, where the enlargement of the gland was compensatory in nature; the toxic symptoms were not constant and when present were of mild degree. In these cases a proper supervision of the girl's life, as to hours of work and sleep, restriction of studies for the schoolgirl, with a trial of iodine internally, would tide the patient over a period of thyroid disturbance from which, upon entering womanhood, she might be entirely free. 2. The mildly toxic type of the adenoma group, in which under proper supervision there was no tendency to progression, the decision for or against operation would depend in a large measure upon how much the patient was handicapped either in work or recreation. It was largely a personal equation and the decision might be left often to the patient, in consultation with her physician. At all events operation was one of choice and not of necessity. In a subdivision of this group might be entered the patient of definite neurasthenic type with a small adenoma. These cases were puzzling and there was no criterion, when the basal metabolism was not above normal, by which the surgeon was to

determine whether the neurasthenia was dependent upon the thyroid disorder. The patient and her physician must be advised of the element of uncertainty and the chances of failure should operation be requested by both patient and physician, as it often is. 3. The grave toxicosis of the adenomata, not the true exophthalmic type, but always its equivalent in the gravity of the prognosis. If the condition was not already inoperable no time should be lost in inaugurating a course of treatment leading up to an eventual resection. 4. The initial hyperplastic goitre, without the precedence of an adenoma, appeared most often in the early years of the third decade. In this group there was the preponderant advantage of surgical attack. The prognosis without operation was grave; the operative risks in the early stages trivial; the period of convalescence short, and the end results satisfactory. This was contrasted with a later stage, when the disease was present in its more aggravated form, with all that it implied in degeneration of the heart muscle and cardiac dilatation, in gross metabolic disturbance, in utter demoralization and loss of nervous stability. The arguments in favor of operation in an early stage were selfevident. The possibility of a complete recovery in the late stage was appreciably reduced. 5. The degenerative or atrophic or terminal stage of a more or less prolonged hyperplasia. There came a time in certain cases when if the patient survived the hyperplastic stage, definite signs of hypoplasia were apparent. Manifestly in these cases there was no justification for the removal of gland tissue.

Dr. HAROLD L. FOSS, of Danville, said that those of us who saw much thyroid therapy, saw cases in which there was toxemia which simulated the toxemia of acute Graves's disease, but in which the manifestations were those of a true adenomatous goitre. Doctor Plummer was explaining this satisfactorily. Doctor Goetsch's test was going to find its greatest value in the hands of the general practitioner. For this reason, every goitre that came to the surgeon had been treated with every sort of a drug and chemical that could be conceived of until in the vast majority of cases, particularly in the exophthalmic forms, the degenerative changes in the heart and nervous system and kidneys were so advanced that the patients were a profound surgical risk. It was due to the fact that the general practitioner had not had at his command a means by which an accurate diagnosis could be made. He was far away from a medical or surgical centre, he had not the time, he believed the case was a toxic form, he waited for the appearance of exophthalmos, which appeared only in a certain number of cases, and the case drifted along because of the lack of a definite diagnosis being made. He believed the Goetsch test would be of inestimable value in the hands of the surgeon, yet it would find its greatest value in the hands of the general practitioner. He would be able to submit his patients to this test and make a positive diagnosis and more of them would be referred in time so that the surgeon could bring about a cure. If there was anything pernicious in medicine it was

the haphazard treatment of these patients. He had not seen a patient with goitre who had not had all sorts of glandular therapy and drug treatment applied for weeks, months, and years in some cases before he saw them. Doctor Kendall had examined gland products exploited by drug houses and found the vast majority to be inert and also found that the quantity of gland tissue as advertised in the various tablets varied widely. He thought that surgery was the treatment of goitre for all cases except the diffuse goitres of young girls and the advanced exophthalmos; adenomatous goitres with advanced degenerative changes in the heart, so that operation was out of the question. Seventy per cent. of the patients could be cured if seen early.

Dr. GEORGE P. MULLER, of Philadelphia, said that Doctor Plummer's paper had been of inestimable value, particularly in understanding the borderland and unusual type of cases. Two statements were made that he thought instructive. One was that the toxic adenomata were so successfully cured. He supposed he meant by operation. The other was in regard to the necessity of differentiating between the adenoma and a diffuse hypertrophy. When one had a toxic adenoma he could tell the relatives he was almost certain to cure that patient by operation. When there was a diffuse hypertrophy, if of moderate or severe grade, one must be cautious as to the prognosis, because in the first place there were a large proportion of recurrences and a certain proportion of failures and mortality. Mortality practically never occurred in an edematous case but did occur in the other type. As Doctor Frazier said, the decision for operation must go hand in hand with the personal equation of the patient. In spite of the weight of usage he had gotten away almost entirely from preliminary ligation. He believed that anatomically the ligation of the superior artery did not diminish the blood supply appreciably. That one could accomplish the same result from the anociassociation point of view and also probably from the anatomical viewpoint with properly directed hypodermic injections of boiling water and scarring and other interference that had to be done with lobectomy did not occur. There would never be trouble with the parathyroid if the resection operation was done in place of lobectomy and furthermore it was just as easy to do a double resection in a moderately severe case at the time of operation as to do a single one.

Dr. THOMAS G. SIMONTON, of Pittsburgh, said that a number of years ago he had stumbled across a case of exophthalmic goitre which was referred to him for treatment, marked exophthalmos, tachycardia of 150, loss of fifty pounds in two weeks, cutaneous eruption around the joints. Syphilographs showed four plus. The young man entered the hospital, having agreed to remain at least three months. The day after he was admitted he received .4 gram of salvarsan and at the end of the week he had received a second dose. At the end of that time there was marked decrease in pulse rate, down to 100, and the gland had decreased in size. The patient was able to sleep and

in four weeks the gland decreased until it was barely palpable. His pulse rate had fallen to 80. He had gained fifteen pounds in weight, slept well at night, and at the end of six weeks was allowed up in the hospital. When he left he had a negative Wassermann. He had since been working and had regained his weight and the gland was barely palpable. It seemed to him it was well to have the Wassermann test and in case it was positive to try specific treatment to see what effect it would have.

Dr. ALBERT F. HARDT, of Williamsport, said that Doctor Goetsch's description of his adrenalin test was certainly most interesting and instructive and was new to most of us. It certainly deserved a thorough trial as an aid to diagnosis. A point brought out by Doctor Frazier and Doctor Foss was the utter uselessness of certain treatments described by many physicians, such as the indiscriminate use of iodine and various glandular preparations and especially the use of electricity. Often patients presented themselves with a history of having been treated by a physician with electricity, saying their thyroid had been reduced two inches. It is well known that the size of the thyroid has nothing to do with its toxicity. The small thyroids, scarcely palpable, may be intensely toxic.

Dr. ADELAIDE ELLSWORTH, of Warren, said that she wished to attest the value of Doctor Goetsch's test. She had used it routinely for a number of months in differentiating the nervous and circulatory disturbances that arose in cases of neurasthenia, hysteria, and the psychoneuroses from subacute hyperthyroidism. So many times the symptoms in those subacute states was so mild that it seemed that they had been suggested to the patient rather than that the patient had made the suggestion, but if his test was applied no doubt would be left. The symptoms would vary with the amount of toxicity present. She felt that a reprint of this work should be in the hands of every practicing physician to enable him to differentiate these borderline cases from true cases of hyperthyroidism. So many women were called neurasthenics when they were not neurasthenics but were merely suffering from mild hyperthyroidism.

(To be continued.)

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Heart, Past and Present. By EDGAR LEA, M.D. Vict. M. R. C. P. London, Honorary Physician and Physician in Charge, Cardiac Department, Ancoats Hospital, Manchester; Assistant Medical Officer, Manchester Royal Infirmary, etc. New York: William Wood & Co., 1919. Pp. viii-300.

In this brief textbook no attempt is made to improve any of the present books on modern cardiology. The principal aim of the author is to correlate the existing data on the heart so that it may be applied from the clinical point of view and in this way direct benefit may be derived from the research work which has been done. A plea is made

that more extensive work be done on the heart from the clinical, that is to say, practical angle, at the same time making use of all the work that has been done in the past. The question of the respiratory functions, on account of their application to cardiac conditions, is extensively discussed. In order that more attention be given to the chemical, metabolic and endocrinological processes which take place in the body and have direct bearing upon the clinical findings, mention is made of these so that they will not be overlooked. Clinicians are often so interested in the local and associated findings that all of their attention is directed to these and the clinical picture is lost as an entity. The author realizes that much of the knowledge of cardiac conditions and their bearing toward the human economy as a whole is yet in its infantile stages, but he urges that whatever knowledge we do possess should be applied intelligently.

A pleasing note is struck in the acknowledgement of the debt we owe the old masters, Corvisart, Laennec, Hope, Stokes, and their coworkers, and in recognition of the helpfulness of the findings of contemporary workers, especially the masterful work of James Mackenzie. Aside from completing the picture and presenting the evolution of heart study in sequence a very pleasing history of the development of cardiac study and pathology has been given. Again and again attention is called to the necessity for more work in certain branches of cardiology. The surface has just been scratched and we need more light; more light, that we may be able to do more for the patients who have been affected by cardiac disorders. This, in brief, is the demand made by Lea. May his call be successful.

Births, Marriages, and Deaths.

Died.

BENNETT.—In Brooklyn, N. Y., on Sunday, December 28th, Dr. Franklyn Bennett, aged seventy-one years.

CLARK.—In Unadilla, N. Y., on Sunday, December 21st, Dr. Paris Gamer Clark, aged seventy-five years.

CONNELL.—In Scranton, Pa., on Thursday, November 18th, Dr. Alexander J. Connell, aged sixty-four years.

DOWN.—In Hartford, Conn., on Monday, December 22d, Dr. Edwin A. Down, aged sixty-three years.

ELLIS.—In Grafton, W. Va., on Monday, December 22d, Dr. Joseph Eugene Rolly Ellis, aged forty-nine years.

FULLER.—In Schenectady, N. Y., on Sunday, December 28th, Dr. Robert M. Fuller, aged seventy-five years.

GRONENDYKE.—In Martinsville, Ind., on Sunday, November 23d, Dr. Oliver J. Gronendyke, of Newcastle, Ind., aged fifty-five years.

HARLE.—In Abilene, Tex., on Tuesday, December 30th, Dr. Charles S. Harle, aged fifty years.

HOUGHTON.—In Boston, Mass., on Friday December 26th, Dr. Neidhard Hahnemann Houghton, aged fifty-nine years.

MCBIRNEY.—In Willet, N. Y., on Friday, December 19th, Dr. Edward William McBirney, aged seventy years.

RHOADS.—In Boyertown, Pa., on Tuesday, December 23d, Dr. Thomas J. B. Rhoads, aged eighty-two years.

ROSENDALE.—In Bowling Green, Ohio, on Wednesday, December 17th, Dr. Charles R. Rosendale, aged eighty-eight years.

ZIEGLER.—In Philadelphia, Pa., on Monday, December 29th, Dr. Ella Ridgway Ziegler, aged seventy-four years.

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HYSTERICAL VOMITING.*

By ARTHUR F. HURST, M. A., M. D., OXON.,

F. R. C. P.,

London,

Physician and Neurologist to Guy's Hospital.

During the past three years my time has been almost exclusively occupied in the care of soldiers suffering from war neuroses. I have been led by my experience to propose a new definition of hysteria. All previous definitions have presupposed the existence of certain mental and physical stigmata, which were thought to be present before the symptoms developed and to persist and require treatment after the disappearance of the symptoms. I believe, however, with Babinski, that physical stigmata never exist until they have been produced by the unconscious suggestion of the observer; and the mental stigmata, such as an abnormal degree of suggestibility, are only present in a comparatively small proportion of cases. Consequently, if we only look for hysterical symptoms in individuals who, according to the old criteria, would be regarded as hysterical, we shall miss numerous cases in which there is nothing in the individual's mental characteristics which would indicate that he would be likely to be suffering from hysteria.

My definition is as follows: Hysteria is a condition in which symptoms are present which have been produced by suggestion and are curable by psychotherapy.

Having accepted this view of hysteria we began to look for cases of hysteria in the medical and surgical wards of hospitals among patients whose disabilities had been diagnosed as organic in nature. Among other discoveries was that of the remarkable frequency of hysterical vomiting. As every type which we met had its counterpart in civil life, a description of the origin of these cases and of the unexpectedly successful treatment which we gradually developed may be of interest even now that the war is over. A preliminary note on the subject was published by Captain W. R. Reynell in the *Seale Hayne Neurological Studies* for November, 1918.

ETIOLOGY.

In every case the hysterical vomiting was suggested by the existence of some form of vomiting which was not in itself hysterical. Every variety of nonhysterical vomiting may be perpetuated and

exaggerated by suggestion after its original cause has disappeared.

The causes of vomiting may be classified as follows: 1, local; 2, reflex; 3, toxic, and 4, central.

The first group includes the vomiting which arises from irritation of the stomach. The irritant produces a varying degree of inflammatory reaction, and the gastritis which results is associated with vomiting, which has for its object the removal from the stomach of the irritant which gave rise to the gastritis. Such cases are very common in civil life, the most important form being that due to food poisoning. There were a large number among our patients that resulted from gassing, the irritant gas having called forth an abundant secretion of saliva in which some of it was dissolved and swallowed. That actual gastritis was produced was proved in a number of postmortem examinations, and by the presence of abundant mucus together with traces of blood in the vomited material during the first two or three days. In the vast majority of cases, both in civil life and in war, vomiting ceased after two or three days, or at latest by the end of a week. In rare instances the acute gastritis is followed by chronic gastritis, but vomiting is not a characteristic symptom of this. It may, therefore, be confidently presumed that if vomiting persists for more than a fortnight after the onset, it is no longer a direct result of the gastric irritation, but is due to the perpetuation of the symptom by suggestion. Consequently, it is now hysterical, and instead of requiring treatment with restricted diet, lavage and drugs, it should be rapidly cured by psychotherapy.

All of the numerous cases of hysterical vomiting following gassing which came under our care had already been in other hospitals for many months, and the vomiting had been diagnosed as due to gastritis, although no other symptom was present, and the vomited material contained no mucus or other abnormal constituent. A few had been diagnosed as gastric or duodenal ulcer, and one patient had even been subjected to a gastroenterostomy. Several men had been invalidated from the service, but no improvement had followed their return to civil life. Without exception they all recovered rapidly under psychotherapy and were able at once to take ordinary food and lead a normal life in spite of having been on a strict and often purely fluid diet for many months, and, in some cases, having been kept in bed during the entire period.

*Address prepared for the meeting of the American Gastroenterological Association in Atlantic City, N. J., June 11, 1919.

The constant vomiting which is such a common symptom in anemic young women, and which was formerly regarded as evidence of a gastric ulcer, is in the vast majority of cases hysterical. It is often associated with pain which may make the simulation of gastric ulcer very close, but the vomiting is more frequent than is generally the case in a gastric ulcer, unless the latter has led to pyloric obstruction. The onset generally dates from some acute attack of gastric irritation caused by food poisoning; but the vomiting, instead of ceasing within twenty-four hours as it would under normal conditions, continues indefinitely as a result of auto-suggestion. Dieting has no effect upon it, as many of these patients continue to be sick for many months in spite of a diet of slops, and I have even seen it continue after rectal feeding had been resorted to. A striking feature in these cases is the absence of wasting, as in the majority of instances the patient remains unexpectedly plump. Directly she is taken away from her own home surroundings into a hospital and given a full diet the vomiting ceases. A certain amount of moral persuasion is often required, but if the patient continues to vomit she must be given the same meal over and over again until she ceases to do so. It is very rare in such cases for a symptom to persist for more than twenty-four hours. At the same time the epigastric tenderness, which is often very well developed, probably as a result of the suggestive effect of frequent examinations, should be entirely neglected, as, if not looked for, it will spontaneously disappear.

It seems probable that many cases of persistent vomiting after operations are purely hysterical, and the well known efficacy of gastric lavage in such cases may be more the result of suggestion than due to the removal of mucus or other irritant from the stomach. On several occasions patients who have suffered so severely from vomiting after previous anesthetics that they have only been persuaded with difficulty to undergo a further operation, and did not vomit when told convincingly that the anesthetist, who was going to give them ether on this occasion, had a special method which was certain to prevent vomiting, although it was really quite indifferent what special modification he used.

In the following case the vomiting caused by an attack of dysentery in infancy was perpetuated as hysterical vomiting associated with hysterical anorexia, and persisted until it was treated by rational psychotherapy six years later.

CASE.—John M., born in India in 1913. He was weaned when four months old, but great difficulty was experienced in persuading him to take the bottle, even with the assistance of a trained nurse. When a year old he nearly died of dysentery. After his recovery from the acute symptoms he continued to vomit all solid food. This condition persisted after he was brought to England in 1915. His mother, a highly strung neurotic woman, spent a considerable part of each day in feeding him. He disliked all food, and could be persuaded to take anything into his mouth only with extreme difficulty. Unless it was fluid he kept it between his teeth and

cheeks for an indefinite period. He invariably vomited solid food, and was only able to keep down rusks and milk pudding after they had been pushed several times through a sieve. Each meal was the scene of unpleasant struggles, in which he often kicked and screamed.

His mother had no control over him and gave way to every whim. When I first saw him in May, 1919, the condition had not improved. He still vomited part of every meal, and spent the comparatively short intervals between his very prolonged meals churning between his teeth and cheeks any semisolid food that he had taken. In spite of this he was very well nourished, though flabby through want of exercise. He could not even be persuaded to take sweets by himself and invariably had to be fed; although in other ways he was beyond the average in intelligence he was extremely awkward with his spoon, knife, and fork.

As the condition was clearly one of hysterical anorexia and vomiting I decided to attempt to treat him in the same way as one would treat an adult with similar symptoms—by explanation and persuasion. At the first attempt, after much protest and some weeping he suddenly settled down and ate an ordinary meal of meat and vegetables, followed by pudding, in a reasonable time, without subsequent vomiting. I had no opportunity of seeing him again, but arranged for him to be separated from his mother and looked after by a nurse. He was now quicker than before with his meals and did not vomit again, but the great success of the meal he ate in my presence was not repeated, as he took quite an hour for each of his meals, after each of which he still kept some food in his cheeks, particularly bread and potatoes. As no further progress occurred, Dr. C. H. Ripman looked after him for some weeks; he was given ordinary meals and was firmly encouraged to eat them. If he took longer than was considered reasonable (twenty minutes for breakfast and half an hour for lunch), or if he cried, he was threatened with a further portion, and, if necessary, the threat was carried out. After three weeks he was eating normally, but, though not otherwise clumsy, he was still awkward in the use of spoon and fork.

He had never been taught to help himself, and was very dependent on other people in every way, but on being separated from his mother he soon became more self-reliant, and dressed and undressed himself. His mother had always sat in his bedroom until he was asleep, saying he could not sleep otherwise, but he quickly learned to sleep in her absence.

After returning to his mother he remained quite well for a few weeks, but then began to eat rather more slowly, and one day he vomited. His mother was alarmed, and took him at once to Doctor Ripman, with the result that he made only one further halfhearted attempt to vomit and in a short time he was taking his food quite normally again. He has now (October, 1919) been sent to school, and no further difficulty has been experienced in getting him to eat.

By reflex vomiting is meant vomiting which originates by a reflex from some organ other than the stomach. The most common varieties are due

to abdominal diseases, such as appendicitis, and to phthisis. We saw examples of these conditions in which the frequency of the vomiting had been greatly exaggerated as a result of autosuggestion, and some in which the vomiting had persisted after complete recovery from the primary cause had occurred. There is obviously no difference between a case of this type in soldiers and in civilians, and I am convinced that the frequency of the association of hysterical vomiting with reflex vomiting has not in the past received the attention it deserves. We found that treatment of the vomiting by psychotherapy in cases of phthisis resulted in such a diminution in frequency of the vomiting that the patients, instead of vomiting after every meal, might only vomit once or twice a week. Consequently the weight rapidly increased and the general health greatly improved. In a number of cases in which general abdominal discomfort was present and the exact diagnosis was at first uncertain, the associated vomiting was almost completely removed by psychotherapy. It was then found that the very infrequent vomiting which still persisted was due to the presence of chronic appendicitis. On the removal of the appendix the vomiting finally ceased.

On the other hand, we saw several cases in which appendectomy had been done, and the patient still vomited. The persistent vomiting was hysterical and removable by psychotherapy, and it is probable that if similar treatment had been given before the operation the latter would have proved completely successful. If the possibility of the association of hysterical vomiting with other symptoms of chronic appendicitis is recognized and suitable treatment is given, disappointing results of operations would be much less frequent. In the same way, the vomiting due to other organic conditions, such as gallstones, gastric and duodenal ulcer, may be in part hysterical, and when vomiting persists after the removal of gallstones or after the medical or surgical relief of an ulcer, this possibility should always be borne in mind. I believe, for example, that some of the rare fatal cases which are caused by persistent vomiting after gastroenterostomy are hysterical, and death could have been averted by psychotherapy.

Seasickness is another form of reflex vomiting, the reflex arising in the semicircular canals. Normal individuals vary greatly in the irritability of their semicircular canals. Thus an otherwise healthy man vomited for several hours after testing his vestibular reaction by turning round four times with his back bent so that his forehead rested on a walking stick placed vertically on the ground. Consequently some people vomit much more readily than others when at sea. In most cases the tendency to seasickness is absent in infants, and in some it diminishes during a long voyage and also with advancing age.

It is, I believe, extremely common for bad travelers to develop into still worse ones as a result of autosuggestion. So convinced are they that the shortest sea journey will make them ill that they make preparations for being sick directly they get on board. It would be difficult for anybody to

resist the suggestion of a crowd of people lying down in a stuffy cabin of a channel steamboat, each with his basin ready, and many beginning to vomit even before the boat left her moorings. The most extreme case I have seen was an old lady who began to vomit in the train to Dover, en route for the continent, although she never suffered from train sickness apart from this.

Psychotherapy by encouragement and explanation will often prevent a passenger from being ill, although he may be convinced from past experience that he could never stand a sea journey. Gross suggestion may act with equal success. This is the only possible explanation of the remarkable results achieved by an American naval medical officer recently recorded in the *Journal of the American Medical Association* as well as in the lay press. He almost completely prevented seasickness on several transports full of troops crossing the Atlantic by stuffing the men's ears with cotton wool in the hope of damping the vestibular reflex. But it is quite obvious that no treatment of the external ear could influence the effect of movements of the head on the semicircular canals, so that the results obtained must have been due to autosuggestion on himself and heterosuggestion on his patients.

The most common example of toxic vomiting is the vomiting in certain acute infections, such as scarlet fever and influenza. If vomiting persists after recovery from the infection, it is in all probability hysterical. We saw some cases of vomiting following trench fever, dysentery, paratyphoid fever, and influenza in soldiers. The so-called pernicious vomiting of pregnancy has generally been regarded as toxic in origin, but in my opinion it is invariably hysterical. The vomiting, which is physiological during the first few weeks of gestation, may be reflex or toxic in its origin; but if it persists for any length of time after this its perpetuation is due to autosuggestion, and it can invariably be cured by psychotherapy.

The chemical changes in the urine pointing to acid intoxication and the other supposed evidences of toxemia are entirely due to the starvation which results from the severity of the vomiting, as these symptoms disappear directly the vomiting is cured by psychotherapy. In 1915 I saw a lady, twenty-one years old, who had been vomiting persistently during the first five months of pregnancy, and who for many weeks had been unable to keep even fluid food down; during the last three weeks she had been fed by rectum, but continued to vomit fluid. Her urine contained diacetic acid, acetone, and a trace of albumin, and her breath smelled of acetone. A gynecologist, who saw her with me, recommended immediate emptying of the uterus. I asked for twenty-four hours' delay, and had a talk with the patient at once. I did not leave her until I saw she was convinced that what I had told her was true—that her vomiting was nothing more than the perpetuation by an idea of what was natural at first, and that as the cause of her vomiting was no longer operable, she would be able to eat her ordinary dinner that evening and would not vomit again. After my departure she ate the first

solid meal she had taken for six months, and did not vomit again; her child was born at full term without any recurrence of the vomiting.

Central vomiting may be due to organic nervous disease, such as cerebral tumor or meningitis. This is obviously of no importance in connection with hysteria. But there is another variety of central vomiting which arises as the physical expression of an emotion and which is of great importance. Extreme disgust and occasionally an emotion such as fear may give rise to vomiting. This vomiting, though emotional and therefore nervous in origin, is not in any way hysterical, as it is not produced by suggestion, being the natural result of the emotion. If, however, it persists after the emotion is no longer operative, its perpetuation is due to auto-suggestion, and it is then hysterical and therefore curable by psychotherapy. We saw a number of cases in which the vomiting began after some particularly disgusting experience at the front. In one case it developed as the result of fright caused by being torpedoed. Similar cases occur in civil life, and such a possibility should always be considered in cases of vomiting, in which no other abdominal symptom is present and in which the origin is completely obscure; a thorough cross-examination into the history will often show that the vomiting began immediately after some emotional crisis.

The following is a very good example of severe vomiting following vomiting of an emotional origin. In this case, as in many others of the kind, the origin may not at first be clear, but becomes apparent when the patient's confidence has been obtained and a complete history is elicited. The wife of an officer who had gone out with the original Expeditionary Force in August, 1914, had naturally been living in a condition of severe strain. In the summer of 1915 for the first time she saw him off from Southampton instead of from London when he was returning to France from leave. The carriage was crowded and hot, and immediately after the train journey was over she had a severe attack of vomiting. From that moment she vomited whenever she traveled by train although she had never done so before. She therefore traveled whenever possible in a car, but soon this also caused vomiting. After a time she found she could not go into a public place, such as a theatre or a church, without vomiting, and finally she was unable to leave her home at all. On each occasion when her husband returned on leave she was unable to go anywhere with him, as every time she attempted anything the vomiting returned. She had all sorts of treatment for her stomach but without avail. I first saw her in August, 1918. It soon became clear that she had attempted to explain away the vomiting, which on the first occasion had been clearly of pure emotional origin by trying to make herself think it was due to the journey in a hot and crowded train. As a result, any vehicle or overcrowded building had later on the same effect on her. As soon as this was explained to her and she was made to realize the purely psychical origin of her vomiting, it ceased, and the numerous other nervous symptoms which had developed simultaneously gradually disappeared.

DIAGNOSIS.

The possibility of hysterical vomiting should always be borne in mind when it arises under such circumstances as described above. It should be particularly suspected when no other abdominal symptoms are present as, although a certain amount of abdominal discomfort may be associated with the vomiting, it is often absent, and actual pain is uncommon. A careful abdominal examination should be made, but when some definite organic disease is found, if the vomiting is very persistent and severe the possibility that it is in part hysterical should be remembered, as otherwise the symptoms may persist, although to a diminished degree, after the organic disease has been removed by medical or surgical treatment. A more complete investigation by means of gastric analysis and x ray examinations should always be made in doubtful cases, but when from the history it is obvious that the condition is hysterical nothing can be gained by such an examination, as in my experience the patient is always satisfied with a plain abdominal examination. A more thorough examination, instead of helping to relieve his mind, may have the contrary effect of making him think that the physician believes there is something serious the matter with him, and when told that this is not the case he may believe dreadful things are being hidden from him. Moreover, the discovery of some slight increase or diminution in gastric acidity may lead to the prescribing of diet and drugs to correct this, or the skiagram may show some slight delay in evacuation, atonic dilatation or ptosis, and lead to the recommendation of further dietetic restrictions, rest in bed, massage, or the wearing of an abdominal support, all of which will confirm the idea of disease in the patient's mind. It must be remembered that considerable variations in the chemistry, motility, shape and position of the stomach occur in normal individuals, and a departure from the average normal condition does not always indicate that this is the cause of a symptom, such as vomiting. When, therefore, the general evidence points to the vomiting being hysterical, psychotherapy should be attempted without any other treatment, even if a complete examination has been made and some slight abnormality has been discovered.

TREATMENT.

The treatment of hysterical vomiting has in the past generally consisted of isolation, rest in bed, dieting, administration of sedatives and, in some cases, a strict Weir Mitchell régime. In our earliest cases we occasionally used the stomach tube as a means of suggestion, but we soon dispensed with this, and during the last year and a half have used none of the methods mentioned, but have confined ourselves to treatment by explanation—the most rational form of psychotherapy. We sit alone in the room with the patient, after having examined him and come to the conclusion that he has no organic disease, and explain to him in language suited to his intelligence what we regard as the cause of his vomiting. We show him how, although at the onset it was the natural result of some irritation, disease or emotion, the primary cause is no longer present, and the persistence of the vomiting is

simply due to the fact that the patient has formulated an idea that he is suffering from some disease of the stomach which necessitates his vomiting and consequently he continues to do so although it is no longer necessary. It is explained to him that his stomach is perfectly healthy, and if it is given sufficient work to do in the form of an ordinary food diet instead of nothing but slops, it will remain perfectly well, so long as the patient himself is confident that the explanation is correct. We do not leave him until we are satisfied that he is convinced of the truth of what we tell him. After this he is given an ordinary full diet, and almost invariably he keeps this down, and a little encouragement on two or three subsequent occasions is all that is necessary to confirm the cure.

I believe the most important part of the treatment is its rapidity, and much better results can be obtained by attempting to cure the patient without any accessories in the way of isolation, diet, or drugs. The second essential for success is that the physician should be confident of his diagnosis and that the patient should have complete confidence in his physician.

17 DEVONSHIRE STREET.

ERRORS IN PRESENT DAY ABDOMINAL DIAGNOSIS.

*As Seen by the Surgeon**

BY JOHN B. DEAVER, M. D.,
Philadelphia.

The subject under discussion falls naturally into two groups: the errors made in the diagnosis of the acute abdomen and those made in the diagnosis of the chronic abdomen. Of course, the first, last and most important thing to think of in making an abdominal diagnosis is the appendix. Not only is it the most frequent cause of abdominal trouble but it is also the most fruitful source of diagnostic errors.

After appendicitis the most common diseases constituting the acute abdomen are: Cholecystitis; intestinal obstruction; perforating gastric or duodenal ulcer; acute pancreatitis; perforating gallbladder; infarct of the spleen; perforation of the colon; hematogenous infection of the kidney; suppurative salpingitis; ruptured extrauterine pregnancy; twisted pedicle of an ovarian tumor; torsion of the entire great omentum or a portion of it; mesenteric thrombosis; torsion of an ovarian tumor pedicle; suppurative salpingitis; torsion of a pedunculated fibroid; diverticulitis, etc.

Mistaking acute appendicitis for acute conditions such as acute cholecystitis, or an acute perinephric inflammation, pyelitis and hematogenous infection of the kidney, is in a large measure losing sight of what is best expressed by the shiftness of the appendix, that is to say, its tendency to occupy various different positions. For example, the appendix may be retrocecal and retrocolic, extending well upward, and in such circumstances can well give rise to local symptoms that may readily be

confounded with inflammation of the gallbladder. It must also be remembered that an appendix situated upward and outward in relation to the lower pole of the kidney or extending high enough to come in relation with the pelvis of the ureter can give local signs that will correspond largely to those resulting from acute pyelitis, acute hematogenous infection of the kidney or acute perinephric inflammation. I have seen many errors made in these differential conditions, in fact, I have a number of times seen a deep collection of pus in the loin, followed later by fecal fistula, the result of a retrocolic suppurative appendicitis.

The matter of primary importance in avoiding such errors is a carefully elicited history, which must be carefully interpreted, plus the physical examination, including, if there is any question of the genitourinary apparatus, urinary analysis and perhaps cystoscopy and ureteral catheterization. In considering the details in differential diagnosis the chief points of differentiation in the history are that in the appendix pain is the initial symptom. Pain, vomiting, tenderness, in the order mentioned, are the outlines of a picture of appendicitis. Where pain is preceded by vomiting, other things being equal, a diagnosis of appendicitis need not be considered. We may then in the adult think of gallbladder inflammation. The forerunners of gallstone disease are indigestion, slight discomfort after eating, not actual pain, but simply discomfort in some instances, shifting to the right costal margin or to the back, belching gas, nausea and often vomiting. The symptoms of an acute attack are sudden pain, preceded or followed by nausea, vomiting, the latter when severe causing marked prostration, and generally some enlargement in the gallbladder region. Persistent vomiting may nearly always be taken to indicate that the inflammation has extended beyond the gallbladder resulting in peritonitis or circumscribed pericholecystitis. In the latter, tenderness, which is always marked in cholecystitis, is very pronounced and though at first it may be diffuse it soon localizes in the gallbladder region.

Jaundice is not a symptom in the uncomplicated cases of cholecystitis. Jaundice in cholecystitis occurs only when the inflammation has extended into the hepatic duct and up into the smaller ducts, or into the common duct causing inflammatory obstruction. The association of jaundice with cholecystitis is so common in the minds of doctors that I wish to disabuse them of this fallacy. Finally, it is well to remember that the two conditions, appendicitis and cholecystitis, may be simultaneously present, as indeed nearly all abdominal disorders may be associated with appendicitis. In the physical examination, if sufficient care is taken, gentle palpation will reveal rigidity and tenderness immediately to the right of the rectus muscle at the point opposite the ninth costal cartilage in the case of the gallbladder; while in appendicitis this point may be equally tender and due to an acutely inflamed appendix holding a high retrocolic position. In the latter instance tenderness will be equally pronounced to pressure directed downward along the line of the appendix. If these patients are not seen

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until after peritonitis has developed the differentiation by physical findings may be impossible. Errors in the differentiation between acute appendicitis and acute noncalculous cholecystitis are more common than with acute calculous cholecystitis. The severity and character of the pain, which in the latter condition is colicky and intense, are of material help in making a differential diagnosis.

In the case of acute pyelitis or of acute perinephric inflammation, the latter usually the result of infection of the cortical substance of the kidney, or of acute hematogenous infection, in addition to the physical examination and the examination of the urine, cystoscopy and the x ray may be necessary. It is well to remember that acute hematogenous infection of the kidney not infrequently occurs in the presence of a boil, felon or some acute skin infection. These retroperitoneal acute disturbances involving the genitourinary tract frequently cause pronounced rigidity of the anterior abdominal wall, which may cloud the diagnosis if one is not mindful of it.

Errors in the diagnosis of acute intestinal obstruction are possible and frequently made—particularly in the internal strangulated cases. An individual previously well, suddenly seized with acute paroxysmal abdominal pain, followed by vomiting, the vomitus being at first alimentary, later bilious and finally fecal; pulse rate and temperature normal, increased peristalsis with inability to pass flatus or have a bowel movement, represent a symptom complex indicating intestinal obstruction. An error not infrequently made is failure to exclude an external hernia. In this connection let me call attention to a grave source of error in not immediately suspecting acute obstruction in a patient who presents the scar of a previous abdominal operation and presents the above symptoms.

Failure to recognize the continuance of symptoms of obstruction in a patient who has had a strangulated hernia pushed back into the abdomen or between the parietal peritoneum and the transversalis muscle, in other words, which has not been properly reduced in the sense that the strangulated loop of bowel has been released but has been reduced *en masse*, is a great error. This reduction *en masse*, I may remark incidentally, is due to intensive taxis, a practice which should be relegated to a bygone age of surgery. In such cases when peristalsis is no longer heard, which usually means bowel paresis, in other words, the silent belly, an error in diagnosis has been made and somebody is at fault.

It would be extremely difficult, if not impossible, to lay down any general classification of symptoms of many of the diseases mentioned, therefore careful examination, which means careful comparison with cases previously seen, cannot be too strongly emphasized as the crucial factor in a diagnostic test.

The errors in the diagnosis of the typical acute perforated gastric or duodenal ulcer, if seen early, before a diffuse or diffusing peritonitis is present, and their differentiation from conditions bearing some resemblance to them, should not be many. It must not be forgotten that there are two types of

gastric and duodenal ulcers, the typical and the atypical. Only the typical ulcer can give a history that will be of great moment in the presence of an acute perforation. Perforation in the atypical case must be diagnosed by the recurrence of sudden very intense pain followed immediately by boardlike abdominal rigidity and fixity of the patient, that is, his disinclination to move the body except as a whole. This picture is so characteristic that when once seen it is almost unmistakable. In addition, if a characteristic history of ulcer can be elicited the diagnosis may be considered as practically certain. An error I have made upon a few occasions is mistaking a perforated appendix for perforated ulcer, especially when the perforation is in the base of the appendix, which makes the condition similar to perforation of the cecum. Perforated gallbladder and perforated colon may be mistaken for perforated gastric or duodenal ulcer in the absence of a history of ulcer. I have seen this mistake made, but fortunately it is of little moment if the patient is seen early, for in either event the abdomen should be immediately opened. The majority of the acute perforated ulcers I have operated upon, and the number has not been small, have been diagnosed, if not by the doctor who has referred the patient to me, by my house doctor, and rarely has the diagnosis not being verified at operation.

The variety of perforated ulcer most likely to be misjudged is the subacute perforation. In this the early symptoms are the same as in the acute type, with the possible exception that while the pain is very severe it does not last as long as in acute perforation. The characteristic point in the diagnosis of either of the two varieties is that it occurs, with few exceptions, in those who have suffered for months or years from the usual symptoms of ulcer. In some cases the severe exacerbation of pain has preceded the rupture by some days. Usually when the patient is seen by the surgeon the acute symptoms have abated and the condition met with is that of a circumscribed peritonitis which, in the absence of any history, will very likely be diagnosed as cholecystitis with pericholecystic inflammation. It is worth while bearing in mind that overexertion, lifting a heavy object or reaching up, as for example, to a high shelf, may be the exciting cause of rupture.

Infarct of the spleen should be suspected when in the presence of infection or following an accident or violent exercise there is sudden sharp pain referred to the point of the left shoulder, with tenderness on deep palpation of the splenic region. This with an enlarged and palpable spleen makes the diagnosis reasonably certain. The chief cause of failure to recognize the condition is its comparative rarity and not having in mind the possibility of such an occurrence.

The common error in the diagnosis of acute pancreatitis is mistaking it for acute intestinal obstruction. Diagnosis will rarely be missed if the following points are kept in mind: First, think of the pancreas in all acute upper abdominal conditions, and especially where the pain is so intense as to be immediately followed by collapse, more or less cyanosis, persistent vomiting, hiccough, absence of

upper abdominal breathing, very rapid and small pulse; when on examination, the point of greatest tenderness is in the midepigastrium and after the onset of the attack there is a swelling in the epigastric region. This symptom complex occurring in an obese subject of middle age, and often of dissolute habits, should suggest acute pancreatitis. The blood picture is also important and will show some anemia, the result of the hemorrhage into the organ, and a high leucocytosis with a polymorphonuclear increase percentage.

In acute appendicitis, where the appendix occupies its normal position, I see few errors in diagnosis. In the fulminating cases, where the appendix holds an abnormal position, either in the true or in the false pelvis, and where a reliable history is wanting, a mistaken diagnosis of acute fulminating salpingitis or of ruptured extrauterine pregnancy is by no means uncommon. The differentiation between pelvic suppuration due to appendicitis, salpingitis, and a collection of blood consequent upon a ruptured ectopic pregnancy, is at times difficult and often impossible. The full blood count is a great help but does not always suffice; for example, a low grade of anemia as well as a high leucocytosis may be present in either of the first two conditions named. High leucocytosis, in fact, is the rule in hemorrhage. The history, the temperature, the vaginal discharge, the pulse, and the appearance of the patient are of much moment and should be carefully weighed. Percussion and auscultation may shed some light.

The differentiation between a twisted pedicle of an ovarian tumor or a pedunculated fibroid can usually be made from other conditions causing the acute abdomen, particularly if either of the neoplasms is large enough to give physical signs of its presence. But the small ovarian tumor occurring in the virgin and becoming twisted upon its pedicle is often impossible to recognize from other conditions which give rise to a peritonitis.

Such rare cases of the acute abdomen as torsion of a part or of the entire great omentum and mesenteric thrombosis are practically never diagnosed. In both, in addition to the intensity of the pain, there are symptoms of shock. Often, unfortunately, the surgeon is not called until there is a peritonitis when the diagnosis will depend largely upon the information gained from the physician in attendance.

Were I asked the most important symptom in the acute abdomen my answer would be pain, that wise provision by which nature sounds the alarm of present or imminent trouble. An important item in the solution of the problem is, that in every case of acute, or suspected acute, abdomen the matter of primary importance is the avoidance of purgatives. Purgation in the acute abdomen has cost so many lives that this cannot be too strongly emphasized. The acute abdomen is a surgical not a medical condition, therefore not the medical man but the surgeon should be called.

The errors made in the diagnosis of the so-called chronic abdomen are more numerous than of the acute abdomen for the obvious reason that the chronic abdomen is more frequent than the acute one. In discussing some of the errors in diagnosis

I am again forced to emphasize the importance first and last of chronic appendicitis.

It is in connection with the chronic diseases of the abdomen that the x ray and the various other laboratory methods are of the greatest use, especially in the more common diseases, which in their order of frequency are: chronic appendicitis, gallstone disease, duodenal and gastric ulcer, cancer of the stomach, pancreatitis, intestinal obstruction, gastroenteroptosis.

That chronic appendicitis plays the most important rôle in chronic abdominal disease is today almost axiomatic. The most frequent error is made in diagnosing chronic cholecystitis or chronic duodenal and gastric ulcer of the atypical variety, or chronic pancreatitis when the real pathology is in the appendix. It is in the case of chronic ulcer that the x ray proves so valuable, but in the diagnosis of chronic calculous cholecystitis it plays a minor rôle. The history of the case, the physical examination and the chemical examination of the stomach contents, can usually be depended upon to prevent an erroneous diagnosis. At the same time it is well to remember that the appendix is capable of mimicking most of the chronic upper abdominal ailments so that it is only by direct inspection that a positive diagnosis can be made.

In chronic cholecystitis the chief point in avoiding error, in addition to a careful history of the case, is a careful physical examination. Especially important is eliciting tenderness by means of finger percussion at the site of the fundus of the gallbladder, with the tips of two fingers placed over this area and carried rather deeply into the abdominal wall, having the patient take a deep, full breath, that is, breathing the fundus of the gallbladder against the finger tips; and again by asking the patient to take a deep, full inspiration and hold the breath for a few seconds while deep pressure with the finger tips is made. These manœuvres will enable one to be reasonably sure of the presence of tenderness. Occasionally, in long standing cases of chronic cholecystitis a tongue-like lobe of the liver overlying a tender gallbladder can be made out by palpation and percussion; also a circumscribed rigidity of the overlying abdominal walls may be present, which, together with the above mentioned signs, makes the diagnosis more certain. The chief error in many cases, however, is failing to rule out a diseased appendix that holds a high position. Again let me say that the appendix can be likened to the protean artist who is capable of assuming many different characters at will.

The avoidance of error in the differentiation between chronic appendicitis, where the appendix holds a high position, chronic cholecystitis, chronic pancreatitis and chronic atypical duodenal or gastric ulcer is many times impossible, with the exception perhaps of the ulcer cases, in which the x ray should settle the diagnosis, although that too has been known to fail. Stomach analysis is anything but trustworthy, yet it should nevertheless be made for occasionally it is of diagnostic value. In doubtful cases we naturally take advantage of every means at our disposal and then fail

often enough, and even with the belly wall laid open, how often have I had difficulty in arriving at a definite conclusion.

Typical chronic duodenal or gastric ulcer with few exceptions ought not be overlooked. The history of indigestion with epigastric fullness, to the extent of producing a feeling as if the stomach would burst, pain coming on two, three or four hours after eating, depending upon whether the lesion is gastric or duodenal, usually relieved by eating or by taking bicarbonate of soda; the high acidity, the periodicity of the attacks of pain, the x ray findings, which are usually positive, should make the diagnosis. The heavier the meal the longer will the pain and feeling of fullness be in appearing. The interval between attacks leads the patients to believe that they have been cured. It is important to remember that an excess of total acidity, with a high free hydrochloric acid, and hunger pain also occur in cases of chronic gallstone disease. When the x ray does not show ulcer or gallstones it frequently will show adhesions which of course mean a lesion; the most common factor in the upper right abdomen responsible for adhesions being a chronically infected gallbladder.

A high appendix which has been the seat of a terminal inflammation is also responsible for a considerable percentage of the cases in which adhesions are found. Adhesions are the aftermath of a peritonitis, that is, where there are adhesions there has been a peritonitis although it need not necessarily have been severe enough to have been recognized as such. Adhesions hold the same relation to a previous peritonitis as smoke or charred wood to a previous fire, where these are found there is or has been a fire. I hope I may be permitted to repeat what I have so often stated that most of the adhesions I have had to deal with have been pathological and not congenital. My experience in having opened many thousands of peritoneal cavities in all stages of inflammation has forced me to this conclusion. It is only those of us who have many times observed in the living autopsy peritonitis from its earliest to its latest and terminal stages that are best capable of passing final judgment on this subject. Adhesions indeed often play a prominent rôle in chronic abdominal disease and are very frequently responsible for errors in diagnosis. The experience is not uncommon after an elaborate diagnosis to find that the pathology is due to adhesions alone.

If a patient past middle life, without a history of indigestion, suddenly loses appetite, especially for meats, grows progressively weaker and more emaciated, develops epigastric pain and possibly a palpable mass; if in addition he becomes subject to vomiting spells every few days which bring up a quantity of coffee ground material, foul smelling and fermented, and the cancerous cachexia quickly develops, we have the classical picture of gastric carcinoma. It is still frequently seen, but it is rare when compared with the other course of development which we have begun to appreciate only in the last few years,—as found in lifelong sufferers from dyspepsia. Medical treatment has at times given relief, but the indigestion recurs again and

again. Appetite may be preserved, but digestion is torture; so that abstemiousness becomes second nature. There may or there may not have been some period when gastric ulcer was suspected or actually diagnosed. Usually there have been no very definite symptoms, and the patient has been treated for chronic gastritis. Finally the patient dies, and at autopsy a widespread epitheliomatous ulcer is found. Gastric carcinoma appears with sudden onset in not more than ten per cent. of cases. The greatest good can only be obtained by operating early for rebellious indigestion and not waiting until there is no longer any question that the patient has carcinoma.

The error of failing to recognize chronic pancreatitis is a common one. While it is true that it is difficult to make the diagnosis, this is no excuse for failing to think of this by no means uncommon condition and in endeavoring to recognize it. A history of longstanding gallbladder disease in the shape of the premonitory symptoms of gallstone formation, namely, fullness after eating, eructations of gas, occasional nausea, epigastric discomfort, occasional yellow tinge of the sclera, slight fullness to palpation in the epigastric region, with, in some instances, palpatory evidence of an enlarged pancreas; if in addition the urine shows a positive Cammidge reaction and, more especially, if free fat is found in the stools and there is likewise a history of large bulky stools—all these symptoms and signs warrant the assumption of some pancreatic disturbance. Most often, however, the condition should have been detected in its early stage of a pancreatic lymphangitis which gives rise to practically the same type of symptoms as in chronic pancreatitis. It is the inexcusable sequel of neglected gallbladder disease, and failure to recognize it provides much of our operating material.

Errors in the recognition of chronic intestinal obstruction can easily occur. Again, the history of the case, next to the x ray, plays the most important part in the making of the diagnosis. The careful roentgenologist should be able to detect the lesion in the majority of instances, yet I have seen him err particularly in the retrosigmoid portion of the large intestine, even when a growth could be felt with the fingers carried well up into the rectum. The majority of cases of chronic obstruction are caused by carcinoma either in the shape of a mass or of an annular constriction. With a history of constipation early in the case and later diarrhea alone, or diarrhea alternating with constipation, the appearance of the patient, the variability of the appetite, gradual loss of weight with accompanying weakness, and in cases at all advanced the presence of coils of intestine seen upon careful inspection of the abdominal wall, colicky pain with hyperperistalsis upon auscultation and deep palpation, palpating of the abdomen of a patient the subject of an otherwise obscure chronic ailment will frequently produce pain, the coils of bowel being then in evidence, these signs are pathognomonic and practically clinch the diagnosis. In chronic obstruction due to tuberculosis of the cecum the diagnosis is not always so clear as in carcinoma, yet by careful examination coup-

led with careful study of the history of the case error in diagnosis will occur only occasionally.

Where there is already metastasis with abdominal dropsy an error should not often be made. A condition not infrequently seen is peritoneal carcinoma with fluid in the cavity. Careful examination will usually serve to diagnose the condition correctly particularly if we make a rectal and vaginal examination. Peritoneal carcinoma and peritoneal tuberculosis so frequently have their origin in the uterine appendages that vaginal examination alone will make the diagnosis. I have no hesitancy in saying that I see many cases of the types mentioned above and have little trouble in satisfying myself of the nature of the lesion, and in most of them I verify the diagnosis by incision. Types of cases I see not infrequently are the result of primary carcinoma occurring in the wall of an ovarian cyst or in the endometrium of a fibroid uterus, previously removed. I am not one of those who believe in the removing of a so-called simple fibroid or simple ovarian cyst, therefore you are probably not surprised that I do not advocate the use of radium in preference to operation in the fibroid cases. Fecal impaction in the shape of fecal obstruction likewise is not infrequently overlooked.

I feel sure my friend and colleague, Doctor Reimann, will bear me out when I say that carcinomatous change in the endometrium of a fibroid and in the wall of an ovarian cyst is more often present than is believed by the gynecological operator.

Gastroenteroptosis is a condition capable of presenting so many sides from the viewpoint of symptoms that it may be very misleading and cause error in abdominal diagnosis. I can only call attention to the importance of the subject with the statement that there are many pitfalls of which the surgeon must be conscious otherwise he will take out appendices and gallbladders, leaving the patient worse off by far than before the operation was performed. It is in this class of cases that careful physical examination plus the use of the stomach tube and the coöperation of the roöntgenologist will stay the surgeon's hand and thus reflect glory and not discredit upon our art. There are many other conditions met with in chronic disease of the abdomen that offer fertile fields for error, but I must defer further discussion for a future communication.

1634 WALNUT STREET.

THE VACCINE ANTITOXIN METHOD IN THE TREATMENT OF DIPHTHERIA.

By FRANK M. WOOD, M. D.,
Chicago.

This paper presents a new method of treating diphtheria, namely, the combined method of injecting vaccine of devitalized Klebs-Loeffler bacilli and antitoxin.

In April, 1913, prior to the announcement of von Behring's toxin-antitoxin method this vaccine-antitoxin method was first used in several cases of known diphtheria, confirmed by the examination of

cultures by the Chicago Department of Health. An autogenous vaccine was made from the first patient and pure cultures of Klebs-Loeffler bacilli obtained. Three hundred to five hundred million bacilli in this vaccine were injected with 1,000 units of antitoxin in two separate but simultaneous inoculations, in the cases of three children having membranes in their throats and of two other contacts. The membranes disappeared in all the three known cases by the third day. Five hundred units of antitoxin were administered as sufficient for protecting the contacts and but one dose of three hundred million bacilli in the vaccine. Two more injections of the vaccine of five hundred million bacilli were administered in the infected cases at three day intervals. Cultures were then taken and found negative by my own examination on the tenth day, and also so reported by the Chicago Department of Health. In the contacts treated, diphtheria did not develop.

This method of procedure has been used repeatedly in known diphtheria for the past six years with complete success in all cases so treated. The attention of the Chicago Department of Health was called to these facts and they recently adopted the toxin-antitoxin method in the treatment of diphtheria.

DOSE OF VACCINE.

It is necessary to observe some caution in administering the vaccine in diphtheria. If this treatment can be administered before the disease has progressed more than four days, and no excessive amounts of toxin have been formed, the dose of vaccine may be three hundred million bacilli at the initial dose. If, however, the disease has progressed for more than four days, membrane formation is excessive, tonsils, nares and larynx involved and there is great toxemia. It is best then to administer one hundred million bacilli and from three thousand to five thousand units of antitoxin, according to the severity of the toxemia. Thus the dangers of pneumogastric paralysis may be avoided. The dose of vaccine may be increased to three hundred million bacilli at the next dose and later to five hundred million, as improvement indicates. The antitoxin may be repeated as indicated. We thus succeed in the destruction of both bacilli and the neutralization of the toxin.

THE ADVANTAGES OF THE METHOD.

By this method the production of toxin is stopped, the patient producing his own antitoxin from the time the vaccine is administered. The dose of antitoxin renders inert the toxins already formed and it thus prevents paralyses and heart failure. It saves life.

It prevents carriers by destroying bacilli in the throat, thus stopping epidemics. It may also be used to immunize exposed patients, as was done in the two contacts, who often harbor bacilli in their throats and carry them to others, thus keeping up the epidemic.

In infected cases it rids the throat of bacilli in ten days' time, thus materially shortening the quarantine period in diphtheria, enabling children to return to school soon and without the danger of becoming

permanent carriers of bacilli to their companions. The ultimate results of the adoption of this method should bring about as efficient a control of diphtheria epidemics as now prevails as the result of the use of vaccine virus in the prevention and control of smallpox.

The advantages of this method to the public are the saving of expense in the cost of antitoxin; the limiting of epidemics also cuts down public expense. It also prevents the loss of time and money on the part of our public school systems. It protects public health. It should for these reasons become the chosen method of treatment in this disease.

REPAIRS FOLLOWING LABOR*

BY WILLIAM E. PARKE, M. D.,
Philadelphia.

Injuries to the birth canal during the process of parturition will occur under the management of the most skillful as well as the most careless doctor; but there will be a marked difference in the number and the degree of the lacerations occurring in the practice of these two classes.

What measures can we adopt to minimize these injuries? The chief one I believe is to avoid undue haste. Do not resort too quickly to the use of instruments. I am sometimes called to apply instruments to a patient who has seemed to be in active labor a sufficient length of time to be delivered and on examination I find the cervix only partially dilated. If the mother's condition is good and the baby's heart sounds about normal in frequency, this is clearly not the time to use the forceps. Sedatives are indicated here. I confess, however, to have yielded more than once and, against my better judgment, have proceeded to dilate as well as I could and apply the forceps, because the patient and her anxious family have been prepared by the family physician to believe that as soon as the consultant arrived he would put the patient to sleep and terminate the labor.

Nature's method is to dilate and retract the cervix and we should wait until this process is well advanced before applying the instruments, unless there is a more urgent indication than the importunities of emotional relatives and a patient whose morale is at a low ebb. I believe that opium and scopolamine or belladonna are not used often enough in this condition. Injuries to the upper vaginal tract are not so amenable to treatment as the injuries lower down and hence are more likely to be followed by invalidism.

Laceration of the outlet can sometimes be prevented by delaying the birth of the head for three or four pains after it would seem that it must come through. This is accomplished by actually holding the head back and by directing the patient to breathe rapidly, or, as I tell them, to pant, when they have an almost imperative impulse to bear down. Rapid labor sometimes and instrumental labor often are the cause of injuries to the birth canal, and the question is, when and how shall we treat them?

It is my almost universal practice to deal with them at once. But if the condition arises in the middle of the night and sufficient light is not available to do accurate work, or if one does not have proper assistance, it is better to postpone the operation until the following day when competent help and light may be had. If the operation is delayed for five to seven days, the patient's getting up is postponed just so long, time which is practically lost by the patient. Only those patients in whom a deep cervical tear occurs which cannot be properly repaired at once, because of the thinning out of the cervix, gain by delay in operation and these form a small proportion of the whole number. Moreover, tears in the cervix are prone to heal without suturing if the wound is not infected, hence the cases are relatively few which would gain by delay in operation, if the operator is careful and skillful in bringing together the parts that belong together. It requires, however, more skill to coapt the tissues when they are relaxed, distorted, and perhaps edematous than it does when involution has advanced apace and the normal relation of the parts is more clearly defined.

It is my practice to inspect the birth canal for injuries as soon as the cord is tied and cut and the baby passed on to the nurse, not waiting for the delivery of the placenta. To do this I insert into the vagina the larger end of a large Sims speculum, pressing the cord behind it, and packing a bit of gauze in front and above to dam back the blood. This gives a clear view of the perineum and posterior vaginal wall without distorting them. I prefer this to the special dilators designed for exposing the torn parts, which not only expose but distort them. If the tear is not a serious one, I proceed at once to place the sutures and usually tie them before the placenta is delivered. Properly placed sutures will not tear out by delivery of the placenta.

I like to suture even small tears. Sometimes there is no lesion of the skin perineum but separation of the labia will disclose a quadrangular appearing tear at the base of the hymen, which one or two catgut stitches will suffice to close. If to this is added a central tear of the perineum not involving the sphincter ani, I prefer to use silk-worm gut sutures for tying on the skin surface, believing them to be less prone to infection, as they surely cause less reaction in the tissues than does catgut. If the laceration extends through the sphincter ani, I always make an immediate repair if the environment is suitable, that is, if material for aseptic work and competent assistance and light are at hand. I use a chromicized No. 1 buried suture in the sphincter muscle and silk-worm gut sutures, one or two of which include the sphincter ends, on the skin surface of the perineum. When the lesion extends up into the bowel I whip this over with a catgut suture which does not penetrate the mucous membrane of the gut but comes just short of it. If the primary repair of the wound is followed by cure—and this is usually the case—the patient is the gainer, whereas, if the wound breaks down through infection, the

*Read before the Kensington and Northeast Branches of the Philadelphia County Medical Society, October 23, 1919.

patient is no worse off than if no attempt had been made to cure her.

Lesions involving the sphincter are central and, of course, at the lower end of the birth canal, and usually do not extend high up. If, however, the injury has resulted from the use of high forceps, especially on occipitoposterior positions of the head, or other forced methods, the lesion may involve almost the whole length of the vaginal canal, including the cervix and the base of the broad ligament. Whether or not it is best to undertake the immediate repair of such an injury is debatable. Considerable hemorrhage is likely to result from it, and suturing is the most satisfactory way of dealing with this complication if operating room conveniences are at hand. But if the complication occurs in a private house, where competent help and material are not to be had, it is better to pack with antiseptic gauze and do an intermediate or secondary repair.

Not rarely the vulva is torn in some other place than the posterior commissure, it may be along the lateral walls, but is particularly prone to occur along side of the urethra. These mucous membrane tears sometimes expose considerable raw surface and bleed freely, and I like to close them up with a fine running catgut suture. For the inside sutures I use catgut and for the outside ones, silkworm gut.

1739 NORTH SEVENTEENTH STREET.

A NEW CONCEPTION OF ASTHMA

*Supported by Over Four Hundred Cases
Successfully Treated.*

BY MARK I. KNAPP, M. D., LL.B., LL.M.,
New York.

The origin of medicine I believe to be synchronous with the creation of the higher animals. There are authentic data of even animals showing a knowledge of medicinal plants, nay, even of surgery. So we find the medicine of remote ages interwoven with mysticism and but gradually, with increasing civilization, there gets to be a clarifying conception of the healing art. Of necessity, medicine advances only with the general advancement of other sciences. We could not understand the picture and composition of the blood without the invention of the microscope, or without the advancement of analytical chemistry. The latest addition of the x ray has again unfolded before our eyes what was shrouded in mystery but a generation ago. Yet, withal, we must show the greatest admiration and reverence for our medical progenitors, who did their best to prepare the field for us. If their conception of medical matters shows crudeness and error, it was the best they could do with the means and instruments they had at their disposal.

Indeed, medicine, scientific medicine, is less than a century old. Up to that time the conception of disease was rather intuitive, speculative, philosophical. The cause of this was, that neither dissection nor autopsies were permitted and, therefore, only inferential deductions from animals could be made. With the invention of newer physical means, with

the discovery of more exact methods of chemical analysis, many of the old views had to be modified or overthrown. And we call this progress. But just because we cannot substantiate a newer idea by instruments or chemical reagents, such new idea should not be dismissed offhand. It is proper to demand of the medical practitioners a high degree of reasoning ability, even if no concrete matter is offered in illustration of a new view, and it is only reasoning that I can offer to the reader, a reasoning based upon other established facts.

Our knowledge of asthma has come down to us from centuries past. The authority who first described the disease thought the asthmatic attack to be due to a spasm of the bronchial tubes. It was a mere speculation, but no one had a better explanation to offer, and so this teaching got into the books and successive generations copied from their predecessors. It was a case of the first impression becoming ingrained in us; no one doubted it and it appears that no one challenged it. I knew no better until the following happened:

Some seventeen years ago a woman came to consult me about her stomach trouble, besides which she also suffered from asthma. The gastric examination showed that she suffered from insufficiency pylori—that disease which I discovered and described for the first time (1). The insufficiency of the pylorus as I have described it and as it is at present understood, taught, and demonstrated was not known before the publication of this article. The patient recovered from her asthma and so did three other patients. All four patients suffered from insufficiency of the pylorus. Cure in the first three cases I ascribed to mere accident, but after the fourth successful case I came to the conclusion that there must be an intimate connection between asthma and the insufficiency of the pylorus. The following appealed to me as offering the best explanation for the simultaneous cure of the gastric condition and of the asthma.

In the majority of the cases of insufficiency of the pylorus, there is increased intraabdominal pressure, which is due to increased gas formation in the gastrointestinal tract. To understand this better I shall comment briefly on the nature of insufficiency of the pylorus. In this condition the pylorus is relaxed more or less, that is, the sphincteric action of the pylorus is weakened, has become insufficient to act normally. The degree of the insufficiency varies from a slight relaxation to complete patency of the pylorus, when there is no transition noticeable between the stomach and the duodenum. The result of this is that the food leaves the stomach in a way which was not intended by nature. There is only one result possible and this is that the patient sooner or later will suffer. The food which should have been acted on by the stomach and undergone an acid digestion gets into the intestine where the digestion is alkaline. It stands to reason that chemical changes contrary to the normal will follow and these are accompanied by gas formation in excess. This was my view which I promulgated in 1902 and also in subsequent articles. In 1907 Moullin, of London, published an article (2) in which my views were fully corroborated on the

strength of laparotomies and autopsies, although the author gave me no credit.

Now both the patency of the pylorus and the increased gas distention can be visualized by the fluoroscope. The increased intraabdominal pressure forces the diaphragm upward against the lungs, which are interfered with in their normal expansion. This interference continues for weeks, months and years at the rate of eighteen times in a minute. Such continued interference with the pulmonic function is bound to have a bad effect upon the lungs and the resulting bad effect manifests itself as the clinical picture which we have designated as asthma. Therefore, when the patient had been cured of his gastroenteric trouble and the abdominal pressure again became normal, the lungs had no more obstruction, and so the asthma was cured. The soundness of this theory has been proved now in over 400 cases.

Opposed to my view is the prevailing opinion that the asthmatic paroxysm is due to a spasm of the bronchial tubes. Where is the proof of this? No one has as yet submitted to an operation upon the lungs during an asthmatic attack, nor does the supposed bronchial spasm survive death, so that it might be proved at an autopsy. And surely, the clinical picture of the laboring chest during an attack is very much opposed to the assumption of a bronchial spasm. In a spasm of the bronchial tubes the calibre of such tubes is diminished and less air will therefore enter the lungs. The effect of this would necessarily have to be a retraction of the chest, sinking in of the intercostal spaces, and labored inspiration. The opposite of this we notice in an asthmatic paroxysm. The chest is enlarged, the intercostal spaces bulge out, and the patient shows difficulty in expiration. Neither have x rays been taken to confirm the old inherited erroneous belief, nor could x rays be taken during the duration of a spasm, as the patient is then in no mood to stay still, nor is he able to do so. Auscultation also confirms that the patient's suffering is not with the inspiration but with the expiration, as the asthmatic wheezing is heard in expiration.

Etiology.—The foregoing remarks fully express my opinion as to the true cause of asthma, but I consider a little discussion of the prevailing view is not inappropriate. Pathological conditions of the nose, heart, kidneys, and the inhalation of certain animal or vegetable matter are looked upon as the causative factors in the etiology of asthma. That these and other agencies may provoke an attack of asthma is not to be disputed, but we must distinguish between the asthmatic constitution and the asthmatic spasm. The asthmatic constitution is the result of a pathological gastrointestinal condition; the asthmatic attack may be called forth by gastrointestinal as well as other noxae. A very vivid exemplification of the etiological relation between the asthmatic attack and the gastrointestinal condition can be seen in the immediate response to lavage of the stomach. I have repeatedly met patients at the height of an asthmatic attack and the paroxysm instantly abated after lavage of the stomach.

Diagnosis.—This is not always an easy matter. The patient may present himself at a time when

his chest is absolutely free from wheezing. The rule should be to treat the patient for asthma even if we cannot hear anything abnormal in the chest at the time of the first examination. The patient should be seen and examined repeatedly. We naturally examine the patient first in his upright posture, i.e., he either sits or stands. Should this examination prove negative, then he lies down on his back for the examination, which will reveal what was inaudible before. However, even this posture may not give the desired result. The patient is then put into the inclined position, that is, with the head down and the feet up, the examining chair being tilted so as to bring about this position. I use this method in every examination of the chest and abdomen, and it is remarkable how much we can hear and feel in this position. We hear the asthmatic râles, which are dry and sonorous and of various pitch in expiration.

Symptoms.—When the asthmatic patient comes to consult us the most characteristic symptom which attracts our attention is the peculiar breathing—a short inspiration followed by a prolonged and labored expiration. If the patient is seen soon after an attack, we will find him still panting and with a livid face. Otherwise he appears calm, though the changed respiratory rhythm is quite noticeable. So marked is this change in the rhythm, that very often I can make the diagnosis when the patient is yet in the waiting room and without my even seeing him. As a rule the patient is so engrossed with his asthmatic suffering that he will mention very little else than that he is suffering from asthma, which at the time of the examination may show no evidence whatsoever. On further inquiry the patient will state that he is short of breath, especially on going up hill or up stairs, or that he cannot take long walks, that he tires so easily. A distressing symptom is the palpitation of the heart and the pain in the region of the heart. These symptoms have proved the great stumbling block to the medical man, which causes the physician to administer cardiac remedies, when they are not only not needed, but very often are most harmful.

In the early stages of asthma these will be about the only symptoms of which the patient may complain. That is, the patient will have these symptoms only when the attack is on, or rather during the days on which attacks occur; otherwise he will be perfectly free from all symptoms. When asthma has persisted for a long time the patient never feels well. He has a sensation of choking or of "a lump over here" (indicating the region of the larynx). He may also complain of fullness or pain in the chest, especially behind the sternum. His appetite is not constant. In the beginning of the disease, during the intervals between the attacks, his appetite may be very good, but at the time when he is suffering from an attack his appetite is gone. There is a sensation of weight and fullness in the stomach after meals, very often accompanied by belching. A most constant symptom is constipation. If, in answer to my inquiry, the patient says that his bowels do move every day, my next question is, What do you take for it? We will find that the patient may be addicted to the habitual use of some

cathartic, or fruits, or bran, etc. There may also be fullness and a sensation of weight in the abdomen. Sleep is usually much disturbed, even in the intervals between the attacks, and there is much dreaming of an unpleasant nature. The patient gets up in the morning not rested.

The manifestation of an asthmatic paroxysm is one of acute air hunger, the patient struggling and gasping for air. Those patients, who have already gone through many paroxysms, may discover in themselves certain prodromal symptoms or sensations sometimes a day before the attack, but usually they feel quite buoyant on the day preceding the attack and will go to bed without any warning of impending trouble. Sometime past midnight, in the early morning hours, the patient, still asleep, will begin to wheeze and rattle. Suddenly he projects himself into the sitting posture, feeling the agony as of impending death by suffocation. The attitude he assumes is quite characteristic and most favorable to expiration. We see all the auxiliary muscles of expiration in full play. The legs are flexed upon the thighs and the thighs are flexed upon the abdomen with the body inclined forward to meet the flexed thighs. With the elbows resting upon the knees, the hands support the chin, the head is kept in full extension. There is gasping inspiration, followed by labored and prolonged expiration. There is lividity of the face and mucous membranes, and the body may become bathed in perspiration. With every inspiration the head is thrown backward, recoiling in expiration; the mouth is wide open and the eyes bulge. After the persistence of these agonies for some time, even for hours, the patient will suddenly jump out of bed and rush to the open window, seeking more air. In many cases the patient cannot lie down and therefore cannot go to bed at all. Often, under such circumstances, the patient may not have been able to sleep in bed for months; he sleeps in the sitting posture, in a chair. When the paroxysm comes he gets off the chair and takes hold of any piece of furniture which will help him to brace himself against it with his body inclined forward and the head thrown back. The duration of the paroxysm is not always the same and it may last from half an hour to several hours. At the end of the attack mucus and gases are expelled. During the spasm we see that the chest is kept fully distended and that the intercostal spaces bulge out.

We note that the attacks come about from seven to eight hours after the meal and when the patient is fully at rest. Those who believe in psychical causes for asthma will find it very hard to reconcile their views with the actual fact of the setting in of the spasms, as the patient has been in bed, sleeping, for some hours, before the beginning of his misery and therefore could not be exposed to psychical influences. But what we do find is, that the attack comes at a time when the food has left the stomach and has been in the intestine and is here undergoing chemical changes, some of which, at the end of the attack, are expelled as gases. The patient feels and complains of fullness and bloating, which mean gas, and it is the gas which exerts its pressure upward against the diaphragm with the

consequences which have previously been explained.

Prognosis.—The prognosis is most excellent. Irrespective of the number of years he has suffered, the patient will get well if properly treated. The well grounded and laudable medical conservatism may justly doubt my assertion, yet the fact is, that the patients begin to feel well within forty-eight to thirty-six hours after treatment has been begun. To the patient, his beginning recovery almost immediately after the commencement of the treatment, is nothing short of a miracle. To see the livid, gasping patient brisk and smiling only a few days after, gladdens the heart of the patient and, certainly, of the physician. It must not be understood, however, that immediately after the treatment has been begun, there will be no more attacks. The attacks come again and again, but with the difference, first, that the intervals between the attacks lengthen more and more, and secondly, the attacks become less severe each time and their duration is lessened. The patient should be told of this at the beginning of the treatment, so that he will not lose courage when an attack comes again. We must use most positive language to the patient with regard to his recovery and assure him of absolute recovery within about four or five months.

Where complications exist recovery will depend upon their nature, and while climate and atmospheric conditions have no causative relation to asthma, they undoubtedly have some influence on the progress of the disease. Sudden changes of temperature may cause great inconvenience to the asthmatic patient. An intercurrent bronchitis may again start the wheezing and the dyspnea, which will last until the bronchitis has subsided. As we all like to get rid of our diseases and never to get them again, the patient will naturally ask whether, if once cured, will he never get asthma again. Suppose one has pneumonia; shall he not be treated, because he might possibly get pneumonia again? Suppose one breaks his leg, shall he not be treated, because he might perhaps break his leg over again? There is this difference, however. One never knows when he may contract pneumonia or break his leg, but one always knows, once he has been cured of asthma, when he will again suffer from an attack. He will get asthma when he disobeys the few dietary restrictions which must be imposed upon him after the completion of the cure, restrictions which may have to be kept up for a year or two. If the patient again gets asthma, he has himself to blame for it. As a rule, however, the patient will experiment once or twice with forbidden food, after which he will be obedient and remain well. He gradually learns that his asthma depends entirely upon his food, that is, upon his digestion, and to keep well and free from asthma he must obey instructions and not eat the few forbidden things.

Treatment.—The treatment will be discussed under three heads: 1, treatment of the paroxysm; 2, medicinal treatment of the asthmatic constitution, and 3, dietetic treatment of the asthmatic constitution.

The best and the quickest relief for an attack is washing out the stomach. Whenever the patient will permit it, this should be done. I have employed

it many times and the results were almost miraculous. When the patient or his friends object to lavage a number of drugs may be employed. Perhaps the safest is the burning of powdered stramonium leaves, or smoking the well known stramonium cigarettes. A variety of powder combinations are on the market which are burned and give momentary relief. Also nitre paper can be burned. This paper can be made by dipping blotting paper in a saturated solution of potassium nitrate and then drying the paper. Occasionally chloroform inhalation is used to check the paroxysm, but the drugs most commonly used by the profession are morphine and adrenalin. Of these two drugs I dread adrenalin the more, because I have seen very bad results after its constant use and in one case I feel sure it was the cause of death. Once a patient begins to use adrenalin, it is very hard to get him away from it. I have had a number of patients who had been using adrenalin hypodermically and it took a long time and a great deal of persuasion to get them to give up its use. The instant relief lures the patient. I have had patients who used up an ounce bottle of adrenalin in twenty-four hours. Some patients maintain that a cup of black coffee will give them relief, while others want to smoke tobacco; but at best all these remedies are only of temporary benefit.

The medicinal treatment of the asthmatic constitution has for its object the remedying of the underlying cause, which is first the insufficiency of the pylorus. As insufficiency of the pylorus means the premature emptying of the stomach contents into the bowel and the consequent irritation of the bowel, it is the bowel which has to be treated, and for this we need alkalies. The most usual drugs are the potassium, sodium, magnesium, and calcium salts. The citrate, acetate, tartrate or carbonate of potassium; the bicarbonate of sodium; the oxide of magnesium and the carbonate or chloride of calcium are given with very good results. The dose depends upon the individual case. Of the magnesium oxide I seldom give more than two grains, but of the other drugs one may give from five to ten grains. A most staple combination is the rhubarb and soda mixture with magnesium. With this may be combined strontium bromide in doses of from six to ten grains. As a rule constipation must be combated with cascara or some other mixture. Should cascara be selected, it may be added to the rhubarb and soda mixture, to which I also add the wine of colchicum in ten drop doses. I have found that the colchicum not only materially aids the cascara but with it we need less cascara. Often the patient complains of pain in the lumbar region for which sodium salicylate is given with advantage. Strychnine and the mydriatics are often used also, and with advantage. The following combination for the constipation I have used for years with excellent results: One quarter grain each of aloin and podophyllin, one grain of phenolphthalein, and one one hundred and twentieth grain of atropine. In most of my cases this pill was the right dose. Should it prove too strong, the dose can be lessened. Where the dry cough persists the iodides are indicated. Of these I prefer the ammonium iodide in

a saturated solution, beginning with five drops three times a day well diluted. In some cases the potassium iodide gives better results.

Of chief importance is the diet, for without the proper regulation of the diet one cannot hope to cure asthma. Unfortunately there is no set rule which will apply in all cases. We must feel our way, conscious of the fact that we shall probably make mistakes at first. Here the old saying "what is one man's meat is another man's poison" finds its most general application. Some patients will get along splendidly on lamb and mutton, while others will suffer severely after partaking of these meats. Some take coffee with marked benefit, while the majority of patients feel worse after it. And so it goes with all foods. I have no set diet for my patients. The way I proceed is this. I have the patient submit to me a list of what he eats and drinks and I go over with him each and every item. The patient must at all times be ready to tell me how each particular food is cooked. If the patient is a man, I have him bring his wife or mother with him on his next visit and I indicate to them whatever corrections may appear necessary. Some foods may need only to be modified in their preparation and others must be eliminated altogether. In this way the patient retains a menu to which he has been accustomed and is therefore better satisfied than if something is given him which he does not like at all. As far as possible we should give the patient food which he likes. Vegetables and cereals are not borne well and, at the beginning of the treatment, they should not be allowed. But even here we shall find many exceptions.

The guiding principle in arranging the diet of the asthmatic patient should be to avoid all food and drink which is in itself irritating, because of its being acid or being easily changed into acids, and the withholding of such food and drink which either contain gases or generate gases in the stomach. Tea, coffee, cocoa, and chocolate are acid drinks, very often of quite high acidity; so are beers and wines, although the acidities of these are not so great. Beers and wines, however, are fermented liquors and always contain yeast, which starts fermentation in the digestive tract, with the formation of gases. The artificial mineral waters are charged with carbon dioxide which places them on the prohibited list. All greasy foods, spices, acid foods and fruits, beans, peas, cabbages, onions and radishes should also be forbidden. After some time we may begin, very cautiously, with some cereals and fruits. I usually begin with one and let the patient have no more for two days, so as to await the result. If the particular cereal or fruit is tolerated, then I try a second one and again wait two days and so on. Plain, common salt is not tolerated by the asthmatic. In its stead the patient gets sodium bromide which he uses as table salt, without regard to the dose. This would point to the fact that in asthma the chlorine content is at fault somehow, which should make an interesting subject for investigation by some chemist. The patient's craving for acids can be satisfied by giving him hydrochloric acid. This is to be used instead of vinegar. About a teaspoon of the dilute hydrochloric acid to half a glassful of

water will be found to be about right. If this is not sour enough more acid can be added, and if too acid more water is added. This is used for salads and for the making of mayonnaise.

The patient should be given his substantial meal at noon and only a light meal in the evening. If the reclining position is possible, the patient should lie down after meals, either on his back or inclined somewhat on his left side, but never on his right side, which would favor the emptying of the stomach contents into the duodenum. The patient should not go to bed early, never before eleven or half past. The reason for this is, that if the patient goes to bed early and has had about five or six hours' sleep and then awakens, he will stay awake the rest of the night, which has a very depressing influence on the patient himself and on his friends or family. As a rule after the patient has slept five or six hours he will awake with a spell of coughing. This coughing I believe to be due to the accumulation of mucus in the esophagus, which would naturally go down into the stomach or be coughed up during the waking hours. The mucus begins to decompose and becomes irritating, which causes the coughing. Some relief may be afforded by drinking hot water before retiring and on waking. Where this symptom continues to be troublesome lavage of the esophagus and stomach is indicated. To wash the esophagus the stomach tube is inserted only about eight or nine inches and either plain or medicated water is poured down at a temperature of between 110 and 120 degrees. Practice will teach us how much fluid should be used, but usually the patient will indicate when he has enough. The tube is now introduced further down into the stomach and the fluid is allowed to run out.

The treatment here outlined does not include any special treatment which a complication may demand. Pathological conditions of the nose or throat or of any other organ must be taken care of as required.

In conclusion, I wish to remark that this paper is merely in the nature of a summary on asthma. For more exhaustive treatises I beg to refer to my articles in the *Medical Record*, March 8, 1919, and in *American Medicine*, October, 1919.

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616 MADISON AVENUE.

Enlargement of the Thyroid Gland in Malaria.

—J. B. Hume (*British Medical Journal*, November 22, 1919) observed thyroid enlargement in several cases of malaria in soldiers in German East Africa. The enlargement occurred usually in men who had suffered previous attacks and appeared twenty to thirty hours after a fall in temperature of from one to three days' duration. The swelling diminished under antimalarial treatment but the gland did not as a rule return to normal size. No postmortem examinations were made. The swelling is taken as evidence of general involvement of the ductless glands in malaria.

POLAND IN THE WORLD WAR, FROM THE MEDICAL ASPECT.*

BY FRANCIS E. FRONCZAK, A. M., M. D., D. P. H.,
Buffalo, N. Y.,

Health Commissioner of Buffalo; Late Major, Medical Corps, U. S. Army; Lieutenant Colonel, Medical Corps, American Red Cross; Member of Polish National Committee, Paris; Medical Counsellor, American Red Cross Commission to Poland.

In dealing with the subject of Poland in the World War from the medical aspect, I trust you will not consider my remarks in any way political or in the nature of propaganda. They are merely from notations made midst overwork and strain, notations of what I actually observed and learned during these great occurrences.

At present, Poland has an area of some 200,000 square miles, and a population of about 38,000,000, somewhat over one third the population of the United States. Let me remind you, that before Poland was united and restored, and her rightful territory returned by action of the Peace Conference on June 28, 1919, it had been dismembered and divided among its three powerful adjoining neighbors—Prussia, Austria, and Russia—for almost a century and a half. These governments, therefore, administered their respective stolen portions of Poland in accordance with their own laws, which in each one was different, as likewise were the sanitary conditions.

The western part, under German domination, was governed in accordance with the laws and regulations of that country. It therefore was fairly well organized and public health work had a proper place; vital statistics were kept, birth, deaths and marriages recorded, communicable diseases reported and dealt with; even medical school inspection and other public health activities were in operation. In the domain governed by Austria, however, little, if anything, in the way of modern preventive medicine or vital statistics existed, except in Lwow (Lemberg) and Krakow (Cracow). Galicia had been given a form of autonomy, but with it there was exercised a thorough prohibiting influence of control from Vienna, so that there was little possibility practically of accomplishing anything desirable. In Russian Poland, on the east, with the exception of the city of Warsaw, public health work, sanitation or vital statistics were almost unknown. Under neither Austria nor Russia were statistics kept (as we understand them in America), the only available records of birth, marriages and deaths being those maintained and returned by the priests, pastors, and rabbis at the end of each year. There was no way of ascertaining even approximately the number or character of communicable diseases. As a matter of fact, the authorities discouraged organization for the purpose of accomplishment.

Water pollution was the rule. There was no interest in nor control over the water supply of streams or wells, and the disposal of sewage was a matter of indifference and neglected. Public health

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work had no place. In Austria and Russia but three municipalities had any form of protecting the water supply or regulating sewage disposal, namely, Warsaw, Krakow and Lemberg. The remainder of the country, with 30,000,000 population, received their water from the best sources the local authorities could provide, and the sewage was turned into the most available stream. The result was obvious, drinking water was everywhere subject to pollution and such was the case with practically all subsistence.

The sanitary conditions of the country, as I have intimated, were as deplorable as the general conditions of affairs were unstable and shaken. The leading men of Poland were alive and understood the state of affairs, they were not wanting in vision or appreciation of conditions, nor were they wanting in initiative or desire to take corrective measures, but they were fettered. The governments not only opposed, but in fact deliberately created conditions, and the cruel restrictions imposed were extreme.

For instance, in Russian Poland, the people were not allowed to use Polish money, not even for public buildings or utilities, and, as is well known, it was forbidden even to teach the native language in the schools, and in every way the policy was to make the position of the people as irksome and distressing as possibly could be done.

In German and Russian Poland the most objectionable characters from the very scum were put in charge to manage affairs and do as they pleased (much as the so-called "carpet baggers" that were sent from the North to the South during the unfortunate period of reconstruction after the Civil War in this country.) Every detrimental condition imaginable was extant, and among them bribery and corruption developed into a custom and a fine art.

The influence of neglected public health work, and the hygienic condition of the country is illustrated by the mortality and morbidity figures which are appalling and reflect the state of salubrity. Before the partitioning of Poland, the average death rate was twenty-two in a thousand. In 1913, taking tuberculosis as an expression, the death rate was 489 in one hundred thousand in Kracow, 208 in Warsaw, and 389 in Lodz, which is a densely populated manufacturing city, much like Manchester, England. The death rate from tuberculosis in Buffalo for the same year, 1913, was 126.

Take the infantile death rate, another criterion. In Austrian Poland for 1906-1910, the average was 205 deaths for every thousand infants born; in Russian Poland, in the urban districts, the mortality was 155 deaths for every thousand infants born; while in German Poland, it was 190 in a thousand born. Compare this with Buffalo, where the death rate for 1917 was 103, and in 1918, 112. It speaks for itself.

The birth rate in Poland in 1910, and I take this from official records, was high. In the Austrian section, in 1910, it was 40.6 in a thousand; in the Russian section 33.7 in a thousand, and in the German section 37.2 in a thousand. In Buffalo, in 1918, it was 29.38.

This beautiful country today presents a pitiable

picture of desolation, and particularly in the towns, villages and communes, as for a long time, permission to do things has been withheld; in consequence, the sanitary development among the peasantry, as well as in the slums of the cities, is low, while among the nonchristians, it is deplorable beyond words.

When the war came, it brought horror and sadness to domestic life, peculiarly pathetic. Conscription took the Polish youth in greater numbers from Austrian Poland than from any other part of Central Europe. These troops were assigned also to the most desperate and dangerous scenes of action and their losses were fearful. The flower of manhood of the country, the most fit physically were decimated and the moral stamina stifled. Poland's losses in the war have been fearful. Authentic reports to date place the number at five millions killed and dead from wounds and starvation. Civilians did not escape and one million were held in eastern Germany to toil in the mines, a half million were shipped to eastern Russia, and a million of these are estimated to be permanently crippled. For various alleged reasons, 30,000 were executed in Russia and Germany, 30,000 being hung in Galicia alone by reason of their refusal to fight their own brothers or bear arms against their own brothers and fellowmen. These figures are staggering, yet I speak by the book and weigh my words.

As a consequence of the number killed and dying from disease, malnutrition and exposure for want of shelter and homes, and from the indirect influences of all this, the population has been seriously affected and is heavily decreased.

The food question is always paramount, without food comes death in countless forms. We who never feel the pangs of hunger, who indulge our taste, and those who enjoy being hungry and get professional advice for want of appetite, can scarcely appreciate the terror, the depression and the horror of being hungry and having the appetite, but having no food, not even for a day, not as an incident, but as a part of daily life; to live and just live with constant hunger; to be weak and getting weaker; to be depressed and becoming more so; life a daily torture, appetite a regret; hope growing fainter and the shadows longer day by day. It is hard for us, in Buffalo, to realize it. When I was in Poland only the very, very wealthy could obtain a sufficient amount of food, and that at famine prices.

As early as last May, when the Buffalo people were eating early vegetables, berries and fresh eggs, steak, fish, the necessities and many luxuries, beef in Poland cost seventy-five rubles a pound, flour twenty marks a pound, bread forty to eighty marks a pound, and a bushel of potatoes 600 marks. A mark is equivalent ordinarily to our twenty-five cent piece, but its value fluctuates and has been as low as four cents. When I was in Poland, it was worth ten cents, and, at this rate of exchange, potatoes in our money cost sixty dollars, a loaf of bread eight dollars and so on.

Is it to be wondered that hunger and starvation were on every hand, the working man and the in-

tellectual equally had to be hungry. A case of hunger edema has probably rarely been seen in America, but there they are common. Undersized, undeveloped, underweight school children are met on every side, and women looking like living skeletons, with protruding abdomens and extremities swollen to the extent almost of bursting, are found in great numbers.

Disease in epidemic form prevails in almost every section. Thousands upon thousands have died and are dying of typhoid, dysentery, typhus, and smallpox. I question if there is a communicable malady that has not a foothold. In the western end of Galicia, a part that escaped the terrible Russian invasion in 1915, 24,109 deaths from disease are recorded, cholera taking 17,195.

In the eastern part, lately Russian, in 1918, with imperfect and incomplete reports, there were 73,380 cases of typhus, and in January and February of this year, in three departments of Poland, having an area about the size of New York State, there were 18,337 cases of typhus. The Ministry of Public Health, taking reports from different parts of the country, estimated the number of typhus cases to be 250,000. In the district east of the River Bug, in the so-called Pinsk marshes, I, myself, saw between five and six thousand cases. Epidemic influenza known there as Ukrainian influenza, took thousands and thousands of victims.

It is interesting to observe how epidemics are given the name of the country they are supposed to emanate from. We recently termed influenza, Spanish influenza in consequence.

The Interallied Commission and the International Red Cross societies, which have given attention and intensive study to the matter, reported at a meeting held at Cannes, France, last spring, that there were more than 100,000 cases of typhus in the south and southeastern sections of Poland. The American representatives at this meeting included such men as State Health Commissioner of New York, Dr. Hermann M. Biggs, Dr. W. H. Welch, from Johns Hopkins University; Dr. Richards Strong, Dr. Snow, formerly of the State Department of Health of California, and now of the American Social Hygiene Association, and others.

This typhus epidemic was brought into Poland by war prisoners and returning refugees from the southwest who came with the Galician troops, that were demobilized on the Italian front and who afterward got beyond control and rushed home in disorder. The attending conditions were as deplorable as the consequences.

The tuberculosis mortality in Kracow, during the early part of this year (1919), amounted to 901 in a hundred thousand population, and the infant mortality 400 in a thousand births—both heavy increases—while the birth rate fell from forty in a thousand to 19.7. From all sections, the statistics show a high infant mortality and a greatly reduced birth rate. A comparison of present conditions in a few of the larger cities with prewar conditions is illuminating. In many places, the deaths outnumbered the births by four to one.

In the city of Zyrardow, a manufacturing city, on the main line between Warsaw and Kracow, and one

I am very familiar with, having visited there in 1900 and in 1910, gives the following: In 1913, the number of deaths to a thousand live births was 80.2; in 1917 it was 453.1.

In the city of Lwow (Lemberg), which I have already referred to, in 1913 there were 12,474 children born, while 7,380 individuals died, the ratio being about 59 deaths to 100 births. In 1917, the births fell to 2,149, while the deaths increased to 8,404, a ratio of 391 to 100. Similar instances, could be cited in city upon city.

As to infantile mortality, in many of the districts invaded by armies, not a child lived to see its first birthday, and in the case of children up to five years of age, as a comparison with the total mortality, it shows 51.2 per cent. in Minsk and 42.2 per cent. in Dobryn. and so on.

Figures are dry, but these represent a living horror and they cannot help but filter into one's sympathetic mind. Just a few more; for every 100 births in 1913, there have been, in 1918, sometimes as low as seventeen births, and in no community did it ever exceed seventy.

In relation to morbidity—the latter part of April, I was in Bendzin, a city with a population of about 80,000. Up to that time there had been 30,087 cases of typhus, 5,618 of typhoid, 1,522 of blood dysentery, and sixty-five per cent. of the population were alleged to be tuberculous. Trachoma, diphtheria, scarlet fever, whooping cough were all rampant, while chronic bronchitis and nephritis pervaded the population. I can truthfully say that a healthy individual was a rarity and the city was actually a pest house. The recorded deaths in 1918 from typhus were 2,853; from typhoid, 544; from dysentery, 373; all this is truly fearful.

In the city of Warsaw, for the first ten months of 1918, there were 11,023 cases of typhus, while in the county in which it is situated there were 15,891 cases and 1,501 deaths. While in Warsaw, during March and April of this year, I saw large hospitals filled with cases of typhus, typhoid, dysentery, and other communicable diseases, and the institutions absolutely destitute of everything to do with. In many scarcely a bed; no bedding, no linen, no underwear, not a drug—they were absolutely destitute of anything to medicate or provide care with, the pitiable sick burning up with fever and not an antipyretic.

While I was in Lwow (Lemberg) this year, to be exact during Holy Week, the latter part of April, the city was almost completely surrounded by the Ukrainians, and there were 1200 shots or shells sent into the place every day. I am reluctant almost to recount what I have seen, the horrors I have encountered, lest they may be seen overdrawn, but in further describing the situation I can say I have witnessed both Polish and Ukrainian soldiers brought in from the front with gunshot wounds passing completely through the chest, dressed with nothing but dried grass, and the only available hospital medication a solution of soap to cleanse the wound and followed by applications of paper bandages, there being no other material, no dressing, cotton, gauze, bandages, antiseptics or even anesthetics.

I have repeatedly seen amputations made of the upper and lower extremities, where the men had to be strapped down to the table to perform the necessary operation, not an anesthetic being within a hundred miles of the place. You can imagine the mortality from attending hemorrhage and shock and from subsequent conditions of sepsis. It was dreadful. In Brest-Litovsk, notorious as the place where the infamous treaty of peace between the Ukrainians, Bolsheviks, and Germans was signed, I have seen civilians, as well as troops, brought into so-called hospitals which were so only in name, and not worthy of the name, for they were merely old buildings containing neither sufficient or proper beds, bedding, drugs, nor dressings, and the men had to be laid on rotten straw and hay from abandoned camps—there was nothing else. The heroes and youths fresh from action, suffering from all manner of injuries and wounds, including those of the viscera, and many with added communicable diseases, such as typhus and typhoid, had, of necessity, to be brought to places such as these, scarcely fit for animals—there was nothing else.

These facts and figures are stupefying. One's sense of perception and realization becomes lost, and seems almost beyond our ability or powers of assimilation.

The organization of the Republic of Poland with General Piłsudski became an accomplished fact, to be exact, on November 18, 1918, and in its organization a Minister of Public Health was provided for. This fact is worthy of notice, not only on account of being a favorable indication in Poland under existing conditions, but in that it is a recognition of the importance of public health work as one of the great government functions.

The profession in the United States has for years advised a national department of public health with its head a cabinet officer. This was before public health work and sanitation had made such rapid strides, and before the different United States services, such as the Public Health Service and the auxiliaries of the Army and Navy had in a great measure met the indication. Public health is a nation's greatest asset upon which everything depends and what more logical than that it should be represented in the Council of the nation.

The scope of the work of this ministry includes the general control, supervision and administration of the sanitation of the country and factors bearing on the care and protection of the health of the people, the problems of social hygiene, laboring conditions, eugenics, population, distribution, and even the new compulsory health insurance, considered by some as the best method of maintaining health and happiness and a sane life for the people. Taken altogether, the program adopted is as ambitious as that adopted anywhere. The United States, itself, has no such program, and Poland's conception is in line with all her progressive aims.

I consider the part I have played in this work to be the most gratifying and illustrious in my public life. No greater honor could come to any one, than to have the opportunity of aiding in the organization of an administration for the health, development and happiness of 38,000,000 of people.

Ignace J. Paderewski is known to the world as a great musician, and as the premier and minister of foreign affairs for Poland, as well as being president of the cabinet. Through his friendship, which I have enjoyed and cherished during the past twenty-seven years, he has repeatedly invited me to become a member of the Polish government in the Ministry of Public Health. This flattering offer appealed to me strongly. The opportunity for doing so much for the country sadly in need of constructive administration for which I am specially adapted by experience; the opportunity for extending my reputation and to be known as an international personage was tempting, but under existing circumstances, and at the price of giving up my citizenship in the United States, I declined an opportunity which I feel comes to but few. I did, however, offer my services in organizing the ministry, in indicating the necessary sanitary work, and in preparing the laws. In this advisory duty I utilized the Federal and New York and other State laws and Buffalo municipal ordinances, and, to assist further, I furnished them with copies of the Public Health Service regulations and complete sets of various State laws.

The organization of the Polish Department of Health follows on the lines of the New York State and the Buffalo Health Department. It provides for a minister of health, administrator of the whole, who must be a medical man, and for a dividing of the country into a number of districts, each with a given number of counties and in each district a chief health officer analogous to a State health commissioner, and under him in each county a subordinate health officer in charge of county affairs.

I cannot speak of the part played by the American Red Cross in and for Poland without emotion, without mingled feelings of pride and gratitude and their mission and work there will ever be precious and a treasured memory of that appreciative but unfortunate and suffering nation. Their charity was without limit, their conception of duty of the highest, their efforts to mitigate suffering untiring, and through all the element of personal interest pervaded. The feelings of deep sensibility I am inspired with I can truthfully say pervades Poland and her people. The organization is now spoken of with a feeling of deep reverence, all of which is echoed in the public press, where it is referred to almost daily. The work of the Red Cross began on March 3, 1919, and has extended from the Baltic Sea to the Carpathian Mountains, from so-called German Poland east—to the river of Pripiet and even to the Dnieper, and the greater the indications, the greater the service.

The organization of the sanitary affairs of the country are so conceived as to stimulate the activities of the bodies of local selfgovernment, more particularly by helping them with advice, initiative, assistance and bringing at the present time food, clothing, drugs, and instruments, which are necessary, the ministry reserving to itself the right of control and inspection of all the local bodies in the sphere of the public health activities. It has the right of initiative and enforcement of all public health measures when neglected by inactive bodies. The sanitary affairs of the army are not under

the jurisdiction of the Ministry of Public Health, but are under the Ministry of War. The present surgeon in chief of the army, General Horodyski, whom I have had the pleasure of knowing for the past nine years, was formerly in charge of the medical affairs of the Austrian army in central Galicia, which is at present waging war on all four fronts, and, when the needs of the army are most urgent, the needs of the Polish soldiers must be taken care of first.

When I came to Poland and had my first consultation with the surgeon in chief and the army surgeons last March, I found that many of the regiments and divisions were without supplies of any kind in the line of drugs or instruments, and it was only through the valuable aid of the American Red Cross Commission to Poland, of which I was the medical counsellor, that they were enabled to obtain even such common drugs as quinine, morphine, carbolic acid, corrosive sublimate, potassium iodide, cathartics and various cough preparations.

The American Red Cross has done wonderful work. Great credit is due to the indefatigable work and aid rendered by the organization in Poland, and never will their interest in that unfortunate country be forgotten by the people of that nation. Their unbounded charity, their cordial aid, their desire to reduce the misery and the pain, especially in the frontier districts, and to help them in every possible way are beyond description. Even at the present day, the American Red Cross is functioning in Lithuania and in the north to Minsk and beyond in the northeast, east of Pinsk marshes and to the uppermost southern boundaries, reached by the Polish army. About 300 American Red Cross workers are engaged in this field of work, their number being added to by numbers of Polish nurses and assistants. The American Red Cross provides not only clothing, food, drugs, and medicines, but with their advice and unbounded energy and direction, point, guide and assist the unfortunate to rise from their condition. The self-sacrifice of the workers and their enthusiasm and personal interest in and for reborn Poland are invincible. They have brought material help and comfort and moral support, and have been an inspiration to hundreds and hundreds of thousands.

The organization operates through five large divisions. The first operates in the so-called Slonim district, east of Bialystok, under the direction of Dr. Emily A. Pratt, of Roxbury, Mass., and Lieutenant A. E. Marshall, from Washington, together with two Polish American nurses, trained under the direction of the Polish White Cross of America, under the presidency of Mme. Helena Paderewski, wife of the premier, Misses Barbara Krol and Isabel Wyszewska and seven Polish nurses and necessary orderlies from Poland. In the last few months, this division has not only provided the necessary clothing and food, but fitted out four military hospitals and several civilian hospitals. In the city of Slonim a civil hospital has been organized with 150 beds, and two smaller ones in Bitum and Dereczyn, two orphan asylums, each with seventy-five beds, have been founded in Albertyn and Zdzieciole. Thousands and thousands of refugees and returning prisoners, and thousands who have been

deposited of their homes and belongings have and are being helped.

The second division operates in the district from Kruzen to Pinsk and eastward, under the direction of A. G. Plankers, of St. Paul, Minn. As his chief aids, he has two Polish American nurses—Miss Frances Zalocka and Mrs. Frances Mikalojczak, the wife of Doctor Mikolajczak, now captain in the Polish army, and formerly a practising physician in the mining districts of Pennsylvania. These Polish nurses and several orderlies complete the personnel. They have founded an orphan asylum, a county hospital and a home for old folks in the old city of Kobryn, which is situated in the marshes of Pinsk, about an hour's ride east from Brest-Litovsk. In this district there have been established five orphan asylums, each caring for 850 orphans, a home for laboring people, and, in the eastern part, four orphan asylums. The military hospitals in Pinsk, Zabinka, Drohiczyn and Janowo have been completely fitted out with beds, clothing, underwear, dressings, drugs and subsistence. Large quantities of food and clothing were also distributed to returning refugees and prisoners of war.

The third division is operating in the district around Pruzany, under the direction of Captain E. C. Hartley, of Carbor, Minn. Two Polish-American nurses from Dunkirk, N. Y.—the Misses Mary and Anna Suchowska—are in charge of the nursing department. Their staff includes nine native nurses and the necessary male orderlies. Over 100 villages and settlements have been provided with clothing, food, and, additionally, with bathing facilities and soap. (Soap, as stated, has been almost unknown several years.) In this district, two hospitals have been completed, one orphan asylum outfitted, and in Bialowieza another large orphan asylum has been established. In the city of Pruzany, they have opened sewing rooms for women, where necessary material is provided free of charge, and in the city of Baranowicze, which, during the war, had been a battleground for months and months, a large station has been opened for the returning refugees.

The fourth division operates in the district around Bereza Kartuska. Captain C. T. Eklund, of St. Paul, Minn., and Captain Thomas M. Barber, of Charleston, W. Va., together with four Polish American nurses are in charge. Seventeen native nurses and the necessary help compose the personnel. Seventy villages are taken care of here, and provided with food and clothing and a large orphan asylum has been opened in Bereza Kartuska and other places with necessary hospitals and facilities. The fifth and last division operates around Minsk and Nowogrodek, under the direction of Dr. V. A. Murray, of San Francisco. She is aided by five American nurses and necessary native help. Five carloads of food and nine carloads of clothing have been distributed among returning refugees in this district, which suffered most terribly, and thousands and thousands of people still live in the trenches formerly marking the line of the belligerent forces. The American Red Cross sent three completely outfitted trains filled with necessary food to other districts, which have not received same before.

In Warsaw and vicinity a great number of hospitals, orphan asylums, homes for refugees have been

opened with American funds. It is almost unbelievable that this could be done within a few months. Thousands of American women work in Red Cross institutions, sewing clothing for the unfortunate.

Among things I observed was the great number of people who seem to be on the move. Great numbers of people left their homes when the various armies were approaching. They migrated to all parts of the country, and now they are returning to what is left of their former homes.

Railroad facilities are very limited and trains crowded beyond capacity, and even the open cars and what were formerly freight cars, are filled with humanity, each individual carrying with him all he possesses. We see baskets, paper packages, bags, and chests tied together and strapped to the backs of the unfortunate men, women, and children and every available space is occupied. The trains are indescribably wretched and filthy. I do not think I have seen more than two cars east of the Bug River which had anything like a window or a door, everything was knocked out, the openings during the cold weather being boarded up with sheet iron, tin, or boards. The trains move slowly over the rusty rails and worn roadbeds, dilapidated engines making slow progress.

Schedules are not maintained, nor could they be. It is necessary at times to break up and use some of the boxes to provide fuel for steam to enable the train to keep moving. Nothing, of course, can be obtained in what was formerly the buffets, because they are mostly all closed up or destroyed. Passengers must do the best they can. Had it not been for the efforts of the American Red Cross, who came to their aid and opened moving kitchens and provided soup and bread, hundreds and hundreds would have died on their way and almost on the threshold of what was formerly their homes. Hundreds of thousands of people move by foot, and the roadways are crowded with struggling, weak, wretched humanity.

In the latter part of March and early April, at the request of the Polish government, and with the authority of the American Red Cross, I went into the country east of the Bug River, where there was an absolute lack of every convenience and everything that would be indicative of a civilized country. There were no respectable hospitals—the one in Brest-Litovsk and the one in Kobryn were apologies for hospitals, and the two or three in Pinsk were nothing but abandoned houses, the floors of which were covered with old straw or hay. There a complete sanitary organization had to be created with delousing stations, not to mention isolation quarters.

While abroad, I traversed Poland from one end of the country to the other, was on all four frontiers and witnessed many actual battles. At Piotrowice, I witnessed the engagement between the Poles and Czecho-Slovaks, and on the River Notec with the Germans. I also took part in attending the injured from the battle front between the Bolsheviks and the Poles on the River Jasiolda near Pripet. For several days, I was in the city of Lwow (Lemberg) besieged by the Ukrainians, and saw thousands upon thousands of injured and sick. In

many places I spoke to physicians and the public on preventive medicine, and especially in regard to typhus and tuberculosis, and incidentally aided in organizing local sanitary departments; in all, I spoke in forty-two different cities.

I may state with authority that the entire available drug supply and the entire available sanitary supply of the whole country could be carried away in a single moving van. Hospitals have been located in various parts of the country, and delousing stations organized on the different frontiers to guard the troops from the danger of epidemics through infection by immigrants returning from the east and south. The better of these hospitals are provided with outpatient service for venereal diseases.

The Polish army of 100,000 men, under General Haller, which fought on the western frontier in France, was transferred in April and May to Poland. Their protection from detrimental influences was a responsibility and a problem of no ordinary character, considering they were obliged to be billeted on the country and the country itself made sanitary and acceptable.

In view, however, of the deplorable sanitary state of the country, one cannot for a moment lose sight of the general healthy condition of the country, inasmuch as there is a close association between the efficiency of the army and the sanitary well being of the people as a whole.

(To be concluded.)

RADICAL OPERATION FOR CHOLESTEATOMATOUS MASTOIDITIS*

With Dead Labyrinth, Facial Paralysis and Extradural Abscess, Complicated by Paralytic Ileus.

By OTTO GLOGAU, M. D.,

New York,

Visiting Otolaryngologist, Gouverneur Hospital; Attending Otolaryngologist, Beth David Hospital; Assistant Attending Otolaryngologist, Vanderbilt Clinic.

One of the most unpleasant events in surgery is the death of the patient after a successful operation. If the cause of death is a direct complication of the disease, for which the patient was operated upon, such as brain abscess or meningitis, following middle ear or mastoid suppuration, we bow our head before the inevitable laws of fate. If, however, the patient succumbs to an entirely remote, unexpected, and uncontrollable set of symptoms, we feel vanquished in the uneven struggle between surgical skill and Nature's dark forces. The case I wish to report is of interest to the otologist on account of the disease from which the patient suffered and the operation that was successfully performed upon him. The internist and pathologist, however, will concern themselves with that rare clinical entity that was the immediate and only cause of his death, viz. paralytic ileus.

CASE—Mr. J. B., aged sixty-one years, was brought to my office on July 31st. Past history:

* Read before the Section in Otolaryngology, New York Academy of Medicine, November 8, 1919.

From his earliest childhood, at irregular intervals, there was a discharge from the left ear. He did not remember having had any infectious disease. When fifteen years of age, he states that a paracentesis was performed upon him, and since that time he believed that he was totally deaf in his left ear.

There are cases known where a paracentesis led to injury of the promontory and inner ear with consequent deafness, especially among malingersers, who try to escape military service. But I am rather inclined to consider the patient's deafness *post hoc* and not *propter hoc*. He very likely had an acute exacerbation of his old middle ear suppuration, with retention of pus, which broke through the oval window into the labyrinth. This assumption appears justified from the patient's statement that at that time he also suffered from dizziness, severe headaches, and vomiting. A few months ago his wife noticed that the left side of his face became crooked. Two weeks ago the discharge from the ear suddenly stopped and the patient felt very weak and dizzy. He also complained of severe headaches over the left temple and mastoid region.

Present state: The patient is somewhat emaciated and is very weak, he can hardly walk. The left sided facial paralysis, embracing all three branches, is very pronounced. Local inspection reveals total destruction of the drum membrane and of all the ossicles. There is very slight discharge of foul, sanious odor. The promontory is covered by granulations and the oval window, being without the stapes, plainly visible. From the attic and antrum region there are hanging yellowish-white masses, doubtlessly cholesteatomatous matter. The left acoustic apparatus, upon tuning fork and voice tests, proves to be totally deaf. There is no spontaneous nystagmus present, and none appears upon caloric reaction. No fistula symptom is elicitable. Upon rotation of the left ear, thereby testing the right healthy labyrinth a horizontal afternystagmus of twenty-five seconds duration and directed to the right becomes evident. When rotating the right ear, thereby testing the labyrinth of the affected side, there appears a horizontal nystagmus of ten seconds duration and directed toward the affected side. We apparently have to deal with what Ruttin calls compensation in a totally destroyed and most likely ossified labyrinth. The slight nystagmus present is caused by the lymph movement within the external semicircular canal of the healthy ear. In such cases of compensation the lymph movement from the smooth end towards the ampulla is just as efficient as the one in the opposite direction. Normally, the lymph movement from the ampulla toward the smooth end is less efficient.

Over the mastoid tip there is severe sensitiveness to touch and above the attachment of the auricle also to percussion. The diagnosis of chronic cholesteatomatous mastoiditis with destroyed labyrinth and necrosis of bone (*vide*, facial paralysis) was made. Furthermore, a tentative diagnosis of extradural abscess was made, based upon the stoppage of the discharge and the meningeal irritative symptoms. Immediate radical mastoid operation was advised, to be followed later, if necessary, by intracranial interference.

I performed the operation on August 1, 1918, at the Beth David Hospital; Doctor Levbarg and the house surgeon assisted; Doctor Mayer administered the anesthetic. Ether was given exclusively and only in small quantity. The anesthetist adhered to the theory that in mastoid surgery only an initial dose is necessary to subdue the patient. The chiseling, in his opinion, has such sedative effect upon the brain tissues that only a few drops of ether are necessary to keep up the anesthesia, once the patient is under. The fact that only a little ether was used is important.

The regular semilunar incision, extending somewhat higher up, was made, and the periosteum elevated and retracted. The mastoid bone proved to be solidly eburnated. It was hard work to chisel away the densely sclerosed osseous tissue, that bore witness of an old chronic involvement. At the bottom of the sclerotic masses, three quarters of an inch from the cortex, there appeared, in the region of the antrum, a bulging grayish membrane. After its incision pus escaped under high pressure. The bone around this pocket of pus was chiseled and bitten away and the pus cavity seemed to reach upward toward the roof of the middle ear and *aditus ad antrum*. After the pus had been cleared away, the dura of the middle cranial fossa, at the roof of the tegmen tympani, appeared to be exposed to the extent of the size of a dime. The bony roof of the tympanum apparently had become necrotic and absorbed to that extent. The exposed dura was covered by granulations, Nature's protective barrier, which of course was left undisturbed. The grayish membrane, first detected, was apparently a limiting capsule thrown around the extradural abscess as a protective barrier. The posterior canal wall was then lowered, special care being taken not to injure the facial nerve. Starting from the attic, immense masses of foul smelling, grayish-white cholesteatomatous matter were seen encroaching upon the middle ear cavity. After cleansing out the latter from these debris, the facial nerve was found exposed in its course through the fallopian canal, just beneath the external semicircular canal and above the oval window. All ossicles, including the stapes, were missing. The invasion of the labyrinth had most likely taken place through the oval window. Due to the exposure of the dura and the involvement of the dura, the wound was not closed posteriorly. After the flaps had been attached, the cavity was cleansed and filled with plain gauze. A light bandage was applied.

The temperature before the operation was 103° but soon dropped to about 100°. The patient rested during the first night quietly and felt relieved. On account of the light dressing the blood oozed through and the dressing was renewed the next day and the wound was found in good condition. The symptoms of facial paralysis seemed to have entirely disappeared. Twenty-four hours after the operation the abdomen became extended and from now on the patient showed distressing symptoms pointing to this region.

As the patient had not urinated, he was catheterized by Doctor Levbarg and a small quantity of urine obtained. A saline enema was given with

good result. Up to this time both intestines and bladder could be made to work by artificial means.

At 9 p. m. of the second day following the operation the patient started to vomit. Bladder and abdomen were extremely extended. The patient complained of severe pains in the pelvic region. He could neither void nor urinate. Catheterization and enemas were tried several times, by different doctors (Doctor Levberg, Doctor Blaustein and Doctor Schwarz) with negative result. At 2 p. m., Doctor Levberg pierced the bladder by means of a trocar and removed a large quantity of urine. The abdomen became still further extended and the pains increased. On the evening of the third day Doctor Schwarz tried to catheterize the extended bladder with negative result. Withdrawal of urine by means of a trocar was resorted to. A catheter was left for two days in this artificial opening. On the fourth day the patient belched gas and vomited almost continuously. The abdomen became more distended and rigid. Hot applications, injections of strychnine, pituitrin, and urotropin internally were given. In the evening, a stomach lavage was given by Doctor Brody. In the night of the fourth day the patient showed great difficulty in breathing and complained of burning sensations in the epigastric region. On the fifth day the patient vomited brown fluid of offensive odor and expelled a great deal of flatus and greenish liquid. The difficulty in breathing increased.

Dr. G. A. Friedman was called in to see the patient and after a thorough examination made the diagnosis of paralytic ileus and also gave a bad prognosis. He ordered and supervised the treatment, consisting of stomach lavage, enemas, and catheterization. The mastoid wound was dressed three times during this period and found to be in excellent condition. On the morning of the sixth day, the general condition became very bad, the pulse rapid and weak and the temperature went up to 105.6°. Abdomen and bladder became immensely extended and the patient died, under continuous vomiting of a dark brown fluid.

AUTOPSY REPORT.

General: A man of sixty, markedly emaciated, showing no rigor mortis or postmortem discoloration. Over left mastoid there was a three inch surgical incision, filled with packings. Abdomen markedly distended.

Peritoneal cavity: Abdominal organs under great tension. On opening the peritoneal cavity, most of the abdominal organs came out. Surfaces were smooth and glistening, no free blood or fluid present. The entire gastrointestinal tract from stomach down to rectum was extremely distended, filled with fluid and gas. The musculature of the organs appeared thinned out, stomach dilated and very distended, and contained little fluid.

Liver: Slightly enlarged, anemic, on section surface was somewhat cloudy.

Gallbladder: Extremely distended, size of a small grape fruit, filled with bile; on pressure bile easily flowed out. There were no obstruction, no stones, musculature normal but thinned out.

Kidneys: Normal in size, capsules stripped easily, leaving a smooth, pale, cloudy, and finely granu-

lated surface. On section markings were obscure, cortex narrowed, parenchyma pale, and somewhat cloudy.

Adrenals: Pale, friable, and looked as if degeneration had been going on.

Chest cavity: No free fluid present, lungs normal in size, pigmented.

Right lung: Pleura firmly adherent to wall, base infiltrated with tubercles.

Left lung: Apex showed diffuse tuberculous infiltrations. These infiltrations were also present at the base, rest of lung normal.

Heart: Enlarged and somewhat dilated; pericardial cavity free of fluid; aortic valves thickened and filled with calcareous deposits.

Bladder: Normal, surface smooth and glistening, not distended.

Prostate: Both lobes equally enlarged and hard on section; it looked adenomatous.

Spleen: Small capsule thickened and wrinkled. On section, the pulp was soft and mushy.

MICROSCOPICAL REPORT.

Thyroid: Alveoli larger than normal, contained more colloid, probably of myxedematous origin.

Prostate: Full of amylaceous bodies indicating prostatic retention.

Brain: No hemorrhages, but there were a few focalized areas of subacute inflammation of unknown significance.

Stomach: Blood vessels congested.

Intestines: Blood vessels contained less blood than normal, otherwise no pathological findings.

Adrenals: No insufficiency.

Specimen: I was fortunate enough to obtain, through the courtesy of Doctor Jerskey, a specimen of the entire temporal bone. The erosion of the facial nerve, in the fallopian canal, beneath the external horizontal canal and above the oval window, was clearly visible. The exposed dura at the roof of the tympanum showed no gross changes, no perforation. The microscopic examination of the adjoining brain tissue, however, showed a focalized area of subacute inflammation. These were changes by contiguity. Had the subdural abscess lasted much longer, a sphenoidotemporal abscess would have been the consequence.

It may be there was some predisposition, and in this way the acute paralysis was the primary condition and what was generally considered the primary was the secondary through the pressure of the enormously dilated stomach upon the duodenum.

From the writer's knowledge of the literature, this is the first report of a case of mastoiditis complicated by paralytic ileus.

64 EAST NINETY-FIRST STREET.

Neoplasms of the Kidneys and Bladder.—Edwin Beer (*International Journal of Surgery*, December, 1919) emphasizes the fact that in tumor of the bladder and kidneys, malignancy can be cured if adequate care is taken to follow a well planned technic and, moreover, a permanent cure of benign papillomata can be obtained by proper use of the high frequency cautery method.

THE BLOOD PRESSURE VOGUE.

By D. NATHAN, M. D.,
Norristown, Pa.,

Captain, Canadian Army Medical Corps.

From the ponderous apparatus of Ludwig or Erlanger to the spring instruments of watch chain dimensions, from the seclusion of the physiological laboratories to the kit bag of the local physician, blood pressure machines have evolved and the finished product is now as much in evidence as are the reagents for making the simplest uranalysis, in the doctor's office.

That blood pressure is an aid in diagnosis is common ground, that high blood pressure has the significance given it by the general practitioner is debatable. Even if the instruments as yet perfected were infallible as a guide to exact blood pressure, there are still several factors to be reckoned with, e. g., local arterial conditions, local increased peripheral resistance, where the reading would not measure anything but the pressure of the blood stream passing through the vessel occluded by the cuff, besides a correct interpretation of the pathological condition responsible.

Again, the blood pressure taken from an artery direct differs from that taken with a cuff. This latter method, however, can be safely used as bearing upon actual pressure of the blood and when the figure is high or low we can be satisfied that the blood pressure is high or low. In the heart hospitals in England less account was taken of the blood pressure than of other clinical factors, and with as good results, I think. The forms later adopted by the Canadian Medical Board required taking the blood pressure when the pulse exceeded 90, and of course the faster the heart beats, other factors upon which blood pressure depends remaining the same, the blood pressure will rise correspondingly. I can say this, that in the examination of thousands of men, many of whom had spent most of four years in the trenches, high blood pressure was of little importance. Among these were cases of disordered action of the heart with blood pressure varying in many cases above normal, few men complained, many cases being discovered by the medical officer examining. Fortunately the battalion medical officer did not carry a sphygmomanometer which he could flash upon every Tommy on sick parade, else we would have had the high blood pressure neurosis to cope with.

It is unnecessary for me to go into the significance of variations from what has been accepted as a standard of normal blood pressure. I will say this, however, that very low blood pressure is always more dangerous than very high blood pressure, the former being evident without the use of a sphygmomanometer and suggesting treatment with better results. Of course it is possible to reduce high blood pressure temporarily, whether it is the result of chronic nephritis or of the idiopathic variety. The electrical manufacturers know and tell the physician all about this high blood pressure. The drug manufacturers make pills for the purpose. They also know how to cure it. If they did not know one might use some depressant in poisonous

doses, say aconite, or do as I have seen done in enteric fever in order to reduce temperature, paint the patient with guaiacol and then cover the part with oiled silk. Fall of temperature and blood pressure were concomitant with dissolution.

Blood pressure is something with which we are all afflicted; having no blood pressure, like an acid condition of the tissues, is incompatible with life. The object of this article is to obviate if possible the further development of a class of psychasthenics with obsessions of high blood pressure. I have had several of these latter and the mental condition induced by their concentration on the state of their blood pressure made them, even to a professional consoler, hard cases to handle. The doctor who diagnoses aloud the disease high blood pressure can rest assured that that patient will soon bestow his patronage upon some other physician, charlatan, or other of their ilk.

617 WEST MAIN STREET.

CLINICAL NOTES FROM FRANCE.

By CHARLES GREENE CUMSTON, M. D.,
Geneva, Switzerland.

SARCOID TUBERCULOSIS OF THE SKIN.

Sarcoid tuberculosis of the skin is a rather uncommon manifestation of tuberculosis, usually atypical in form and having a benign evolution. The lesions are multiple, seated in the connective tissue, and affect at times the form of distinctly limited nodules, at others cords or masses with more or less diffuse borders. They are hard, occasionally pruriginous but are more apt to be indolent and are encountered on any part of the trunk, head or limbs. Both sexes are attacked by the process.

The process particularly offers as a condition—which relates it to the class of tuberculides—that it is occasionally deprived of one or several characters of typical tuberculosis and in any case, has no tendency to ulceration or suppuration. The tubercle bacillus can only rarely be demonstrated in the lesions, while a positive tuberculin reaction is rare and still more so in experimental inoculation.

Generally speaking, cutaneous sarcoid tuberculosis usually begins slowly and insidiously and often it is merely by chance that the patient's attention is attracted to the lesions. At times a local red edematous swelling marks the onset of the process, at others more or less pruriginous macules or papules are the first manifestation. When once the process has become established, it is characterized by the presence of multiple nodular masses, isolated or not, seated in either the dermis or the hypodermis or in both. The nodular masses vary in shape but are usually round or oval and consist of a single mass or knotty cords or bosselated areas with an indistinct contour.

The size of a single nodule is variable, being from that of a pin's head to a pigeon's egg; they are hard, fibrous in consistency, quite like cartilage. They are often movable over the underlying structures, although Audry has reported a case where the lesion was adherent to the underlying periosteum, seated at any level in the dermis or hypoder-

mis, and for the most part are adherent to the skin which is tinged a wine red or copper rose color. Pressure causes the color to disappear.

When an attempt is made to pick up the adherent skin it will assume the aspect of orange skin. Usually indolent, the lesions may become sensitive to pressure or upon certain movements. Some very painful cases have been recorded. Cutaneous sarcoid tuberculosis may be met with anywhere on the body, but according to the various clinical types, the lesions have a predilection for certain parts of the cutaneous surface. The general health does not appear to be affected, the patient presenting the appearance of perfect wellbeing. The urine is usually normal, while both thoracic and abdominal viscera offer nothing pathological.

The evolution of the process is essentially slow and chronic without any tendency to generalization. When tumefaction of the lymph nodes exists, it is never marked. Following a traumatism the lesions may become painful and even slightly inflamed, but soon this subsides. Occasionally, but very rarely, mild suppuration may take place in the lesions and never lasts long.

Cutaneous sarcoid tuberculosis is almost always a benign and multiple morbid manifestation. This tendency to multiplicity is very slightly evident in certain varieties, but much more so in others. The majority of cases observed up to the present time have been mild and curable and, generally speaking, they are to be regarded as such, although it is to be recalled that Gougerot has described cases which acted like true malignant neoplasms and which answer to the conception that this lesion is a tuberculosis having a sarcomatous element.

The following classification of cutaneous sarcoid tuberculosis has been suggested by Gougerot in his lectures delivered at the St. Louis Hospital, Paris, and I here append his words textually from notes taken by Dr. R. Bonnaud:

"Cutaneous sarcoid tuberculosis, taken in the etymological sense of masses clinically resembling sarcomata, can be divided into several groups as follow:

"1. *Massive sarcoid tuberculosis*.—A mistaken clinical diagnosis is made with sarcomatous neoplasms and even the microscopic diagnosis is sometimes difficult to make. This first group is not well known and comprises at least two distinct forms: a. Hypodermic or muscular infiltration with tubercles forming masses composed of lymphoconnective or lymphoid infiltrates with epithelioid follicles, giant cells and degenerated caseous plaques—a massive tuberculoma in full activity; b, hard, sclerous tuberculomata, more or less limited or diffuse, histologically fibrous or fibrocellular, sometimes difficult to distinguish from fibrosarcoma, but in one case Gougerot was able to make out a typical tuberculous follicle at one spot which, of course, affirmed the bacillary nature of the fibrous mass and guinea-pig inoculation later on confirmed this etiological diagnosis.

"2. *Sarcoid tuberculosis with large hypodermic nodules*.—Clinically, limited or diffuse, recent or long standing, adherent or not to the skin which they may invade and exceptionally ulcerate, the cases be-

longing to this group comprise: a. Torpid tuberculous gummata, with a caseous centre, inoculable in the guinea-pig, never ulcerating, always remaining in the phase of an indurated mass. This variety is sometimes called Kraus's nodular tuberculosis. Gougerot has seen one case in an adult female, the lesion being on the thigh. The skin was involved, violet and pigmented and a diagnosis of sarcoma or lymphosarcoma was made. The lesion was excised, the wound healed *per primam* and no recurrence occurred. Microscopically, the structure was that of a caseous tuberculous gumma; no bacilli could be found in the sections but guinea-pig inoculation was positive. b. Sarcoid tuberculosis of the Darier-Roussy type, which, as is known, does not ulcerate the skin and histologically does not reach caseification. c. Sarcoid tuberculosis, Winkler's dermohypodermic type. Gougerot has seen an instance in a young girl with a lymphangioma of the abdominal wall. There were some twelve nodules seated on the abdomen, invading the dermis and depressing the skin and during the entire evolution of the process no ulceration of the epidermis occurred. No biopsy was made. d. Sarcoid tuberculosis, a form of transition toward Bazin's indurated erythema. One instance has been met with in Gaucher's clinic.

"3. *Sarcoid tuberculosis closely resembling lupus*.—For no reason this condition has been called lupoid tuberculosis by Darier. a. Sarcoid or lupoid tuberculosis of Boeck, a disseminated dermic lesion with very numerous elements, red violet and indurated at the onset, soft and orange colored later on, ulcerating only exceptionally. b. Dermic sarcoid tuberculosis. c. Sarcoid tuberculosis with a single lesion, resembling a massive lupus by its softness and the red orange color of the distinctly limited patches. Histologically the patch has at times a typical follicular structure like lupus with a negative result by experimental inoculation; at others the structure is lymphoconnective with rare tuberculous follicles and nevertheless, in one instance inoculation was positive. Therefore, these lesions resemble a limited massive lupus or Boeck's single sarcoid. d. Dermic sarcoid tuberculosis resembling a leproma from its yellow hue and elastic consistency. Gougerot has seen one case. One of the lesions was situated on the face: it was indurated, chondroid on one of the edges and ulcerated on the inferior segment. Histologically it had the structure of a follicular tubercle; no Hansen bacilli were found. e. Sarcoid tuberculosis with violet colored nodules resembling sarcoma or lymphosarcoma.

(To be concluded)

LETTER FROM SIBERIA.

IRKUTSK, November 13, 1919.

In Prague in 1912 I was studying the physiological effects of systematic exercise upon the mind and body. I had seen the well developed gymnasts from France, Italy, Belgium, Luxembourg and the sokols from Servia, Croatia, Slavonia, Slavakia and even the Juanks of Bulgaria. At that time we had no idea what might happen; our American sokol teams of Czechs and Slovaks gave proof of their

ability. On my return home to United States the Balkan war broke out and the Czech units of surgeons and physicians, hoping to help their Slavic brethren, returned hurriedly to their native land. Some of the American students went with them at the time and soon discovered the ability and technical superiority of the Czech surgeons. Some of these were professors from the University of Prague, and the others were medical students who worked as their assistants. The experience gained showed that war furthered the progress of the healing art. All branches of the Czech medical service had been benefitted and the sympathies of the Slavic world were certainly on the side of those who came in the time of need. Even the Bulgarians were grateful for the humanitarian acts of the Czechs. In many respects the service rendered was superior, as in first aid, in the use of ambulances and sanitary trains, mass inoculations, prevention of disease, wound sterilization, and in various branches of orthopedic surgery. They scored a victory even in the typhus and cholera epidemic, in dysentery and relapsing fever. They finally returned home to Bohemia well satisfied with the work done.

In 1914 when the Great War broke out the Czech surgeons and physicians were obliged to go against their will with the Austrian regiments. The Slavic soldiers, especially the Czechs and Slovaks, joined the Russians or Serbians at the first opportunity that was presented, demonstrating to the Allies that these men were willing to help crush Austria. Where foreign legions were formed the Czechs, Slovaks, Poles, Russians, and Serbians joined in the fight against their common enemy, Austria-Hungary and Germany. Many came from the United States and Canada. In Russia the Czech and Slovak prisoners soon organized their own regiments. The Czech surgeons and physicians were active in this movement, doing their best to help the newly formed Czecho-Slovak army. They fought with the Russians, and when the old czar's régime went to pieces, they joined the progressive revolutionary element of great Russia. Difficulties, prejudice, and misunderstanding of all kinds were encountered and different obstacles removed.

About a year ago we came to Siberia, traveling in the path of the brave Czecho-Slovak army. We saw the soldiers all along the line of the Siberian Railway. We inspected the hospitals along the entire line. We observed the medical and surgical work done in the railway cars or *teplushkas*, as they call them. We visited the base hospitals in larger cities, Cheljabinsk, Petropavlovsk, Tomsk, Krasnojarsk, Omsk, Irkutsk, and Vladivostok, and the first aid stations near Tajschet, Novo Nikolajevsk, and Jizni Udinsk. The medical service of the Czech army is well organized. Colonel Haering, who was with us in Serbia, is one of the well known Czech surgeons. Among his colleagues are Colonel Foustka, Richter, Girska, Sramek, Knap, Smetana, Boucek, Janda, Prasek, Panka, and Jindra. They have been placed at various stations along the line and have had medical students as assistants. All the surgeons and physicians of the Czecho-Slovak army are well educated and well liked by their men. Male nurses are

employed in the respective wards of the hospitals. Some female nurses are employed. They are recruited from the Russian Sisters of Mercy, an organization of volunteers from the better and more intelligent classes of the local population along the route of the army. The male nurses are called *sanitars* and those who have some medical knowledge are named *felchars*.

Their pharmacists have a better education than American druggists. They are better versed in many languages, especially Latin, and are able to fill the prescriptions of all nationalities and military authorities in Siberia. They have many advantages over the Americans, who are obliged to have interpreters. We have been working with them right along, showing them American methods. All of the hospitals from Omsk were evacuated in time during the retreat, as well as our hospital in Cheljabinsk, which was closed in July. The patients were all saved and brought on sanitary trains to Irkutsk and further along the line.

Colonel Haering, the chief in Irkutsk, made the following statement: "In 1914 our surgeons were noted more for quality than for quantity, and it was necessary for us to work hard, for purposes of temporary relief. We frequently met the Americans and they were of great help to us. Our losses from March, 1918, to June, 1919, were as follows: Killed in battle, 1,361. The heaviest losses were in the month of August, 261. In February there were only two deaths. Died from wounds, 232. The greatest number in June, forty-eight; in March, two. Six hundred and twenty-three died from disease, ninety-seven in March and only thirteen in July. Sixty-three men committed suicide. From April 1, 1918, there were 4,272 patients in our hospitals. There were also 4,272 cases of infectious disease. There were 5,906 venereal cases under our care, including 2,488 cases of syphilis. Fifteen per cent. of the men had neurasthenia and this did not include the cases of melancholia and insanity. There were 1,543 cases of scorbutus from January to June, 1919. Of these 933 occurred in June.

It was very hard for this army, for they fought constantly as they retreated towards Vladivostok. There was no ammunition for the soldiers nor supplies for the sick and wounded. There were few physicians. There were many mistakes made, but when we consider the situation and the terrible surroundings, too much could not be expected.

In röntgenology the Czechs have proven themselves proficient, and for this reason there existed a remarkably small degree of preventable deformity in healed cases. At present the Czecho-Slovaks are absolutely neutral, serving the Allies as best they can. Their surgeons knowing the value of exercise, simple calisthenics and gymnastics, play and light athletics, and the psychology of the wounded soldiers still under military control and the necessity of the curative workshop, with the beneficial results of electricity, massage, bone graft and tendon operations.

I am on my way to Vladivostok, and will soon have the opportunity of writing to you again.

J. RUDIS JICINSKY, M. D.,
Captain, A. R. C. Siberia Commission.

Editorial Notes and Comments

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TODAY AND TOMORROW.

In our combat with disease we have found few medicaments or methods of treatment that are completely satisfactory. At times, as in the last epidemic of influenza, we are forced to acknowledge a complete defeat. Again, in relation to other diseases, such as yellow fever, typhus, and small-pox, we assert our mastery. Under certain conditions even these diseases gain a foothold and demand a number of victims, but on these occasions the fault cannot be attributed to the medical man but to certain social maladjustments, when men fling aside the benefits that civilization has been able to provide while they wallow in slimy trenches or fill lousy huts, in their struggle for bread or that they may more advantageously kill their neighbors with whom their diplomatic servants have arranged quarrels.

Throughout the cycle of human affairs, under conditions of prosperity, when medicine reflects a smug existence prevalent among the people; during war times, selecting the men for battle, guarding their health and healing their wounds, and then in the struggle for survival during the dull aftermath in a provision depleted world, with famine, pestilence and epidemic stalking among the inhabitants, luring them to misery and an early death—the physician is present.

We see nations starving and suffering while we are comfortable and well fed. The readers of the NEW YORK MEDICAL JOURNAL have been shown a picture of the conditions in Poland as seen by

a physician. The beginning of the story will be found in this week's issue of the NEW YORK MEDICAL JOURNAL. The story is not an exaggeration. It gives a glimpse into what is going on throughout most of the countries in Europe. In once gay Vienna waxy faced, dull eyed children want for milk and clothing. Throughout Turkey, Russia, Armenia, Germany, Austria, and the Balkans the people are hungry most of the time. Countless millions have been made to suffer for the sins of the military leaders who sought glory on the field of battle and plunged the whole of Europe into distress and misery.

And always the people turn to the physician for aid. He can often see the etiological factors which have produced the unnatural and deplorable condition, but he can do little to aid. Perhaps the lesson will be learned more quickly by the physicians who throughout their training have been taught to link the chain of cause and effect. Perhaps in the councils of the future the people will seek their advice as a prophylactic measure instead of entrusting their destinies and their lives to groups of senile statesmen who can only see one aspect of civilization; who create disputes that they can maintain their hold on a useless existence for a moment longer.

It is difficult to give a résumé of the interdependence of economics, politics, evolution, and medicine of the world's civilization. This has been accomplished by Trotter in *Instincts of the Herd in Peace and War*. This small book should be read with care by every physician interested in the welfare of society and in the wellbeing of the people.

Leaving the destinies of the world in the hands of a few myopic, greedy statesmen has proved a failure. Their ignorance, personal fixations and the maladjustments of their personal lives which have been reflected in their actions, has cost the lives of millions of men and women. Their unwillingness to look beyond their mirrored council chambers and acknowledge their former errors has brought about the suffering and gloom which pervades the greater portion of civilization today. It would be well if the physicians of the world, acting upon the evidence which they have at first hand, could step outside of the small circle which convention has built about them and interest themselves in the bigger task of healing a crushed and broken world; perhaps the ruling old men will lay aside their scepters long enough to consult the medical men of the world and ascertain the true state of affairs. Or it may be that their successors will

be more progressive and realize more clearly the necessity of a consultation. There is just a bare possibility that the victims will tire of the great game and insist, though ever so blindly, on a change which will no longer leave them as tattered pawns at the end of a great struggle; insist on a change when they themselves will have a voice regarding their own destinies.

THE PROFESSION IN ONTARIO.

Has the profession of medicine in the Province of Ontario fallen upon evil days? Is the government of that province alive to the interests of the people? Is it properly impressed with the importance of maintaining a high standard of excellence in the medical profession, not only in morals but in education? These are questions of the most vital significance, and medical men in Ontario are asking one another, "What does it all mean?" The medical bill to provide for a new medical practice act, for reasons apparent to no one, has been allowed to drift. The Ontario temperance act, which closed the bars and liquor shops, tends to bedevil the profession and is a most annoying measure to the faculty. They would be glad to be rid of it. They do not wish to be authorized by act of parliament to prescribe liquor for medicinal purposes. They gained that right when they were licensed to practise by the Ontario College of Physicians and Surgeons and became members of that body. Some have been hauled before the courts and heavily fined for breaches of the act. Others have seen their practices decline through it. Still others have been disciplined by the Ontario Medical Council, and suspended from practice from three to twelve months. All are possessed of a certain amount of fear in exercising their privilege. To practice upon the sick successfully the doctor must have a clear and untrammelled mind; if not, then the patients suffer. This is not good for the people at large.

The appointment of a young and inexperienced laboratory man, be he ever so competent in research, to be wholetime professor of medicine in the University of Toronto, with unlimited powers in the choice of the staff in medicine, has occasioned deep grumblings and rumblings. These have resounded through the halls and wards of the Toronto General Hospital, an institution closely associated with the clinical and laboratory work of the medical student. Some excellent and experienced men have resigned never to take up clinical teaching again. Toronto is not supremely blessed with proficient teachers in medicine at the present time. Death, sickness, and overseas and military service have caused a thinning in the ranks. Many men

profess to see disaster to a great institution which a few years ago counted its able clinicians almost by the scores. The government must look alive or they will have both hospital and university tumbling about their heads. That medicine has not yet arrived at the time when the experimenter takes superscience over the clinical diagnostician and the therapist, many aver, the laboratory man to the contrary notwithstanding. Thayer, in his address before the Canadian Medical Association (*Canadian Medical Association Journal*, September, 1919) says: "All the new methods of research, however clean-cut and valuable their results may be, are of use only if they are exercised by one who has mastered them by practice and experience." Further: "Physicians forget that laboratory reports are in few instances final, that their value depends in great measure on their relation to the clinical aspects of the situation—that at every point the human element comes into play." And still further: "One of the most important duties of the professor of medicine is to give his personal attention to the students who are for the first time approaching the patient. It is at this point in the career of the student that the wise and experienced clinician can exercise his most important and lasting influence." There is the *multum in parvo*—the wise and experienced clinician.

URIC ACID AND THE PURIN BASES.

In order to estimate the dose of uric acid with any degree of precision it must be made in weight after crystallization resulting from a quantitative preparation, according to Salkowski's technic, but this procedure only aims to determine the dose of uric acid. The procedures of indirect valuation by volumetric silver doses give the proportion of uric acid and purin bases, expressed in uric acid. The results which they give are always higher than those obtained by Salkowski's procedure and one may by difference, form an approximate estimate of the content of purin bases other than uric acid by comparing the two results. The excellent and rapid procedure devised by Denigès is the one which lends itself the best for these estimates, while at the same time one can carry out both operations with the same specimen of urine, with a single precipitation. Kruger's procedure offers no advantages over Salkowski's, while Denigès's copper volumetric method offers fewer guarantees from the viewpoint of total precipitation of uric acid and, therefore, cannot take the place of Salkowski's technic. The procedures based on the formation of ammonium urate all give an incomplete precipitation of uric acid, while the procedures of estimate by oxidation of uric acid by potassium permanganate are sub-

ject to too many variations to be classed among precise technics, and even Ronchèse's method does not improve the latter condition in any marked degree.

Therefore, among all the procedures so far described there is only one which offers some guarantees of precision for determination of the dose of uric acid, namely that of Salkowski. As to the purin bases an approximate valuation can alone be made and that by the difference obtained between the results of Salkowski's technic and those obtained by Denigès, which gives an approximate estimate of the total amount of uric acid and the purin bases. In reality, the operation is carried out on amounts almost always less than one gram in twenty-four hours, that is to say about fifteen hundred cubic centimetres, so that the most trifling mistake assumes a very great importance. Consequently, a procedure should be employed which in itself will offer the greatest degree of precision, but this procedure has yet to be found. It may be nevertheless said that from what we now know of the purin bases they should be estimated *en bloc* as this would be more accurate both from the physiological and pathological viewpoints.

A NOTE ON THE HISTORY OF DIABETIC GANGRENE.

In his work on human anatomy, the first edition of which appeared in 1713, Cheselden for the first time mentions the occurrence of boils and carbuncles in diabetic subjects. In 1770, Frank, in his *De curandis hominis morbis interpretationes clinicae*, alludes to the same facts, while Manuel Pereira Garço, *Trado do Diabetes*, Lisbon, 1806, points out that diabetic patients often suffer from ulcerations on the legs. Beardsley of New Haven is said to have stated that diabetic patients suffer from abscesses and that their limbs are often cold, livid and numb. Demours stated that these lesions were caused by the use of antiscorbutic syrup which these patients were given at the early part of the 19th century. Duncan thought that in two of his diabetic patients who died from a phlegmon of the arm following blood letting, scrofula was the cause. Latham, von Stosch and some others pointed out the frequency of cutaneous lesions and infections of the connective tissue and bones in diabetic subjects, but up to 1839, no writer had mentioned gangrene or any special type of necrosis in relation to this affection, and it appears to have been Monneret who for the first time mentioned pulmonary gangrene in a diabetic in a paper published in the *Archives générales de Médecine*, 1839.

On February 1, 1845, a discussion took place at a

meeting of the Pathological Society of Dublin, in which Carmichael, Marsh, and Adams took part, *à propos* of several cases of senile gangrene in diabetic patients and they distinctly questioned whether there was a real relationship between this process and diabetes. In 1852, Marchal (de Calvi) presented his report to the Academy of Medicine of Paris in which he unmistakably showed the relationship uniting glycosuria with gangrene and in the same year Hodgkin, before the Harvey Society of London, mentioned the part played by diabetes in the etiology of certain gangrenous processes, but the paper was not published until 1854. Hodgkin merely referred to the fact, while Marchal studied the subject in all its aspects and replied categorically to the question put forward in 1845 by the Pathological Society of Dublin. After this the cases multiplied; among the most important contributions to the subject being due to Dionys de Canières, 1852, Gallard 1857, Wagner 1857, Fraconneau-Dufresne, 1858, and Alquié, 1861. Then in 1866 the Imperial Society of Surgery of Paris held its ever famous discussion on surgical intervention in diabetic gangrene, a subject which has held the attention of the surgical profession to the present day and which has not been placed on a solid foundation until within the last few years.

BRITISH CONSERVATISM.

The *Lancet* of London announces that "arrangements are being made by the Royal Army Medical Corps to train men not over twenty-one years of age as pharmacists, dispensers, dental mechanics, x ray, mental and laboratory attendants, as well as masseurs, opticians, nursing orderlies, and hospital cooks. The engagement will be for the customary period of seven years. The uncertainty of the future may deter some from entering, but the civil medical profession will greatly gain from a supply of trained technical assistants." In view of the fact that the British Army had an opportunity to observe at close range and to profit by the excellent work done by the pharmaceutical corps of the army in France, in Italy, and even in Australia, it is surprising to note that no step is being taken to profit by the observation and experience gained, and introduce a pharmaceutical corps in the British Army. Instead arrangements are being made to train pharmacists, cooks and masseurs, a grouping which pharmacists outside of Great Britain would resent. This failure to appreciate the true value that a pharmaceutical corps would be to the army is all the more incomprehensible in view of the fact that the head of the chemical warfare service of Great Britain, the late Lieutenant Colonel Harrison, was himself a pharmacist. This is but another instance of the ultraconservatism of the British.

So far as any actual change is concerned our own service, however, is not much better off than the British. It is true that the Surgeon General

has recommended that provisions be made for a medical service corps which will include commissioned officers who are not physicians, but unfortunately he proposes that these commissions shall only be issued to men who have served for five years as enlisted men, a provision which will effectually exclude the better type of pharmacists, bacteriologists, and technical assistants whose scientific training would be of great value to the service. Such men cannot be expected to undergo five years of service as enlisted men. It is to be hoped that Surgeon General Ireland will modify his views so as to leave himself free to appoint at least a few men of high scientific attainments in the proposed medical service corps.

MEDICINE IN JUGO-SLAVIA.

The Jugo-Slavs recognize the importance of science and hygiene in the development of prosperity and social wellbeing. This people, just achieving life as an individual state, decimated, impoverished by the war, and composed of a population in which the citizens are in the minority, is already busy in the restoration, the enlargement, and the establishment of universities and hospitals, according to a writer in the *Presse Medicale*. How it will equip these institutions and keep them going is another problem, for material and money are equally lacking, but the Jugo-Slavs have faith in the future—and in the Allies, avers the correspondent. At Zagreb (Agram) a faculty of medicine is growing rapidly. There, gathered in the first two years of study, are 200 Serbian students and 600 or 800 Croats, Slovenes, and people of kindred nationality. The language of teaching is Serbian, to the exclusion of German, which is banned even in the preparatory schools. The list of professors, which is not yet complete, includes: M. Mickulicic, department of experimental medicine and pharmacology; M. Perovic, department of anatomy; M. Sarnith, department of histology; M. Smelouka, department of physiology; M. Zivitch, preparator.

Beside the Hospital des Souers, Zagreb possesses an orthopedic hospital with equipment for electrotherapy and mechanotherapy, where there is apparatus for prosthesis and the care of Austrian wounded, and a bacteriological institute directed by a student of the Pasteur Institute, M. Gutschy, who has installed there an antirabic service. At Belgrade they are actively at work on the reconstruction of the university, which suffered particularly from bombardments. This city possesses: 1. A ministry of public health with a minister, an inspector, and a director. 2. A surgical hospital directed by M. Soubotitch. In connection with the hospital there are an institute of pathological histology directed by M. Milovanovitch, and a wing for tuberculous women and children, directed by an English woman doctor, Miss McNeill. 3. A general hospital, the first floor of which is given over to venereal and cutaneous diseases, directed by M. Zujovic. 4. A military hospital with a wing for diseases of the eye, a wing for otorhinolaryngology, a dental service, and a bacteriological laboratory. 5. A *Goutte de Lait* which will be directed by M. Gau-

tier. 6. A museum of natural history and ethnology. The people are intelligent and enthusiastic; their mind is naturally drawn toward medical science, which remains for them a little mysterious but in which they divine a benefit for the amelioration and the wellbeing of the race.

Obituary.

HORATIO C. WOOD, M. D., A. M., LL. D.,
of Philadelphia.

Horatio C. Wood, the noted therapist, died at his home in Philadelphia on January 3rd at the age of seventy-nine. For many years he had been a semi-invalid. His death was the result of pneumonia which he contracted December 28th. Doctor Wood received the medical degree from the University of Pennsylvania in 1862. He received the degree of LL. D. from this university as well as from Yale and Lafayette and the A. M. degree from Swarthmore.

He was professor of botany at the University of Pennsylvania from 1866 to 1876, and professor of therapeutics from 1876 to 1907 and at various times was editor of *New Remedies*, *The Philadelphia Medical Times*, the *Therapeutic Gazette*, and the *United States Dispensatory*. He was a member of the National Academy of Sciences and president of the pharmacopœia convention of the United States 1890-1910, and also of the College of Physicians of Philadelphia in 1902-1903. He was the author of many well known books, including *Nervous Diseases and Their Diagnosis*, and *Brain Work and Overwork*. In 1902 he was appointed to the high post of the representative of the United States to the international medical conference, which met in Brussels.

WILLIAM S. GOTTHEIL, M. D.,
of New York.

Doctor Gottheil was known for his works on dermatology. He was born in Germany in 1859 and died at his home on January 9, 1920. He received the degree of bachelor of arts at Cornell in 1879 and the medical degree at the College of Physicians and Surgeons in 1881. He became professor of dermatology in the New York School of Clinical Medicine and was a frequent contributor to the *NEW YORK MEDICAL JOURNAL* for a number of years. He was an active member of the Medical Society of the County of New York.

CHARLES MCINTYRE, M. D.,
of Easton, Pa.

Dr. Charles McIntyre, former president of the American Academy of Medicine and editor of its bulletin, died January 4th at the age of seventy-two years. He was born in Philadelphia on August 30, 1847. He graduated from the Lafayette College and from the medical school of the University of Pennsylvania. He became an instructor in chemistry and lecturer on sanitary science at Lafayette College. He served as secretary of the American Academy of Medicine.

News Items.

Gift to Yale Medical School.—The Yale Medical School has received a gift of property valued at \$200,000 for general endowment, by the will of the late Mrs. Levi Shoemaker, of Wilkes-Barre, Pa.

Professor Röntgen Resigns.—Professor Röntgen, the discoverer of the x ray, who has reached the age of seventy-five, is reported to have resigned from his post as lecturer at Munich University and as director of the Physical Institute.

No Sugar for Hospital Patients.—More than eight hundred patients in the Willard Hospital, New York, the Kingston Avenue Hospital, in Brooklyn, and the Riverside Hospital at North Brothers Island were reported to have been almost without sugar for some time.

New Medical Diploma in England.—A diploma in "medical radiology and electrology" has been instituted by the Universities of Cambridge and London, to be granted to qualified medical men who attend a course of theoretical and practical instruction at either of the universities named.

New York Association to Aid Newly Blinded.—The New York Association for the Blind has issued a statement saying that one of the fundamental purposes of the organization was to help newly blinded men and women adapt themselves to the changed conditions that blindness imposed.

Harvey Society.—The Harvey Society announces that the sixth lecture of the series will be given Saturday evening, January 24th, at the New York Academy of Medicine, by Dr. Carl Voegtlin, professor of pharmacology, U. S. Public Health Service, on Recent Work on Pellagra.

Doctor Noguchi in Mexico.—Dr. Hideyo Noguchi, of the Rockefeller Institute for Medical Research, has landed at the port of Progreso, from which he will proceed to Merido in order to carry on studies of his discovery of L. icteroides and to try on a larger scale the curative properties of the specific serum prepared by him.

Home for Influenza Orphans.—The Rochester Catholic Charities' Aid Association announces the establishment of an infants' home and day nursery, to be known as the Anna Wilkin Nursery in honor of a donor's bequest. The influenza epidemic created the need for this home, which will care for twenty children.

Chair of Anesthetics.—The University of Cincinnati has under consideration a recommendation made by Dr. John C. Oliver, acting dean of the medical school, that a chair of anesthetics be established in the university. If the committee reports favorably, this university will be one of the first in the country to establish such a chair.

Reappearance of Typhus in Serbia.—Typhus has again made its appearance in Serbia and Albania. Failure to use proper sanitary precautions are revealed in districts where typhus was thought to have been stamped out. The American Red Cross has sixty-two nurses on duty to combat a recurrence of the epidemic which swept the Balkan States last year.

Genitourinary Clinics Resumed.—Dr. A. L. Wolbarst has resumed the genitourinary clinics given Thursday evenings at 8:30, November to March, inclusive, at the West Side Dispensary and Hospital, 328 West Forty-second Street, New York. Interesting cases may be brought for diagnosis and conference.

Hospital School at St. Louis.—The City Hospital school for convalescent children and those able to move about was recently opened in St. Louis, under the direction of the board of education. Each morning the doctors say who may go to school, and those who are confined to bed but not suffering badly are given bedside instruction.

Boston Physician Amnesia Victim.—An amnesia victim who was locked up in the jail at Lambertville, N. J., as a vagrant has been identified by his son as Dr. John L. Brand, a retired physician of Boston. Doctor Brand, who is a native of England and an Oxford graduate, was rescued from the jail by a Lambertville minister, who perceived that the "vagrant" was out of the ordinary.

Services in Honor of Doctor Osler.—A notable gathering of members of the medical profession and other friends of the late Sir William Osler attended services in his honor on January 1st in Old St. Paul's Church, Baltimore. The services were held at the same hour as the funeral services in England. The trustees, faculty, and student body of the Johns Hopkins University were represented, as well as the nurses of the training school and officials of Johns Hopkins Hospital, the Medical and Chirurgical Faculty of Maryland, and the Baltimore City Medical Society.

Red Cross Relief Funds.—Out of a fund of \$30,000,000 available for its work this year the American Red Cross has set aside \$15,000,000 for European relief, \$13,750,000 for use at home, and \$1,250,000 for completing its program in Siberia. Dr. Livingston Farrand, in making public the plans of the Red Cross for carrying forward peace time activities, is said to have stated that a considerable reserve must be held for emergency calls incident to such possible events as the opening of Russia. Obligations to service men and their families must be provided for, while the Red Cross must be ready at the same time to meet relief demands due to disasters.

Personal.—Dr. Joshua H. Leiner has been appointed an adjunct attending neurologist to the Lebanon Hospital, New York.

Dr. G. Kirby Collier, formerly assistant superintendent of Craig Colony for epileptics at Sonyea, N. Y., has opened offices in Rochester for the practice of neurology.

Dr. A. Lebendig, formerly chief of the x ray department, U. S. Army Base Hospital 208, Bordeaux, France, has resumed practice in Rochester, N. Y., limiting his practice to röntgenology.

Dr. Nelson W. Janney, of New York, has been appointed director of the new Memorial Laboratory of the Santa Barbara Hospital.

Dr. Ralph B. Seem, of Baltimore, assistant superintendent of the Johns Hopkins Hospital, has been appointed superintendent of the Billings Memorial Hospital, Chicago.

Medical Association of the Greater City of New York.—This association will hold a stated meeting Monday, January 19th, at 8:30 p. m., in Dubois Hall of the Academy of Medicine. After the election of officers the following papers will be read: The Incidence of Malignancy in Diseases of the Bladder, by Dr. John F. Erdmann; Carcinoma of the Colon, by Dr. George H. Smeken; The Röntgen Ray as an Aid in the Diagnosis of Carcinoma of the Colon, by Dr. Harry M. Imboden. Dr. Charles H. Peck, Dr. Charles N. Dowd, Dr. Howard Lilienthal, and Dr. John E. Jennings will participate in the discussion.

Automobiles Must Be Quiet.—At a meeting of the New York city board of health on December 17th, the following resolution was adopted:

Resolved, that Article 12 of the Sanitary Code be amended by adding thereto a new section to be numbered "229," to read as follows:

Sec. 229.—Automobiles and Other Motor Vehicles; Loud and Explosive Noises Prohibited.—Every automobile or other vehicle equipped with a gasoline or other internal combustion engine in which a gas is generated or used for the purpose of propulsion, shall be constructed so that the exhaust from such engine is made to discharge into a muffler or other device which will prevent loud or explosive noises; and no person having the management or control of any such automobile or vehicle, or operating the engine thereof, shall cause, permit, suffer or allow the exhaust from such engine to discharge into the open air, or otherwise than into a muffler or other device which would prevent loud or explosive noises.

Prize Offered for Model Tenement.—In an effort to improve housing conditions in New York slums, prizes aggregating \$6,000, have been offered by Vincent Astor, Alfred E. Marling, president of the Chamber of Commerce, and the New York Foundation for the best plan of transforming a typical block of slum tenements, according to an announcement made by the State Reconstruction Commission.

The winner must develop a plan of remodeling which will attract landlords by assuring increased income with the least possible outlay, providing for sightliness, sanitation, fire protection, ventilation, better lighting, privacy and recreational spaces.

Would Make Kings County Hospital Equal to Bellevue.—Commissioner of Charities Bird S. Coler, of New York, is engaged on a plan to make Kings County Hospital the equal in every way of Bellevue. The two chief improvements proposed are the building of a \$1,000,000 maternity hospital and the removal of the Home for Aged and Infirm to the 400 acre farm owned by the city at Sea View, Staten Island. Commissioner Coler will request an appropriation of \$1,000,000 for a 200-bed maternity hospital to be built near the centre of the hospital grounds. Dr. John F. Fitzgerald, general medical superintendent, is quoted as urging the removal of inmates of the Home for Aged and Infirm to the Staten Island farm on the ground that the air and location there are more favorable. A special committee has been appointed to inspect the Sea View site and make a report. The Kings County Grand Jurors Association has taken under consideration the condition of the hospital, with a view to bringing about improvements, and has appointed a committee to consult with Commissioner Coler.

Medical Society of the State of New York.—The annual meeting of the Medical Society of the State of New York will be held March 23rd, 24th and 25th in New York city, with headquarters at the Waldorf-Astoria. The house of delegates will meet Monday afternoon, March 22nd in Hosack Hall of the New York Academy of Medicine. This meeting will last through Monday afternoon and evening and complete its work, including election of officers, Tuesday morning. On Tuesday afternoon the scientific sessions will begin. These will be held at the Waldorf-Astoria and the McAlpin. A new feature of the scientific session will be the inauguration of a section in neurology and psychiatry. The various scientific sessions will continue all of Wednesday and Thursday morning. The open meeting of the society will be held Tuesday evening, March 23rd, in the ballroom of the Hotel Pennsylvania, and the banquet will be held Wednesday evening at the Waldorf-Astoria.

New Tuberculosis Association Formed in New York.—The antituberculosis work in New York city which, for the past seventeen years, has been thoroughly and energetically carried on by the Committee on the Prevention of Tuberculosis of the Charity Organization Society, has been taken over by a new and larger corporation, the New York Tuberculosis Association, Inc. All the members of the old committee including such prominent workers in the tuberculosis field as Dr. Hermann M. Biggs, State commissioner of health; Dr. Royal S. Copeland, health commissioner of New York city; Dr. Lee K. Frankel, Dr. S. S. Goldwater, Mr. Thomas W. Lamont, Dr. S. Adolphus Knopf, and others are members of the board of directors of the new association.

The objects of the association are: The study of tuberculosis and of the means of preventing it; the dissemination of knowledge as to the nature of the disease, its causes, methods of prevention, and treatment; the promotion of adequate facilities for the prevention of tuberculosis and for the care, treatment and economic rehabilitation of persons afflicted therewith, and the coordination of the work of public and private agencies engaged in any of the foregoing activities.

A broad program of education, publicity, preventive work among children, of home treatment and aftercare, coordination of existing clinics and of relief agencies, will be developed by experienced secretaries. A novel addition, in cooperation with the Federal vocation board, will be the opening of a workshop where, under the best sanitary conditions and medical supervision, arrested cases of tuberculosis will be restored to productive capacity under healthy surroundings.

Dr. James Alexander Miller is the president of the association and Mr. Homer Folks is the vice-president. Dr. John S. Billings, long connected with tuberculosis work in New York City, is the director. Among the secretaries so far appointed are: Mr. G. J. Drolet, statistician; Miss Gretta Jones, relief organizations; Mrs. Josephine Toering, tuberculosis dispensaries; Mr. E. C. Rybecki, labor; Mr. David Ryan, publicity.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

Importance of Physical Therapy.—William Seaman Bainbridge (*Military Surgeon*, December, 1919) states that the lesson of reeducation, learned by bitter experience during the war, will have been in vain unless the principles are applied to civil life. It has been computed that 14,000 industrial accidents with permanent disablement took place every year in this country, and the average age of those persons injured was between thirty and thirty-five. For the five years ending December, 1917, a total of 16,526 workmen were killed and 49,000 injured in our mines and quarries. For the same period the railroads killed 48,801, and injured 931,764. In New York State during the year ending September 30, 1914, there were reported a total of 88,314 nonfatal accidents. It has been estimated that at least three quarters of a million casualties occur among wage earners every year and not less than a half million persons of working age suffer from permanent vocational handicap.

The scope of physical therapy is not restricted to the treatment of those injured in industrial work, or by accidents, but may be used for treatment in many other pathological conditions and of various defects resulting from disease. The suggestion is made that civilian hospitals in time of peace shall have departments fully equipped for the employment of physical therapy, so that they can be utilized not only for the treatment of the injured but also, as far as may be possible, secure a maximum of physical efficiency among the general population. No patient recovering from a serious wound, surgical, or otherwise, should be discharged until every effort has been made to send him out in as sound a condition as possible. Prior to this war it had been the custom to discharge the patient with as little delay as possible. Prolonged immobilization of a joint injury or fractured limb is by no means the best treatment from the viewpoint of the future usefulness of the limb. Early mobilization has preserved the utility of many wounded men.

The surgical experiences during the war have shown that the necessity for amputations has been considerably lessened. Every large hospital and especially those in which surgical cases are treated, should be supplied with the necessary apparatus for using all of the essential forms of physical therapy, with perhaps curative workshop treatment best adapted to speedily restore the patient to physical fitness. This is an economic asset in peace and of value to the country in time of war. The war showed that in every civilized country an undue proportion of its adult population were unfit or suffered from some physical defect. Perhaps the majority of these defects could be remedied by judicious treatment and scientific training. The general population of the countries at war in Europe have undergone a course of physical training. The same thing occurred in this country, to a certain extent.

It is also suggested that civilian hospitals shall be so equipped in time of peace as to be more quickly available by the government in an efficient condition for military service in the event of war. The experience in the war has been that it is difficult to increase the scope of civil hospitals for military purposes without a disorganization of the institutions. The attempt to utilize the civilian hospitals resulted in a great deal of confusion, in difficulty in the treatment of cases and in a mixing of the records. There must be more hospital beds in time of peace—ready for war time emergency—than in the past. Other observers believe that these plans should be carried out solely by the army and navy. The civil hospital is no longer an establishment merely for the care of the sick and injured, but has become in addition a teaching institution. In former years military posts were isolated in such a manner that it was impossible for the medical officer to come into contact with his colleagues in civil life or keep in touch with civil hospitals. Today the situation is changed. In Germany the problem of prompt and efficient cooperation between military and civilian hospitals has been fairly well solved and there will be a tendency to copy the methods in vogue there.

A third suggestion is that military hospitals, both temporary and permanent, shall be equipped in such a manner during peace, that when utilized in time of war the maximum medical and surgical efficiency can be obtained. The equipment for physiotherapy has been far too meagre. It is advocated that lay workers be trained in physical therapy, in passive and active movements and in various forms of applied exercises. If physical therapy is to be conducted with success, trained lay workers must be relied upon. The military hospitals equipped in this way could offer the facilities of the physiotherapeutic department to civil hospitals for the treatment of suitable cases. If this were done the treatment could be taken over by the military hospital when required. The results of the proposed equipment and treatment in military hospitals during the war should be:

1. The retention in active service of the effective and the elimination of the noneffective.
2. The prevention, as far as possible, of disabling aftereffects of wounds.
3. The restoration of useful soldiers to the Army and sailors to the Navy for active service in the shortest time possible.
4. A minimum of civilian inutility by the limitation of disability, by means of treatment and reeducation of men who cannot be cured completely, thus preserving as far as possible their capacity for work in the future.
5. An economy to the State not only through reduction of pensions but also because men, through treatment, will be rendered selfsupporting and a help rather than a burden to the community.

Treatment of Bone Cavities.—Walton Martin (*Annals of Surgery*, January, 1920) states that it has long been recognized that cavities and tunnels in bone, when opening on the surface of the body, heal slowly or not at all. The cavities result from opening circumscribed pyogenic abscesses in long bones, from removal of local tuberculous foci, from curetting away new growths, from excision of bone cysts, and in chronic hematogenous osteomyelitis. In infected compound fractures, especially gunshot fractures, complicated cavities and tunnels result. The external or subperiosteal callus encloses one or more detached necrotic fragments or sequestra, and this casing of new bone is analogous to the involucrum of chronic hematogenous osteomyelitis. In the process of healing in a bone cavity granulations form over the entire cavity, but the rigid bony walls do not permit the drawing together of the granulating surfaces. The skin at the margin of the cavity begins to turn in and a thin layer of epithelium dips down over the granulations. Shallow grooves and cavities may become covered in this way, but in larger cavities, after a certain advance, the epithelium no longer grows; little new bone is formed beneath the granulating area and the cavity remains unchanged.

Healing can only occur if, beneath the granulating surface, new bone or new connective tissue is formed, and thus the level of granulations is gradually raised until the cavity is filled and the skin heals over the surface. Healing rarely occurs in this manner. The most satisfactory method of dealing with a cavity with rigid walls is the removal of such portions of the bony wall as will permit the soft parts to come in contact easily with the remaining underlying bone. This calls for the conversion of the cavity into a gutter. It presupposes complete removal of all foci of osteitis and every morsel of necrotic tissue or sequestrum, in many instances a formidable and extensive operation. In bone cavities in close proximity to a joint, the removal of the roof and side walls with the idea of allowing the soft parts to fall in, may be almost impossible or necessitate a difficult flap or plastic operation with damage to sound tissue. In certain tunnels following compound fractures, the removal of all the bone on one side of the tunnel leaves the shaft weak and with poor mechanical support. There is extraordinary power of bone regeneration in young subjects after the removal of large portions of the shaft, and even evidence of formation of bone from connective tissue aside from any osteoperiostic activity. Infection has often impaired the osteogenic properties of the cells. We do not know what the favorable conditions are for the transformation of connective tissue to bony tissue. Nor are the conditions causing exhaustion of the reparative processes known. For the last fifty years there have been numerous attempts to secure healing by plugging the cavity rather than by obliterating it. Gypsum, copper amalgam, gutta percha, various cements, bismuth paste, and absorbable materials, such as sterilized pieces of sponge, rolled up catgut, starch, and iodoform, decalcified bone chips, and other materials had been used. These results were not satisfactory.

In local suppuration in bone, if the cavity is exposed and one of the walls cut away so that there is no overhanging roof left, the soft parts can be brought together and the skin sutured. The cavity fills with blood which is gradually replaced with new formed tissue. This method is most satisfactory for small chronic, localized abscesses surrounded by eburnated bone.

In treating bone cavities the following conclusions may be drawn:

1. That complete removal of all the infected bone lining the cavity, of all foreign bodies, and of every particle of dead bone is essential.
2. That in the great majority of cases the cavity must be obiterated to insure healing.
3. That this is most satisfactorily accomplished by the removal of sufficient portions of the wall of the cavity to allow the soft parts to fall in and fill it up.
4. That in certain tunnels and cavities near joints some form of plugging may be indicated.
5. That of many materials used as plugs the free fat transplants present real advantages.
6. That the two stage operation, with careful sterilization of the cavity under bacteriological control, following the Carrel-Dakin technic, is of great value.
7. That in small chronic bone abscesses in the ends of long bones with attenuated infection no filling or intermediate sterilization is necessary.

Combined Wounds of the Thorax and Abdomen.—Anselme Schwartz and Jean Cluënu (*Paris médical*, October 18, 1919) note that a wound at the base of the right half of the thorax may involve the liver, right kidney, and hepatic flexure of the colon; a wound on left side may involve the stomach, spleen, splenic flexure, and left kidney. The injury of the diaphragm is the most salient clinical feature of such wounds, favoring not only the penetration of infection from one serous cavity to the other but also the production of a diaphragmatic hernia. The presence or possibility of an abdominal wound indicates immediate surgical treatment in these cases as in any other abdominal wound. Besides, the injury to the diaphragm must be repaired at once to prevent or cure hernia, and the chest injury may itself be sufficiently extensive to demand an emergency operation. Operation, then, should be postponed in wounds of this general type only when one is certain that the chest alone is involved. The authors refer to various disadvantages attending the operative procedures hitherto recommended, and describe their own technic in these cases. Beginning at the wound of entrance an incision is made along the corresponding intercostal space to the lower margin of the thorax. The wound of the parietes is dealt with, the chest opened, and the pulmonary lesion examined and treated according to requirements. Penetration of the wound into the abdominal cavity having been confirmed, the chest incision is prolonged in the direction of the umbilicus as far as seems necessary and the peritoneal cavity opened. The cartilaginous margin of the thorax is now severed with the knife and the diaphragm split down to the wound in it. With this procedure all organs in the upper portion

of the abdominal cavity can be carefully examined and any injuries found repaired. Finally, the diaphragm and cartilaginous margin of the thorax are painstakingly sutured, and the abdominal and thoracic incisions then closed with or without drainage, according to indications. Where the wound orifice is in one of the last two intercostal spaces, which are usually open anteriorly, there is no cartilaginous margin to cut, and the incision is continued in a straight line across the abdomen. Where the wound is in the fifth or fourth interspace, too much cutting of ribs would be required, and it would seem preferable to deal with the chest wound first, close it, and perform a thoracotomy lower down, in the seventh interspace. A posterior situation of the wound of entrance does not interfere with the technic as first described.

Treatment of Central Luxation of the Femur.

—Royal Whitman (*Annals of Surgery*, January, 1920) discusses the treatment of fracture of the base of the acetabulum with penetration of the femoral head, uncomplicated by extensive fracture of the pelvis or injury to its contents. The cause of the injury is usually direct force applied to the trochanter, the immediate penetration being increased in some cases by subsequent weight bearing. The physical signs are often overlooked at the time of the accident. The prominence of the trochanter is lost. The limb is somewhat flexed, adducted, and slightly shortened. There is a fair range of flexion and extension, but rotation is limited and abduction is almost completely restricted on account of the contact of the trochanter with the acetabular rim. Sensitiveness and other evidences of local bruising of the tissues are usually present and movements of the limb are painful. The lesion is often diagnosed as a contusion. Pain is increased on weight bearing and is reflected down the inner and posterior region of the thigh, caused by pressure on the nerves passing in the neighborhood of the displaced femoral head.

The diagnosis is usually established by the x ray some months after the injury. It may be mistaken for a pelvic tumor. The methods usually employed for reducing the fracture are not successful for permanently reducing the displacement. These are forcible manipulations under anesthesia or the application of traction, either longitudinal or combined with a lateral pull. After a time accommodative changes relieve the pressure on the nerves and increase the mobility of the new articulation. The practical indication in treatment is to assure a sufficient range of abduction, which from the functional viewpoint, is of far greater importance than the reduction of the dislocation. In following the treatment the patient, after anesthesia, is placed on a pelvic support, provided with a perineal bar, the two extended limbs being supported by assistants, who draw the patient firmly against the perineal bar. The sound limb is then abducted to the normal limit to fix the pelvis. The other limb in the extended attitude and under manual traction is then gradually and forcibly abducted, if practicable, to the normal limit, which should indicate the complete withdrawal of the head of the pelvis, and in this attitude a plaster spica is applied extending

from the line of the nipples to the knees. The plaster spica must be retained for several months, locomotion being permitted as soon as it does not increase discomfort. Displacement is impossible in the abducted attitude. After the support is removed, the limb must be passively abducted to the full limit at frequent intervals, until the patient has gained voluntary control of this movement.

This treatment is designed primarily for uncomplicated cases, in which the natural mechanics may be utilized. If the pelvis was so fractured that effective leverage could not be employed because of the lack of a resistant fulcrum, one would attempt to secure a sufficient degree of abduction by direct manual traction combined with gentle lateral movement of the limb. If immediate treatment is possible the head may be disengaged by direct manipulation. Under ordinary circumstances this is not possible. The range of abduction depends on the distance between the trochanter and the acetabular rim, and is determined by their apposition. Complete abduction indicates complete disengagement of the head. If the resistance is so great that the head cannot be withdrawn by natural leverage, an osteotomy below the trochanter is indicated, since the purpose of the treatment is to secure and retain a sufficient range of abduction for functional requirements. If a sufficient range of abduction is attained by the manipulation, its retention can be assured by fixing the limb for a sufficient time to permit the accommodative changes of the tissues. The abduction method may be applied in all obscure injuries of this region, as for fracture of the neck of the femur, since it is the only effective method of adjusting and fixing the fragments. The treatment has the further advantage that immediate correction is supplemented by an aftercare conducted with a definite aim and guided by physical signs.

Adequate Reduction and Care in Colles's Fracture.—Frederic J. Cotton (*Boston Medical and Surgical Journal*, December 4, 1919) has observed many unsatisfactory results in Colles's fracture and found in nearly every one the trouble has been the failure to recognize and handle the backward rocking of the distal fragment, which, as long as it persists, makes proper reduction of the ulna impossible. In this fracture the damage may be expressed as a rotation backward of the hand about the ulnar head as a fixed point which tears the ulnar ligaments loose and also breaks the radius. The hand is displaced, with the radial fragment, up and back in toto to a varying degree, but always with the hand displaced backward and the associated tilting backward of the lower radial fragment. Cotton's method of reduction is to reverse, in reducing, the mechanism of the production of the deformity. In other words, if the ulna is the fixed point about which the hand is displaced, to make it the fixed point about which one reduces; if the hand is displaced in extension, to reduce it in flexion; if it is displaced in a rotation of supination about the ulnar head, to reduce in pronation. The older methods of reduction aimed almost exclusively at a carrying forward of the lower fragment on the upper; the new matter is, after the obvious displacement of the radius is corrected, then to carry the hand about

the ulnar head as a fixed point into pronation and flexion. A good deal of force is directed up under the ulnar head, a strong force flexes the hand, and a twist of the whole hand about the ulnar finishes the work. For retention the average splints are often inefficient. Position is best held in flexion, and flexion is best held in plaster, preferably applied as stripsplints of eight to ten layers of plaster of Paris bandage, one on the back from elbow to finger knuckles, one in front from upper forearm to palm, these caught with a few turns of plaster bandage. Watch carefully against interference with the circulation, if necessary slitting the plaster along the side after a day or two. The flexed position is abandoned after a fortnight, and straight splints are then worn for a week.

Subcutaneous Injections of Milk in the Treatment of Milk Intolerance in Infants.—E. Weill (*Presse médicale*, October 18, 1919) writes concerning cases of so-called digestive intolerance, characterized by vomiting after each feeding or after the majority of feedings, with crying before the vomiting, and evacuation of the greater part of the milk ingested. Vomiting may occur either immediately after feedings or later. In some children there are six to eight bowel movements a day, with erythema of the pelvic and crural regions, even where the children are exclusively breast fed. In other instances obstinate constipation is the main difficulty. Nervous symptoms, such as crying, restlessness, sleeplessness, and a convulsive tendency often accompany the digestive disturbance. The condition as a whole occurs independently of any congenital lesion or infection of the digestive tract, and is not incompatible with a relatively good state of health. Weill encountered within six months over thirty cases of this nature in exclusively breast fed infants and in eleven infants given mixed feeding. The condition is ascribed to some form of anaphylactic disturbance. Clinically, it was found regularly amenable to "vaccination" through subcutaneous injection of a small amount of the badly tolerated milk. Breast milk is injected if the child is breast fed, and cow's milk, if such milk is being used. In mixed feeding, alternate injections of the two kinds of milk are given. Cow's milk from any source will remove the difficulty from other cow's milk, but the author does not yet know whether this applies also to breast milk from different women. The therapeutic milk injections are given beneath the skin on the sides of the abdomen. Sometimes swelling and inflammatory reaction follow in the neighboring tissues. Absorption occurs in two or three days, and is at times accompanied by an echymotic discoloration. In the cases with the most pronounced local reactions are seen the best and most lasting therapeutic results. Sometimes an injection is followed by sharp pain, coming on two to four hours after the procedure and lasting the same number of hours. Breast milk injections rarely induce fever; cow's milk raises the temperature for a few hours. Repeated injections, given at intervals never exceeding two or three days, caused slight anaphylactic shock in two instances, with some coldness of the lower extremities. At first, ten or fifteen mls of milk were injected, but such doses, though harmless,

proved unnecessarily large. In one case, unassociated with visible digestive disturbances, two injections of less than one ml of milk checked permanently severe attacks of laryngeal spasm in a child one year of age. The usual milk injection is now five to ten mls. If improvement is not pronounced, second or third injections are given at two day intervals. In all reinjections Besredka's method is employed, one half ml of milk being injected first, then two mls one hour later, and five to ten mls three hours later. These antianaphylactic precautions are especially indicated if milk intolerance should recur after a considerable interval of relief. Breast milk to be injected is first boiled or heated to 110° C. Cow's milk is similarly treated for twenty minutes. All steps in the procedure should be carried out under strict asepsis.

Citrate Blood Transfusion.—Richard Lewisohn (*Presse médicale*, October 15, 1919) describes the technic of citrate blood transfusion as practised by him, after experience in 200 cases. He divides the indications for the procedure into four groups, viz., hemorrhagic disorders, anemias, operative cases, and septicemia. Hemophilic tendencies in children can, it seems, be corrected completely and permanently by a single blood transfusion. The most striking results have been obtained in melena neonatorum. When such a patient is brought to the hospital almost exsanguinated, usually on the second or third day after birth, an intern is at once sent to secure 100 mls of citrated blood from the mother. Blood testing is unnecessary, as the maternal blood never causes hemolysis in the offspring. Upon injection of the blood into the median cephalic vein through a fine cannula, hemorrhage stops at once in the great majority of cases. Results in purpura are not nearly as satisfactory as in hemophilia. Intestinal hemorrhages are sometimes so alarming as to indicate immediate transfusion. In hemorrhage from gastric ulcer, operation should follow the procedure to prevent recurrence. In all severe cases of typhoid fever a donor should be kept at hand even before there is any sign of hemorrhage. The same applies in all operations on patients with cholemia, e. g., in the presence of stones in the bile duct, pancreatitis, etc., many lives could thus be saved. In ruptured ectopic gestation, transfusion immediately after operation greatly improves the chances of rapid convalescence. Hemorrhage following operations on the kidney, bladder, stomach, etc., is frequently arrested by transfusion, without secondary operation. In traumatic hemorrhage, thousands of lives were saved by transfusion during the recent war. In pernicious anemia, transfusion, while not curative, may prolong life and temporarily check the rapid progress of the disease. In leucemia it is of little value, but in primary or secondary anemias, excellent results are sometimes obtained. Transfusion on the day preceding operation should be often employed in patients weakened by prolonged illness. Post-operative transfusion will similarly accelerate convalescence in debilitated patients. Very acute forms of septicemia are not benefited by transfusion; in subacute and chronic septicemias, however, transfusion might with advantage be widely used.

Miscellany from Home and Foreign Journals

Tetanus Among the Wounded in 1918.—C. Sieur and R. Mercier (*Bulletin de l'Académie de médecine*, October 21, 1919) present statistics based on 150,000 wound cases. Among the patients admitted to hospitals in the front or fighting zone, comprising both the patients so severely wounded that they could not be transferred elsewhere, or for only a short distance, and the minor wounds followed by rapid recovery, the incidence of tetanus during 1918 was but 0.06 in a thousand. Among the patients admitted in the intermediate zone, i. e., patients with wounds of moderate severity, transferred some distance behind the line, the incidence of tetanus was 0.19 in a thousand. Finally, among the patients transferred to the zone of the interior, the average incidence was 0.3 in a thousand; sometimes it exceeded this figure, but it never reached one in a thousand. The marked improvement in results as compared to the high incidence witnessed at the beginning of the war is ascribed not only to more systematic and earlier injection of tetanus antitoxin and the institution of a regular supply of antitoxin to the front line medical units, but also to a more rapid removal of the wounded, improved surgical technic in the treatment of wounds, and a more systematic removal of all embedded missiles. Even in army units operating at full capacity the ratio of tetanus cases never exceeded 0.3 in a thousand.

Toxic Effects of Fibroid Tumors of the Uterus.

—R. R. Higgins (*Surgery, Gynecology and Obstetrics*, December, 1919) concludes from a review of the work done in the study of fibroid tumor, that some of the complications are serious and demand attention. The absorption of toxins incident to the growth of fibroid tumors may account for changes in the heart muscle which frequently occur. The frequency of nervous symptoms, the relatively large number of cases of infection of the kidney, secondary to even small fibroids, all point strongly in favor of this theory. Weakness of the cardiac muscles is frequently associated with uterine myomata. The characteristic lesion is a brown atrophy of the heart muscle, and fatty degeneration is present when profuse hemorrhage accompanies the growth. Some of the deaths in these cases may be attributed to shock and exhaustion but in a number of cases death was caused by preexisting cardiac and cardiorenal changes. No particular form of cardiac degeneration can be attributable to myomata, but it is logical to conclude that fatty degeneration is the most frequent change. Arteriosclerosis is frequently found. In some cases a clinical weakness of the heart muscle only was found. The patient may have to be kept at rest for several weeks before operation can be attempted.

The symptoms of the nervous system are frequently overlooked and when found are given scant consideration. Some individuals are more susceptible to toxic absorption and this accounts for the wide variation in mental impairment which may result. The toxicity incident to a disturbed thyroid secretion is markedly increased by a growing fi-

broid. Urinary disturbances are frequently encountered. Pressure may account for it, but in many cases casts, albumin, and pus occur when there is no pressure. Persistent treatment, including irrigation of the kidney pelvis, failed to cure the infection. In some instances the urinary symptoms persist after the removal of the tumor. This may be due to the involvement of the deeper kidney structure and removal of the kidney may be necessary. It may be that a more careful observation of the character of the cells, the lymphatics, and blood vessels in these so-called benign growths will lead to a better understanding of this subject.

The Scarlet Fever Wave of 1919.—Stanley H. Osborn (*Boston Medical and Surgical Journal*, December 4, 1919) gives the following as what we know about scarlet fever: 1. The incubation period is from two to five days with a maximum of eight days. 2. The infective germ or agent is present in the nose, throat, ear, and suppurating gland discharges for about twenty-eight days after the onset of the average case, and on this fact the quarantine period must be based. 3. As long as a sore throat or body discharges exist in a case of scarlet fever, the patient should be considered capable of transmitting the disease. All persons who have been in contact with a case of scarlet fever may become sick at any time within eight days after the last contact. In regard to the control of scarlet fever the following points are made:

1. Quarantine of the sick patient should be carried out for twenty-eight days from the onset of the disease and thereafter until infective discharges from the nose and throat, ear, and abscesses, have ceased.

2. All school children should be excluded from school for eight days after contact with a scarlet fever case, unless they are immune by having had the disease previously.

3. A daily medical inspection of schools where a scarlet fever case has appeared is the best single method to clear a school of scarlet fever, for mild and beginning cases will be detected and proper precautions taken. The inspection should exclude from school each child who has a sore throat, a discharge from the nose, or ears, suppurating glands or abscesses, and may be carried out by the school physician, or trained public health nurse.

4. The daily followup work by the school nurse, investigating absentees, will disclose mild cases at home who have no physician in attendance, and who because of the mild character of the disease might return to school while in the contagious stage and infect others.

5. No person should be allowed to handle milk or food after exposure to a case of scarlet fever until the maximum incubation period has elapsed or permission has been obtained from the board of health.

6. No persons whose occupations bring them into contact with children, such as a teacher who has been exposed to scarlet fever, should return to work without permission from the local board of health.

Etiology of Tubal Pregnancy.—G. Brown Miller (*Surgery, Gynecology and Obstetrics*, December, 1919) presents a factor in the production of tubal pregnancy not mentioned in textbooks. He cites the case where a period is missed and the woman attempts to bring it about by the introduction of foreign bodies into the uterus. After an interval she exhibits the signs and symptoms of a tubal pregnancy, which is confirmed by operation. He concludes that there is a causal relation between the taking of oxytocics and the other measures employed in the production of an early abortion and tubal pregnancy. He argues as follows:

1. Impregnation can occur just before a menstrual period.

2. The length of time between the fertilization of the ovum and its implantation in the uterine cavity is generally given as between seven and nine days, but it may be longer.

3. Anything which interferes with the passage of the ovum along the fallopian tube is recognized as a cause of tubal pregnancy; tumors in the uterine wall, torsions of the tube, chronic salpingitis, and other conditions are causes of tubal pregnancy.

Certain drugs, as well as the introduction of foreign bodies, produce contractions of the uterine muscles. These contractions interfere with the passage of the fertilized ovum down the tube and tend to produce tubal pregnancy as is the case in attempts to bring on an early abortion.

Diagnosis of Tuberculosis of the Kidney.—Daniel N. Eisendrath (*Southern Medical Journal*, November, 1919) gives the following as the most important data upon which to make a diagnosis of renal tuberculosis.

1. *Bladder symptoms.*—Increased desire to urinate, at first often at night, but later diurnal; painful urination, concomitant with the frequency, which gradually becomes more and more severe; incontinence or great irritability as the bladder involvement progresses.

2. *Kidney symptoms.*—A dull ache or recurrent colicky pains on the affected side, or on both sides in bilateral involvement. Enlargement of the kidney is a very unreliable finding. The same is true of tenderness over the diseased kidney. Rigidity is found only when the perinephric tissues have been invaded.

3. *Fever.*—There is little as a rule unless there is a mixed infection or a sudden retention.

4. *Urinary findings.*—Pyuria may be present except in cases of closed pyonephrosis, or in the early stage of mixed infection. Hematuria may be the first symptom or may appear with pyuria at intervals. Tubercle bacilli can be found in the urine in eighty per cent. of the cases by the Forssell or Crabtree methods.

5. *Cystoscopy and ureteral catheterization.*—This is the most important single method. Unless changes specific of tuberculosis are found in the bladder it is best to suspend judgment until the urine obtained by ureteral catheterization has been studied by culture and staining methods.

6. *Pyelography and x ray.*—These yield much information as to the changes in the renal pelvis and parenchyma.

Dakin Solution.—W. W. Harper (*International Journal of Surgery*, December, 1919) differentiates the real Dakin solution from other alkaline solutions as follows: To twenty c.c. of solution add two grains of powdered phenolphthalein. There is no reaction with true Dakin's solution, while an intense red color develops in other alkaline solutions. The clinical appearance of a wound cannot be trusted for the purpose of closing. Wounds may appear to be the same and yet one have a half per cent. while the other has a two per cent. infection. If these two be closed, one will give a perfect result while the other will result in failure.

Relation of Endothelium to Purpura, Angioneurotic Edema, and Allied Disturbances.—E. C. Thrash (*Southern Medical Journal*, November, 1919) says that so-called idiopathic capillary hemorrhages, purpura, angioneurotic edemas, petechial hemorrhages, all result from the changing from flattened tubeforming structures to mitotic globular cells for the purpose of defending the economy against an invading enemy in the form of chemical, bacterial, animal, or endogenous poisons, and in this way disintegrating the capillaries, arterioles, and venules, leaving them in such a state that through their walls serum may transude to produce edema, red cells may pass out by diapedesis to produce purpura, and from their ends blood may flow to produce frank hemorrhage.

Carbon Dioxide Intoxication.—Amar (*Presse médicale*, October 18, 1919) reports experiments showing that carbon dioxide accumulation in air in confined spaces reduces oxygenation of the blood and the intensity of cellular life. This accounts for the muscular weakness and prostration seen in persons intoxicated with carbon dioxide. The condition also results in increased pulmonary ventilation and prolongation of expiration in order better to empty the lungs. This same defensive reflex is met with in nearly all consumptives. Twenty-seven per cent. of carbon dioxide causes certain death, which, however, is brought on gradually and in a manner suggesting anesthesia—a fact suggesting that ordinary anesthesia is induced through reduction of cellular combustion.

Infection of the Young by Trypanosome Infected Mothers.—P. W. Bassett-Smith (*Journal of Tropical Medicine and Hygiene*, November 1, 1919) states there is little direct evidence reported of the passage of trypanosomes from the mother to the young, and none as to whether this takes place in the human race. That trypanosomes can be transmitted through the milk of nursing mothers has been shown by Lanfranchi in the case of the *Tr. brucei*, *rhodesiense*, *evansi*, *gambiense*, and *lanfranchii*. In rats used by the author in experimental work on trypanosomiasis, examination of the placental blood in one rat, in which the uterus was found to contain a number of well developed embryos, revealed the presence of trypanosomes. On examination of smears of the livers of these embryos, mature trypanosomes were found in moderate numbers. It is therefore certain that *Tr. rhodesiense*—the species used—can pass directly from the mother's blood to the fetus.

Proceedings of National and Local Societies

THE MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

*Sixty-ninth Annual Meeting, Held at Harrisburg,
Pa., September 22 to 25, 1919.*

(Continued from page 44.)

SECTION IN SURGERY.

Surgical Treatment of Carcinoma of the Stomach.—Dr. HARVEY F. SMITH, of Harrisburg, stated that very definite progress had been made in the diagnosis and treatment of cancer of the stomach during the past several years. Advances in diagnosis had come through the x ray and through the pathological study of fresh surgical specimens. The former in the hands of an expert had reached the point of ninety per cent. accuracy, while the latter had given a better appreciation of underlying conditions and a clearer interpretation of the sequence of events in cases of recurrent, painful, periodical gastric disturbance. Progress had been made in the treatment by incorporating additional points in technic, which not only had eliminated many previously existing difficulties, but had permitted more thorough, frequent, and extensive resections. Gastric surgery had thus been placed upon a firmer basis with a larger recognition of the operability of cases which a few years ago had been considered inoperative. The improved methods of diagnosis were of vital interest to the surgeon for, after all, the real value of surgery in the treatment of cancer of the stomach depended upon operation while it was yet a local condition. Approximately seventy per cent. of stomach cancers were located at the pyloric end. This group furnished the largest number of resectable cases. Further progress in the surgical treatment of cancer of the stomach must depend upon very positive and active cooperation of the family physician, x ray expert, and surgeon. The physician had the difficult and vitally responsible task of promptly deciding which patients with gastric malfunction required medical care and which surgical. The roentgenologist should be given the opportunity for an examination in every patient approaching the so-called cancer age who had an unexplainable anemia, with or without gastric symptoms, or who had digestive disturbances which became progressively worse in spite of diet and medical care. The surgeon should be called more frequently to consult in cases of a doubtful diagnosis than to confirm a positive one.

Dr. J. STEWART RODMAN, of Philadelphia, said that he thought this was a very important subject and that Doctor Smith had presented it in a very attractive form. Nineteen years ago his father first pointed out in an oration on surgery before the American Medical Association the principle of excising ulcers of the stomach, the ulcer bearing area being usually at the pylorus but elsewhere if the ulcer was situated elsewhere. He did this because of the possible danger of sub-

sequent perforation and hemorrhage and, first and most important of all, malignant degeneration. As Doctor Smith had said, there was definite clinical and pathological evidence that gastric ulcers did become malignant. If that was the case, the important thing to do was to get rid of the ulcer if possible. He did not think that we could always do it. In that case gastroenterotomy was the operation of choice. Increasing experience had shown that wherever possible gastroenterostomy alone was not the ideal operation for ulcer of the stomach and that it should be supplemented by pylorotomy and excision of the ulcers of the lesser curvature.

Dr. ALFRED C. WOOD, of Philadelphia, said that it has seemed to him on occasions that if all that we had been taught of the symptoms of carcinoma could be forgotten and if we could start entirely fresh we would really make a little progress. For instance, he did not think we had gotten away from the teaching he had heard thirty years ago that in cancer, wherever found, we might expect pain and loss of strength and weight, anemia, cachexia, enlarged glands, a mass, and so on. Now we all knew that these were the symptoms in the advanced stages of the disease when operation could be only palliative, if anything could be done at all. So that it seemed to him that we ought to stop talking of these things. They were of no help in the diagnosis at the time when operation might be curative. As had been pointed out and as we all knew, of course, the x ray was of the greatest assistance in making a diagnosis at the earliest stage in gastric meal function. There was no other aid that was of such early and definite benefit as the x ray in skilful hands. He presumed that that meant very intensive and extensive study. One or two plates taken of the stomach without any opaque substance having been introduced were of no avail and yet patients were brought by their physicians with an x ray plate, sometimes two plates, for diagnosis as to whether they had cancer. An x ray study by a competent man would give the earliest information that could be obtained today, not of cancer, but of some lesion, and he was one of those who were willing to accept the evidence of the Mayo Clinic that cancer was a late stage of ulcer in a great many cases. So that we did not want to wait until we had cancer of the stomach; in order to give the patient any benefit we should operate on his ulcer. Now, if we had a case of continued indigestion, with a train of symptoms that were suggestive of ulcer and the x ray failed us, or we couldn't get an x ray, and if we had had all the medical talent that was available in that location without reaching any definite conclusion, it must be admitted that an abdominal exploration was preferable to settle the point. So far as the curability of cancer of the stomach was concerned, of course, it was a surgical condition; there was no method of treatment by drugs, but there were well authenticated cases of cure from resection.

Dr. M. BEHREND, of Philadelphia, said that he had been struck recently by the great number of cancers in young people around thirty years of age. Only recently he had had to operate on a man thirty years old who had a carcinoma of the pylorus, with a metastatic growth of the liver.

Dr. J. J. GILBRIDE, of Philadelphia, said that we had a group of cases in which the onset was sudden. In this class of cases we were better prepared to meet the condition than we were in those which had existed for a long time. The general practitioner was not to blame for the late diagnosis in chronic cases. The patients did not visit the physician. Their symptoms were not sufficiently severe to warrant their going to a physician. Men of fairly robust health did not notice anything particularly wrong with them until perhaps they had passed on to a rather advanced stage.

Joint Meeting of the Sections in Medicine and Surgery.

SYMPOSIUM ON DISEASES OF THE GASTRO-INTESTINAL TRACT.

Diagnosis of Cholecystitis and Gallstone.—Dr. DAVID RIEMAN, of Philadelphia, said that no time need be taken up with a discussion of gallstone disease when it presented the classical symptoms. If it always produced such symptoms the subject would lose much of its perplexity, but at the same time much of its interest. There were few conditions in the body that created such confusing pictures as disease of the gallbladder. Since it was admittedly difficult to distinguish between gallbladder disease with and without stones, he would treat them as one. Gallstone disease appeared in two principal forms, a, in the form of recurrent attacks with intervals of fairly good health, and b, in the form of illdefined gastrointestinal symptoms that might point to gallstone, gastric ulcer, duodenal ulcer, appendicitis, and other conditions. The pain of the gallstone attack was probably most often situated in the epigastrium; next most frequently in the liver region, either below or above the right costal border, but it might be in the lower part of the abdomen near the appendix, in the neighborhood of the umbilicus, or even in the left hypochondrium. The pain was usually associated with tenderness which, however, was as a rule more circumscribed in distribution than the pain. Sometimes the tender spot was no bigger than the tip of the finger, at others it was a moderately large rounded area. As a normal gallbladder could never be felt, a palpable gallbladder was *ipso facto* proof of disease. There were several points of value that such a history might bring out: 1. The attacks of gallstone colic were frequently nocturnal, wakening the patient from a sound sleep. 2. They came on with little or no warning. 3. Between attacks the patient was often quite well, had a clean tongue and a good appetite, though often troubled with gas. Attacks were sometimes months or even years apart, but might occur at frequent intervals. A history of acute indigestion or of ptomaine poisoning should arouse suspicion. Acute indigestion, so often given as the cause of death or as the cause of very sharp

abdominal pain, was generally a misnomer. If it came on without warning in an adult in middle life, it was usually either angina pectoris or biliary colic. 6. One should always ask the patient whether the pain had been severe enough to require a morphine injection. An affirmative answer was a point in favor of gallstones. 7. The presence of gallstones in the feces was not common, but he thought that if we had our patients look for stones systematically after all sudden attacks of pain in the upper abdomen, they would be found more frequently. The gastric crises of locomotor ataxia were most important, the underlying spinal disorder being overlooked. Chronic pancreatitis, the result of gallbladder infection, whether it be primarily lymphangitis, as was held by Deaver, or due to extension along the duct, was not easily distinguished from gallstone disease, and since the treatment was the same, preoperative differentiation was not so important. The differential diagnosis between gallstone disease and appendicitis was sometimes impossible. Renal calculus, unilateral hematogenous nephritis, spondylitis, and lead colic were possible sources of diagnostic error in relation to gallstone disease, just as they were in relation to disease of the appendix.

Dr. J. J. GILBRIDE, of Philadelphia, said he felt that there was no part of the body that was more neglected than that involved in disease of the gallbladder. Therefore, one should not wait to find all the symptoms, for in such cases the disease dates back many years. In chronic disease the common symptoms were indigestion, distress, and periodical pain, occurring it might be, once in six months or once a year. A stone in the gallbladder might not produce any symptoms whatever except indigestion and pain. If there was an infection there would be jaundice. In stone in the common duct there was practically always jaundice. Sometimes there was nothing but a history of pain. In the absence of jaundice he thought a clear history of pain was the most valuable symptom. It might be referred to the right shoulder, to the left shoulder, or to the left side. Occasionally the pain might be referred to the umbilical region. He had seen cases of gallstone where pressure over the gall bladder did not produce any tenderness whatever.

Value of the Röntgenological Study of the Gastrointestinal Tract.—Dr. HENRY K. PANCOAST, of Philadelphia, read a paper on this subject in which he stated that within the past few years very little had been added to the latitude of diagnosis by this means. It was well for the internist or surgeon to realize the exact dependence that could be placed upon a röntgenological study in any given condition, and especially upon the work of the röntgenologist in the locality to whom they referred work of this kind. Misplaced confidence would reflect upon them and lack of deserved confidence would deprive them of much valuable assistance. The röntgen examination of the gastrointestinal tract was in no way to be regarded as a substitute for a careful and thorough clinical study of a case. In had a well recognized and established place as a method of examination to assist in reaching correct conclusions, just as had the clinical

study, and it had well defined limitations with which everyone should be thoroughly conversant. An examination of the gastrointestinal tract was in a large measure, aside from the observation of filling defects, a physiological study by an unusual means of watching the mechanism of the progress of an opaque meal for the purpose of detecting interference with normal physiological action. Therefore, time and patience on the part of both patient and examiner were required. A complete study could not be accomplished in less than three days, and frequently more time was required. It was time that it was recognized that the making of three or four roöntgenograms without a proper roöntgenscopic study was not the correct or accurate way of making a gastrointestinal study, and yet positive diagnoses of serious lesions were constantly made based upon no more evidence than the very doubtful filling defects shown on one or two plates without any fluoroscopic study. Or, on the other hand, serious lesions had remained undetected because of a lack of adequate study through undeveloped technic. Such examinations were usually a waste of time and also a poor investment, and the conclusions, being without foundation, might be misleading and even dangerous.

There was a widespread manifestation, of lack of skill and experience in gastrointestinal study. More men were specializing in roöntgenology now than ever before. It was partly the duty of internists and surgeons to see that not only these men kept abreast of the times, but also those who had been doing work of this kind for some time. The new man had usually completed a thorough course of training, but he must continue to read, study, attend meetings and visit others and see their work, because advances in roöntgenology were so rapid that one soon fell behind, and the hermit roöntgenologist rapidly became a useless member. Roöntgenology was not a field for fanciful diagnoses unless one was very certain of his premises. The internist or surgeon wanted reliable facts. Opinions must be grouped as positive, negative, or those coming under the head of suspicious. A roöntgenological study of the gastrointestinal tract might be regarded as fulfilling one of three purposes: First, it might verify a clinical diagnosis either by substantiating or disproving the presence of a serious condition, as, for example, ulcer or carcinoma, in both of which it could now be depended upon. Second, it might assist in deriving a correct diagnosis by supplying information that could not be determined in any other way or might be uncertain clinically, as in the same conditions with an uncertain clinical picture. Third, indefinite cases in which a clinical diagnosis could not be centered upon any particular condition. In such instances the roöntgenological study became more difficult and complicated and might have to include a study of the gallbladder and urinary tract, and possibly other parts as well.

Dr. JOHN H. GIBBON, of Philadelphia, said that the advancement in the diagnosis of gastrointestinal lesions had been due to a great extent to what the roöntgenologists had done. Doctor Pancoast, however, had given one word of warning and probably he could emphasize it more than any roöntgenologist

would like to, that is, the danger of operating on the interpretation of an inexperienced roöntgenologist or upon the apparent lesion shown in plates. Many of us had come a cropper when we relied entirely upon such a diagnosis.

Thorough Study Versus Exploratory Incision in Gastrointestinal Lesions.—Dr. JOHN H. GIBBON, of Philadelphia, in a paper on this subject, said that it was admitted that the so-called exploratory incision was a justifiable surgical procedure under certain circumstances. There should, however, be an honest effort on the part of internists and surgeons to reduce and limit these circumstances. It was very easy to fall into the habit of "exploring" or "opening to see," but it required some effort to develop the habit of studying our patients carefully, of weighing symptoms and giving them their relative value, and of taking into consideration the contraindications as well as the indications for operation. The easily acquired habit rendered one a poor internist or surgeon, with little likelihood of further development, while the other made him a man whose opinion carried weight and who was likely to progress in knowledge with experience. A common excuse for neglecting proper study and resorting to immediate exploratory incision was the supposed urgency of the patient's condition and the saving of time. While this excuse might be legitimate in one case, it was not applicable in nine out of ten so-called emergencies. His own experience led him to believe that errors in diagnosis and the mistake of doing an unnecessary operation were not due to ignorance but to carelessness, to what might be called "cocksureness." One of the great disadvantages of an incorrect abdominal diagnosis was the fact that in order to reach satisfactorily the real lesion, another abdominal incision might be necessary. Another point which was worthy of consideration in this connection was the importance of examining our patients before operation for conditions quite different from those which caused the patient to present himself to us. The time to discover a lung lesion, Bright's disease, hyperthyroidism, venereal disease, or a kidney infection was before, not after, operation and such a discovery might be the means of saving the patient's life and the surgeon's reputation.

Surgical Treatment of Lesions of the Gastrointestinal Tract.—Dr. ALFRED C. WOOD, of Philadelphia, read this paper in which he said that the perforated ulcer was always a surgical condition; medical treatment was not to be thought of for a moment. While this was not disputed in theory, in actual practice we still found an inexcusable delay in some cases. In most instances this must be charged to the physician, as it was very seldom indeed that medical aid was not promptly called. The urgency of the symptoms forced the patient to demand immediate relief. This being the fact, it remained only for the physician to make the diagnosis and start the patient on the way to the hospital. The symptoms and signs of acute perforation were usually so typical that there should rarely be any uncertainty, and if such did exist in the phys-

ician's mind, the only safe course was to call a surgeon at once. Each hour of delay lessened the chance of recovery. On the other hand, chronic ulcers, including those accompanied by hemorrhage, belonged to the physician, at least for a time. That ulcers healed and remained healed in many instances was freely admitted; but that others either did not heal or tended to periodical exacerbations was also well known. He was not prepared to lay down any hard and fast rule as to just when the latter class should be turned over to the surgeon; but it seemed at least reasonable to say that after medical measures had been given a fair trial without permanent relief, it would be proper to have the surgeon join the physician in the case. After operation for ulcer, he believed the patient should be returned to the internist for a prolonged course of observation and such dieting and other treatment as might be necessary to promote rapid and complete healing of the ulcer, as well as to restore the normal gastric functions. Carcinoma of the stomach was still an unsolved problem. We had as yet no way of detecting the disease in its early stages, when a radical operation might be followed by a permanent cure. The result was that most of these patients came to the surgeon when only a palliative operation could be done, and in many instances even this was not possible. He did not wish to be considered as advocating abdominal operations until all approved methods of diagnosis had been exhausted; but it must be apparent to everyone that if a larger measure of benefit was to be offered these patients, operation must be done much earlier in the future than it had been in the past. It would not be disputed that every case of carcinoma of the gastrointestinal tract was a surgical problem from the beginning. It was not a medical condition at any stage, and yet almost every one of these patients had been under medical observation and treatment for a more or less prolonged period if not throughout its whole course. He desired especially at this time to stress the importance of diseases of the pancreas and of their close association with inflammation of the bile system. The evidence now at hand seemed to warrant the statement, first, that pancreatitis was frequently, if not in most instances, the result of infections of the bile tract; second, the only means known at present to prevent pancreatitis was to deal promptly and radically with cholecystitis and cholangitis; and third, when pancreatitis was present, the most important factor in its treatment was efficient biliary drainage.

Dr. HAROLD L. FOSS, of Danville, said that errors in diagnosis were due to carelessness rather than the lack of knowledge as to how the diagnosis should be made. A number of years ago he had investigated the errors in diagnosis of abdominal conditions in one of the largest clinics in this country and found that the gross errors as proved at the operating table were about ten per cent. That was in a clinic where every possible means had been exercised to determine the correct diagnosis before the patient was sent to the hospital. There were experts in every particular branch, so the patient received the benefit of these examinations,

and yet in that great clinic they were making about ten per cent. gross errors in abdominal disease; sixty-five per cent. related to duodenum, gallbladder and appendix. He had found that the cases of errors in a large series of abdominal cases had had to do with gastric and duodenal ulcer. Gastric ulcers had been diagnosed as duodenal and duodenal ulcers had been diagnosed as gastric ulcers. In regard to carcinoma of the stomach, the whole thing rested with the diagnosis. With early diagnosis something could be accomplished. Unquestionably a large proportion of patients could be cured if seen in time. The Mayos had a large number of patients living six and seven years who had had resections and the Polya operation performed and patients who had carcinoma, as proved pathologically, but the diagnosis must be made early and the diagnosis in these cases would rest chiefly with the clinical work and with the roöntgenologist. Röntgenology did not help us in any part of the body to such an extent as it did in early carcinoma of the pylorus.

Dr. LAWRENCE LITCHFIELD, of Pittsburgh, said that he had observed a case in which root pains from a growing tumor pressing on the spinal cord had caused several abdominal operations. How many surgeons tested the patient who was suffering from acute or chronic abdominal pains for ankle clonus or disturbance of sensations in the lower extremities? How many surgeons had operated on the abdomen in the presence of ankle clonus? Another question for the internist: Patients came with glycosuria; the cases were diagnosed as diabetes and treatment was begun, when a careful search into the history might give vague symptoms of gallbladder disease which might lead to the diagnosis of pancreatitis. Drainage of the gallbladder might clear up the glycosuria and the case might not have been a true diabetes at all. Just one question for the surgeon: Many cases of perforative peritonitis did not present the traditional picture as to gravity. The history might strongly suggest perforation, but the physical examination did not seem quite to warrant opening of the abdomen. He had seen two deaths where surgeons had refused to open the abdomen because the patient had not seemed sick enough. A patient with marked cachexia and an easily palpated mass in the abdomen was found to be suffering from tuberculous peritonitis and that man had been running a large wholesale dry goods business for the last ten years following operation. In cases of suspected malignancy abdominal section would do no harm and might be enlightening.

Dr. JOHN A. LICHTY, of Pittsburgh, said that he thought Doctor Pancoast had struck the keynote in x ray work, that it had to be coordinated with conditions in general, and he would like to add that the x ray man who interpreted his own plates, or rather who established diagnosis, would have to be a pathologist, or at least he would have to go to an autopsy quite frequently, and he would have to be a clinician. He did not see how else we could allow the diagnosis to go over entirely to the x ray men. He thought our good x ray men were doing that. They were saying that pathology and clinical

medicine was but a part of their sphere. If exploratory laparotomy was done it should be real. That is, if the diagnosis was in question, however sure you might be about one organ or the other being at fault, every part of the peritoneal cavity should be examined. He did not believe an operation for gallbladder disease should be done without a previous Wassermann test and this should be done with the idea of determining whether syphilis was present. Recently a colleague of his had opened an abdomen for chronic appendicitis and found a gumma on the ileum.

Dr. THOMAS McCRAE, of Philadelphia, said that mistakes in operation were often made on account of careless examinations, and bad palpation was a contributing factor. The physician often started palpating the abdomen with the tips of the fingers, sticking down here and there. If a man had superficial tenderness he elicited a great deal of tenderness and muscle spasm would continue for perhaps an hour or two, and when the patient was examined later marked tenderness and muscle spasm would be found. He believed the first point in abdominal palpation was to use the flat of the hand and palpate gently. A disease responsible for many wrong diagnoses was prostatitis. Doctor McCrae thought that in many cases the statistics as to cases of gastric ulcer cured by operation were based on observations that did not extend sufficiently long. As regards carcinoma of the stomach, outlook was gloomy. He had seen in his wards many cases of carcinoma of the stomach in which operation was out of the question, except to relieve pyloric stenosis, and frankly he felt that no very great advance had been made because the patients were not seen early enough. A campaign of education might help in ten, fifteen or twenty years.

Dr. ALFRED C. WOOD, of Philadelphia, said that he had one clear recollection of a case of carcinoma studied in the medical ward because the signs were obscure. The physician said: "The patient has symptoms that might point to ulcer or carcinoma; his hemoglobin is sixty per cent.; his red cells are 3,000,000; he is a little sallow, but we will treat him for ulcer, and, if he improves, we will know that he has ulcer." He was treated *secundum artem* and improved, the red cells went up to four and a half millions. He gained in weight; the diagnosis was ulcer and he was sent home. In a short time he came back to the hospital. He was much worse. He was then subjected to operation and an inoperable carcinoma of the stomach was found. He wanted to say finally that a patient with carcinoma could be built up in regard to blood, weight, and general condition.

Medical Treatment of Diseases of the Gastrointestinal Tract.—Dr. JOHN A. LICHTY, of Pittsburgh, read this paper in which he said that the points of difference between medical and surgical treatment of diseases of the gastrointestinal tract centred usually about diseases of the appendix, the gallbladder, the stomach, especially ulcerations, and the pancreas. About the appendix there was little difference of opinion. An acute appendicitis was plainly a surgical condition; a chronic appendicitis, which was always difficult to diagnose, was

not receiving the same enthusiasm from the surgical side as it had formerly, and was receiving more serious attention on the part of the medical man. With reference to peptic ulcer, there were still those who felt that it was a surgical condition, and only that. Evidently the difference of opinion here was largely due to the fact that the surgeon spoke of a different condition, a chronic, indurated, incurable, peptic ulcer, whereas the physician spoke of an acute ulcer which might heal spontaneously, if left alone, or in which the healing might be brought about more promptly by care in the diet and by the use of certain well known remedies and procedures. In diseases of the gallbladder matters were reversed, or rather the opposite of that of disease of the appendix. The acute condition received medical attention, the chronic condition was in nearly all cases the surgical condition. In disease of the pancreas, conditions were very much as in the appendix. The acute condition demanded prompt surgical procedure, and the chronic condition required most deliberate study and possibly largely medical and dietetic treatment. Through the studies in biological and physiological chemistry in coming years the field for medical treatment might be greatly enlarged. This, however, would depend largely upon more exact methods of making an early diagnosis.

The Attitude of the General Practitioner.—Dr. WILLIAM EGBERT ROBERTSON, of Philadelphia, read this paper in which he said that the conviction was borne in upon the general practicing physician, that in this field, as in most others for that matter, it was to him that the ailing individual first came for advice, and that it was his privilege and duty to study the patient's condition, that relief might follow upon an exact diagnosis, or that the thorough preliminary study might result in the selection of other counsel more suited to the particular needs of the patient. Not seldom a prominent pretuberculous phenomenon was digestive disturbance, with or without epigastric pain. When to this was added the loss of blood by mouth, the similarity to gastric ulcer was strong enough to cause a certain proportion of these subjects to seek relief by way of the operator's table. If one accepted the view that general anesthesia by inhalation might awaken a latent tuberculous focus, or excite into greater activity one already active, the pathos of the situation became more apparent, and should increase the sense of moral obligation of the family doctor to whom such individuals first turned for relief. It was necessary, not alone to permit the patient to narrate his complaints, but to take a history and make a complete physical examination in every instance. Thus did we command the greater respect of the patient, and refuse to permit him to make his own diagnosis. The tendency on the part of the busy family doctor to accept a patient's diagnosis was somewhat frequent, and this frequently led to errors of judgment, and, in consequence, to errors in handling the patient, even leading to unnecessary operation, which might jeopardize or even sacrifice the life of the patient or postpone until too late an operation that might have promised cure. These were the reasons which made imperative the

more careful study of any patient who presented apparent gastrointestinal symptoms.

The question of diet in the management of disease was rarely considered in a truly scientific manner. Even in the special field of gastrointestinal disorders we paid too much attention to drugs and too little to foods. The family doctor was given the opportunity to study the life history of the disease, and if he did so carefully he would almost always be able to find that the victim was one who was fussy in his attitude towards his food, often failing to eat any breakfast, an inadequate lunch, and worn out and irritable, often in no condition to digest a meal, he would grumble over his dinner, which might represent the only adequate meal of the day.

The Value of the High Rectal Enema.—Dr. HENRY D. JUMP, of Philadelphia, read this paper in which he said that Naunyn in 1896, Nothnagel in 1898, and Boas in 1903 maintained that the flexible rectal tube always coiled in the ampulla of the rectum. Many of us had had the same experience in washing out the bowel of infants with a large catheter, for frequently the coiling of the catheter had permitted the end of it to reappear at the anus. Their work had been done at the Misericordia Hospital with the aid of one of the best trained nurses and a well trained orderly. Dr. C. P. O'Boyle, of Doctor Pfahler's service, had made the radiographs and to these gentlemen he was indebted for valuable suggestions. They had made persistent efforts, with men and women patients in various postures, to run the tube into the sigmoid flexure. While this might be done under certain conditions it was difficult, uncertain, and in most instances impossible.

Dr. ROBERT A. KELTY, of Danville, said that some enemas were given for more cleansing, some for catharsis, some for nutrition, and some for x ray purposes. They had tried on several occasions at autopsy to pass a tube high and had found that under exceptional circumstances only would the tube pass the sigmoid flexure at the brim of the pelvis.

Dr. THOMAS McCRAE, of Philadelphia, said that he thought Doctor Jump's paper was an extremely important one to take to heart, but he must say he had very little expectation that papers such as this would carry much influence. The idea was so firmly fixed that there was a difference between giving fluid low down and supposedly high up that it was going to take a great many years and a great many papers to get that idea into the minds of more than comparatively few. It was important for nurses in training schools to know this. A tremendous amount of time was lost in teaching nurses how to give this and that sort of enema. Practically it was time wasted. It was going to take a great deal of preaching to place the idea before the laity.

Dr. J. J. GLBRIDE, of Philadelphia, said that as for Doctor Jump's paper, those facts had been well known for twenty years and personally he did not know that we missed a great deal by being unable to pass a tube high up. Of course this paper would serve a purpose in emphasizing to others the needlessness of trying to do something that could not be done.

Dr. HENRY H. PANCOAST, of Philadelphia, said that there was one danger in the attempt to give a high enema. When the tube was kinked considerable more force had to be used to get the fluid into the rectum. It must be given slowly; if given too fast, there was sure to be spasm of the descending colon, which would prevent the fluid going very far. The ileocecal valve served its purpose well when taking care of fecal contents, but when it tried to stop enemata it had no power to do this and it opened almost invariably. The time to stop barium enemata was when we saw the ileocecal valve give way. One case was on record where a barium enema had been vomited. He believed that in one instance the tube had been introduced as far as the splenic flexure.

Dr. ALFRED T. LIVINGSTON, of Jamestown, N. Y., said that the only thing that had not been mentioned was the most important of all and that was the technic of the enema. There was a tendency to spasm if the fluid was introduced rapidly, which gave great pain and obstructed the flow of fluid. He found that approaching a pint this spasm would occur, and at this point he stopped the flow, waited a few seconds, and then slowly began again. If it passed a pint and a half he was sure that the sigmoid had relaxed and that there was a free passage. As a rule he gave four to six pints, or even as high as nine pints.

Dr. A. E. ROUSSEL, of Philadelphia, said that a certain case had been carefully studied for two years because of duodenal ulcer. The patient had been advised to have an operation after a sufficient length of time had passed without improvement in his symptoms under medical treatment. This had been refused. About a week before he was seized with subacute pains and a clinician of good standing was called in. The temperature and respiration at the time were normal; there were no symptoms of shock. The pulse rate was but slightly increased and there were pains in the neighborhood of the gallbladder. A tentative diagnosis of the passing of gallstones was made and before the practitioner in question could visit his patient the next day he received word that the patient was up and that the necessity for his call was not apparent. He was not called upon until a day later, and Doctor Roussel was called in the same evening. There was undoubtedly a general peritonitis and with the knowledge of the work done two years before it was comparatively easy to diagnose perforation of a duodenal ulcer.

Dr. ALFRED C. WOOD, of Philadelphia, said that it might be worth while to call attention to the dangers of making an effort to pass the so-called high rectal tube, but in spite of that, as Doctor McCrae had said, certain individuals still insisted on trying. No doubt most were familiar with cases in which in an effort to pass the rectal tube up into the sigmoid the rectum had been perforated, and he had known of instances of that kind in which not only had the rectum been perforated, but the nurse had gone on with the administration of the enema, all of which had been received into the peritoneal cavity. Therefore, it seemed to him that Dr. McCrae's hint should be taken to heart and all who had any-

thing to do with the teaching of nurses should impress upon them that not only was there no occasion to pass the tube more than two or at most three inches, but that if they had a rather rigid tube there was very positive danger in it. In regard to the quantity of fluid that might be administered, he had been at the operating table in a case of severe hemorrhage in which the efforts of the physicians present to sustain the patient until the operation could be concluded had been so persistent and aggressive that the salt solution put into the patient's bowel finally ran out of the mouth while he was operating. In another case the enema came out of the mouth from the constant desire to overcome, as supposed, fecal impaction which did not exist. They added quart after quart until the fluid began to appear in the vomitus.

Dr. DAVID RIESMAN, of Philadelphia, said that few of them taught nurses how to give enemas. That was left to the nurses themselves, and if Doctor Jump depended upon the members to spread this doctrine to the nurses, it would fail; so he would suggest that he send his paper, with or without the permission of the society, to all the nursing journals in the country. Doctor Robertson touched upon a matter which was very important and ought to be spoken of with a good deal of emphasis. We asked our patients whether they ate fast or slowly, whether they drank tea or coffee, and whether they smoked to excess. But that was not enough. We must ask our gastrointestinal patients, our tuberculous patients, and our diabetic patients just exactly what they ate, and if we asked that question systematically a surprising amount of interesting information would be obtained. Some never drank any water, some never ate fruit, some had idiosyncrasies to this or that, and some ate too much, but he believed much gastrointestinal disease and perhaps the tendency to tuberculosis was based on faulty diet. He had used for years in his own hospital and private work a mixture containing sodium bromide with alkalies, sometimes with belladonna, but he had had just as good results without belladonna.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Cheerio! The Story of an American Medical Officer at the Fighting Front with the British Army. By Major HAROLD M. HAYS, M.C., U.S.A. New York: Alfred A. Knopf, 1919. Pp. iii-291.

A picture of the war is drawn by a physician, whose name is familiar to the readers of the NEW YORK MEDICAL JOURNAL, for he contributed many of his earliest writings to the JOURNAL. Simplicity is the keynote of the book. It narrates the story—his story of the war—just as he went into it himself, with an open mind, awakening to each new experience and drinking it all in. Finally he noted these experiences without an attempt at coloration and presented them in the pleasing form of this short story.

The common interests and feelings of the American and the British are portrayed. It shows that the psychology and the governing factors of these two peoples are closely allied. It resolves itself into a plea for a better understanding and will do much to obliterate the careless conceptions that have been formed by these two peoples of each other.

War did much to establish a cleavage—in both of the opposite senses of the word—a cleavage between the temporary enemies which it is hoped will be temporary and a cleaving of the allies which we trust will remain. It is now when the smoke of battle is clearing and the debris being cleared away that we can best learn the lessons of value taught by the disasters of the war. This little volume with its simple story simply told will do much to accomplish this end.

Les Enseignements chirurgicaux de la grande guerre. By Professor E. DELORME. With One Plate and Two Hundred and Seventy-seven Illustrations. Paris: A. Maloine et Fils, 1919. Pp. 564.

Professor Delorme, who is inspector general of the French Army, has written a very complete work on the progress made in surgery during the late war on the western front, from 1914 to 1916, inclusive. The subjects treated which particularly interest the surgeon are, among others, the lesions of the soft structures from projectiles, foreign bodies, gas gangrene, tetanus, wounds of the vessels and nerves, fractures of the diaphyses and injuries to the joints. The work is particularly commendable to those engaged in the teaching of modern surgery. The illustrations are good and for the most part original, while an extensive bibliography is appended to the chapter treating each subject. It is similar to, but on a larger scale and more complete, than the excellent work written by Lieutenant Commander William Seaman Bainbridge of the U. S. Navy.

Births, Marriages, and Deaths.

Died.

FRASER.—In Edinburgh, Scotland, on Monday, January 5th, Sir Thomas Richard Fraser, of Edinburgh.

GOTTHEIL.—In New York, N. Y., on Wednesday, January 7th, Dr. William S. Gottheil, aged sixty-one years.

HOLMES.—In New York, N. Y., on Friday, January 9th, Dr. Christian Rasmus Holmes, of Cincinnati, aged sixty-three years.

JOHNSON.—In Irkutsk, Siberia, on Saturday, December 13th, Dr. James J. Johnson, of Braggs, Okla.

KINNE.—In Syracuse, N. Y., on Sunday, January 4th, Dr. Elbridge Olin Kinne, aged sixty-seven years.

LANCE.—In Portsmouth, N. H., on Sunday, January 4th, Dr. Arthur Joseph Lance, aged fifty years.

LOGAN.—In Hunan, China, Dr. Oliver T. Logan, of Indianapolis, Ind.

MCINTYRE.—In Easton, Pa., on Sunday, January 4th, Dr. Charles McIntyre, aged seventy-three years.

STEWART.—In Indianapolis, Ind., on Thursday, January 1st, Dr. Frank C. Stewart, aged sixty-six years.

SWOBODA.—In Philadelphia, Pa., on Saturday, January 3d, Dr. Richard Justus Swoboda, aged thirty-seven years.

WOOD.—In Philadelphia, Pa., on Saturday, January 3d, Dr. Horatio C. Wood, aged seventy-nine years.

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Original Communications

PRACTICAL CONSIDERATIONS ON ACQUIRED RETRODISPLACEMENTS OF THE UTERUS.*

By JOHN OSBORN POLAK, M. Sc.; M. D.; F.A.C.S.,
Brooklyn,
Professor of Obstetrics and Gynecology, Long Island College Hospital.

I shall attempt in this short paper to review briefly the subject of retrodeviations of the uterus, and suggest such measures for their prevention as have proved useful in our clinic. Retrodisplacement of the uterus is one of the commonest of the gynecological conditions met with by the general practitioner, for, broadly speaking, one in every five women has a backward displacement of the uterus; this may be of congenital origin or, what is more frequent, the displacement has been acquired following labor or abortion.

Retroversion is usually associated with retroflexion and some degree of *decensus uteri* always co-exists; while retroversion may be congenital, retroflexion is always acquired.

The text books commonly describe three degrees of retroversion, as follows:

1. When the fundus is directed toward the sacral promontory and the axis of the uterus coincides with the axis of the vagina.
2. When the uterus lies with its axis nearly horizontal in the pelvis.
3. When the fundus is below the level of the cervix.

Clinically these degrees are immaterial so long as the uterus can be repositioned and be retained in an anteverted position after the malposition is corrected. It is needless in this discussion to take up the consideration of congenital retrodeviations, for in the nonparous women unless they are complicated by infection, they produce no symptoms. In congenital retroversions the cervical invagination is usually faulty, the anterior portial lip is short while the posterior lip is deeply invaginated. Consequently this shortens the anterior vaginal wall while the posterior wall of the vagina is lengthened.

Many practitioners believe that all abortions need to be curetted, and this notwithstanding the period of gestation, the presence of sepsis, or the amount of hemorrhage. While we are not in accord with this view, we know that many retroversions of the

uterus date their origin from this procedure. In order to introduce a curette into the cavity and curette the uterus, it must be drawn down with volsella forceps into the axis of the vaginal canal. This is commonly done while the woman is under an anesthetic and it allows the intestinal coils to come down into the uterovesical space. If, at the conclusion of the operation, the uterus is not repositioned and anteverted before the patient comes out from the anesthesia, the vomiting and retching will further force the intestinal coils into the space anterior to the uterus; if this occurs, when the woman assumes the upright posture, instead of having the intraabdominal pressure exerted on the posterior wall of the uterus, it is exerted on the anterior surface and an acquired retroversion follows. Lacerations of the cervix always predispose toward subinvolution; this is particularly true if these lacerations are infected, as is of common occurrence. Subinvolution causes excessive weight of the uterus, while tears of the pelvic floor muscles favor retrodisplacement by impairing the supports of all the pelvic organs.

As already stated, posterior displacement of the uterus may be present without producing any subjective symptoms. This, however, is not the rule, for sooner or later backward displacements always cause some local pathological condition or local complication, owing to the mechanical pressure and interference with the efferent pelvic circulation. In time continuous pelvic congestion will always produce a train of pelvic and general symptoms. Some of these complications of pelvic displacements are:

1. Increase in the size of the uterus from circulatory stasis, which necessarily produces an edema in the several uterine tissues. In the endometrium we find a progressive hypertrophy with consequent menorrhagia. In the myometrium the muscle fibres are swollen and hypertrophied so that the bulk of the tissue mass is increased. In the overlying serosa the edema results in swelling and superficial desquamation of the endothelial cells and the formation of posterior peritoneal adhesions.

2. Retroversion of the uterus causes the ovaries and tubes to be carried downward and backward. This prolapse and partial torsion of the broad ligaments necessarily interferes with the pelvic circulation, and the ovary becomes engorged with blood as the efferent circulation is interfered with, small round cell infiltration takes place in the stroma, and ovulation is impaired. The veins in the broad liga-

*Read before the Suffolk County Medical Society, October 20, 1919.

ments become engorged and varicosed, and as the cells on the surface of the ovary become swollen adhesions form between the ovary and the peritoneum.

3. Rectal obstruction occurs from pressure of the fundus on the rectum; this pressure interferes with its lumen and results in sacculatation of the sigmoid and interference with the rectal circulation which is manifested by constipation, proctitis, and hemorrhoids.

4. Traction is made on the neck of the bladder when the fundus falls backward; this in turn distorts the shape of the urethrovaginal opening and causes vesical irritability. Retroversion and uterine descensus allows a visceral ptosis to take place, owing to relaxation of the pelvic diaphragm, which is made up of the pelvic floor and fascial sheaths; and finally owing to constipation and ptosis we may have complicating digestive disorders.

In cases of congenital retroversion there is commonly associated also other developmental defects as defective invagination, narrow arch, deep symphysis, funnel pelvis, and a narrow vaginal vault. When these patients marry they either remain sterile or become pregnant; when the latter condition develops, the gestation may end in abortion before the third month or go on to term without complication. Displacements do not of themselves cause abortion, but the displaced uterus sooner or later becomes the seat of a circulatory stasis and hypertrophy of the endometrium results; this in turn impairs the seat of the ovum.

The most common cause of retrodeviation of the uterus is the relaxed condition of the uterine supports following childbirth from prolonged labor, operative traumatism, neglected puerperia and co-incident infection, which arrests the normal involution of the uterus. The woman who gets up with a subinvolution of the uterus and impaired supports, always has some descensus and retroversion commonly follows. The associated descensus results from the injury to the fascial sheaths and the lengthening of the uterosacral ligaments, which permit the cervix to slide forward in the axis of the vagina and allow the intraabdominal pressure to be exerted on the anterior face of the uterus, and further force the uterus downward.

When this is coupled with the common use of the tight obstetrical binder crowding the pelvic organs downward, the too often neglected constipation and bladder distention, so common when the woman is in bed, together with straining during defecation, and we have present all the factors necessary to retrovert the uterus, for straining forces the rectovaginal septum forward between the separated levators and thus tilts the cervix forward, while the intraabdominal pressure crowds the fundus backward; hence we can readily see how the heavy puerperal uterus becomes retroverted.

The next most common cause of acquired backward displacement is found in the treatment of abortions; here the uterus is smaller and can be more easily retroverted by traction on the cervix during curettage, unless the operator takes pains to reposit the uterus into anteversion while the patient is still under the anesthetic.

TREATMENT.

Congenital retroversions in virgins, or newly married women, producing no symptoms need no local treatment. Special attention, however, should be given to the rectum and pelvic colon, as fecal stasis is a common cause of pelvic complications. The treatment of acquired retroversion is: 1, preventive; 2 corrective—i. e., reposition and retention. Under the first heading we shall include such measures as are applicable to the management of the puerperium whether this is the puerperium after childbirth or after abortion.

It takes from eight to twelve weeks for the uterus to go through its normal involution, and for the relaxed pelvic structures to regain their normal tone; and unless this is appreciated many women will have *descensus uteri*. Of first importance is the avoidance of injury to the pelvic structures during labor and abortion, and when such injuries do occur they should be properly repaired. We can minimize trauma by allowing sufficient time for complete dilatation of the cervix. Hurry makes tears, whether we hurry labor by the use of bags, the hand, forceps or pituitary extract. A too prolonged second stage causes relaxation of the fascial planes by overstretching. Cystocele and rectocele follow, often when there is no apparent laceration. This can be avoided by timely median perineotomy which relieves the strain on the stretched levators by allowing them to retract as well as the pressure on the vesicovaginal fascia.

After labor we seek uterine drainage, for this is the solution of uterine retraction and contraction. To accomplish this we place an ice bag on the fundus, employ posture and administer ergot. The Fowler position favors uterine drainage, while turning the patient over on her abdomen three or four times a day favors drainage from the vagina, and thus removes the accumulated secretion in the vaginal vault in which the cervix sits. This minimizes infection of cervical injuries, and thus diminishes the frequency of postpartum endocervicitis, and favors involution; for infection of the cervix retards involution. The bowels should be moved daily with small enemata and the patient be allowed to sit up to expel the bowel content. On about the sixth day postpartum we begin bed exercises; these consist of postural exercises and muscle exercises. With the patient lying prone her arms extended above her head, she is instructed to breathe deeply; this elevates her diaphragm and raises her abdominal viscera. Then with the pillow removed, she raises her head and shoulders from the bed with her abdominal muscles. She then flexes the thigh on the abdomen, and the leg on the thigh, until the knee reaches the chest. The leg and thigh are then extended and held in this position by the psoas and abdominal muscles. This motion is repeated from five to fifty times, first with one leg and then with both. From the seventh day on unless the puerperium is febrile the patient takes the knee-chest posture at least three times in the twenty-four hours, and remains in that position for twenty minutes. She is specially trained how to assume this posture, and how to open the vulva to allow air to enter the vagina, and to resume her

dorsal position by first dropping into the latero-prone position. After she leaves the bed we teach her how to use the "monkey trot," or walking on all fours.

Monkey trotting is insisted on throughout the entire puerperium after the patient leaves the bed. The woman is told to walk on all fours, night and morning, until she returns for her final checkup three or four weeks after she is discharged. Douches may be used after the first two weeks; these should be taken at a temperature of 116° F. lying down. A borax solution has the best effect on the tissues. The reservoir should be at a two foot elevation. It is heat and plenty of cleansing solution that we want, not force. The douche is followed immediately by five minutes exercise of the monkey trot.

When the patient returns to us at the end of four weeks, we make a careful pelvic examination, and if the uterus is retroverted we correct it and retain it in position, first with the gauze tamponade put

position and the tampons removed, the vagina cleansed with an antiseptic solution and the tampon renewed in the manner as already described. If the patient is allowed to withdraw the tampons in the usual way, i. e.; sitting on the toilet, the cervix is dragged forward and the uterus relapses into retroversion again.

After the uterus has been reduced in size and all vaginal thickening and parametrial tenderness have been removed by the intelligent use of alkaline douches, and the vaginal tamponade, then and not until then, should the retention of the uterus be maintained with a pessary. For the successful retention by the pessary the reposition of the uterus must be complete. The pessary must hold the uterus in perfect anteversion, its anterior bar resting on the pubic shelf behind the pubis and not project through the vulva, or permit retroflexion to take place over its posterior bar. The patient should be wholly unconscious of its presence and should be instructed to remove it immediately if it



FIG. 1.—Beck's monkey trot as used after the tenth day for the prevention of retroversion.

in with the patient in the knee-chest position, and later with a properly fitting pessary. The greatest field for the pessary is in the retention of the post-partum retroversion.

Reposition of the uterus without periuterine adhesions in recent cases may be easily accomplished by bimanual manipulation, with the patient in the dorsorecumbent position or the uterus may be repositd by instrumental manipulation of the cervix with the woman in the knee-chest posture. We never reposit a uterus with the uterine sound. When the uterus has been repositd it must be retained in its corrected position. This is done at first with the tampon later with the pessary. With the uterus repositd and the patient in the knee-chest posture, the cervix is pushed well up and back toward the sacrum, and the lambswool tampons saturated with boroglyceride are placed below and in front of the cervix to hold it backward, never behind it. The patient is instructed to return in forty-eight or seventy-two hours with the packing still in place. She is again placed in the knee-chest

causes pain. Too small a pessary will fail of its purpose. There should be sufficient room on every side to admit the finger. Too sharp a posterior curve may permit retroflexion of the fundus over the posterior bar, while a too little downward anterior curve may irritate the urethra and vesical neck. In the presence of much relaxation of the pelvic floor the pessary fails because it is frequently not well retained. The function of the pessary is to antevert and raise the uterus in the pelvis by raising the upper part of the posterior vaginal wall. The posterior vaginal wall in the posterior fornix runs around the posterior or upper bar as a rope over a pulley, and draws the cervix upward and backward. The anterior bar takes its purchase behind the pubis, and is retained in this position by the pelvic floor. It thus supports the anterior vaginal wall. There are certain contraindications to the use of the pessary, as follows:

1. A large lax introitus without sufficient muscular structure in the pelvic floor to hold a pessary in place.

2. In lacerations of the cervix with hyperplastic change and parametric inflammation in the base of the broad ligaments, and in the uterosacral ligaments.

3. In inflammation of the pelvic peritoneum.

4. In the presence of prolapsed or tender ovaries.

5. In the presence of posterior uterine adhesions limiting the mobility of the uterus.

When the pessary fails, and not until then, should we consider operation for the correction of retroversion.

287 CLINTON AVENUE.

THE TECHNIC OF TONSILLECTOMY IN USE AT CAMP HANCOCK ARMY HOSPITAL, 1918.*

BY GEORGE M. COATES, M. D.,
Philadelphia,

Lieutenant Colonel, Medical Corps, U. S. Army,
and

M. RASKIN, M. D.,
Baltimore, Md.,

First Lieutenant, Medical Corps, U. S. Army.

The method employed by us for tonsillectomy at the base hospital, Camp Hancock, Georgia, was first described by F. O. Lewis, associate professor of laryngology at Jefferson Medical College, and therefore no claim of originality is made in this report. The technic was also used in the winter

chiefly aimed at herein is simplicity of technic, with a view of returning the patient to duty at the earliest possible date. The operation to be described is done under local anesthesia by election; the principle, however, can be employed with general anesthesia. No primary or secondary hemorrhages, or complications of any kind, had been encountered at the time this report was made. We feel sure also that the period of convalescence is materially lessened by the use of this method and the operating time is undoubtedly shortened.

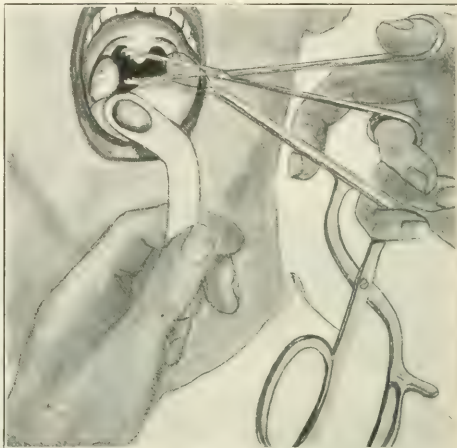


FIG. 2. Operative technique: Second step, A. Reapply forceps with deeper grasp. The upper blade being inserted in the upper incision, traction being made toward the median line of the pharynx. (Note the position in which the forceps and snare are held.)

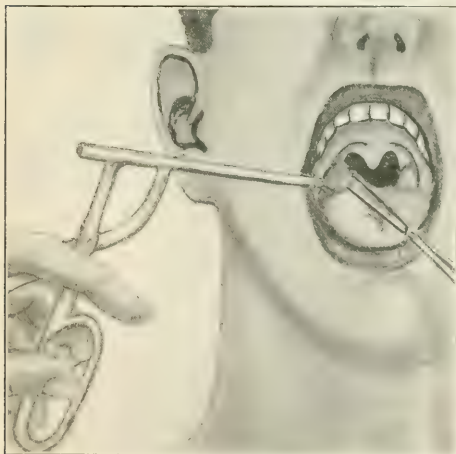


FIG. 3. Operative technique: Second step, B. The snare is first encircled. Traction on forceps toward median line with gentle pushing of snare wire against the pillars, will cause tonsil to revert.

of 1917-1918 at Camp Sevier, South Carolina, with entire satisfaction, although at Hancock it was a little more elaborately carried out.

It is not our intention here to elaborate on the indications for tonsillectomy. The objective

*Permission to publish granted by the Surgeon General, U. S. Army.

Patients are admitted to the base hospital the night before the operation, thoroughly examined, and given the usual preoperative preparation. Before coming to the clinic, the soldier takes a bath and thoroughly brushes his teeth. Upon reaching the clinic, he is instructed to wash his face and hands with soap and water and then with a weak solution of bichloride of mercury or alcohol. A sterile gown is put on and the patient is seated in a white enameled operating chair with sterile slips for the arms. The head is covered with a sterile towel and a sterile sheet is draped over the gown.

Anesthetization.—In the case of very nervous or apprehensive patients a hypodermic injection of morphine and atropine is administered twenty minutes in advance of beginning the operation. This was found necessary in a good many patients coming from the Thirtieth Division at Camp Sevier, but was more rarely used with soldiers of the Twenty-eighth Division at Camp Hancock, there being a decided difference in the types of these men. An application of ten per cent. cocaine hydrochloride is made slowly to the plica, anterior pillars, base of the uvula, pharynx, and the base of the tongue, care being taken to avoid the production of gagging. A cotton wrapped curved copper applicator dipped in ten per cent. cocaine solution is inserted immediately below the plica, between the base of

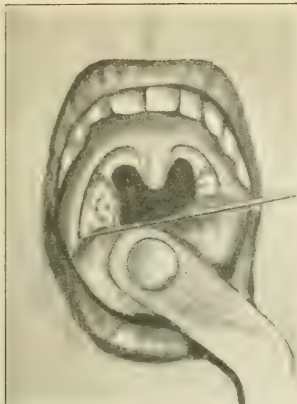


FIG. 3.—Cotton wrapped, curved, copper applicator dipped in ten per cent. cocaine solution laced between the base of tongue and tonsil.



FIG. 4.—With closed lips, allow applicator to remain in contact for several minutes.

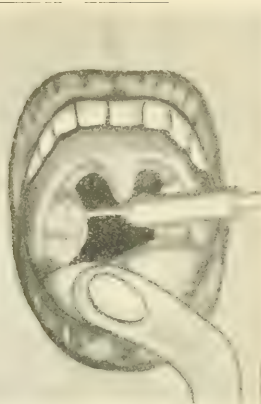


FIG. 5.—Raise the edge of anterior pillar with the point of the needle.

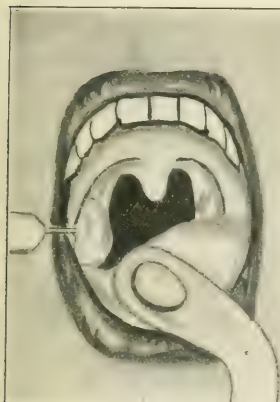


FIG. 6.—Incline needle laterally and push forward for a depth of one or two cm. The fluid lodges between the capsule and superior constrictor. Two c.c. of a one per cent. solution of apothesine with several minims of one one thousandth of adrenalin chloride solution, or substitutes one tenth of one per cent. cocaine, one per cent. solution of novocaine, or normal saline solution.



FIG. 7.—Operative technic: First step.—Incision is started at anterior free lower border of the tonsil. The cut being made upward in the tonsillar tissue, following the line of anterior pillar, and severing the plica triangularis if necessary. Continue the incision upward, sweeping around the grasp of the forceps and continue downward anterior to the posterior pillar, until the lower free border of the tonsil is reached.

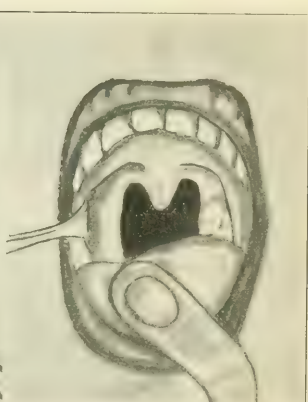


FIG. 8.—Tonsil fossa exposed, showing complete enucleation with preservation of anterior and posterior pillars. After the completion of the operation as described after the manner originally described by F. O. Lewis.

the tongue and tonsil. With the lips closed the applicator is allowed to remain in contact for several minutes. This same procedure is repeated on the opposite side. (Note Figs. 3 and 4.)

Two c. c. of a solution of apothesine in normal saline solution with several minims of one in 1,000 of adrenalin chloride is injected under the anterior pillar about the midpoint; this site having been previously painted with a three and a half per cent. solution of tincture of iodine. (If the apothesine was not available a one tenth of one per cent. solution of cocaine was used, or a one per cent. novocaine solution.) With an ordinary tonsil syringe the edge of the anterior pillar was raised with the point of the straight needle employed; the

needle was then inclined laterally and pushed backward for a depth of one or two cm., the fluid lodged between the capsule and superior constrictor muscle. (Note Figs. 5 and 6.)

Both tonsils may be injected at once without loss of time. The patient not infrequently complains of an inability to articulate. This is evidence of excellent anesthesia. In a few instances normal saline solution alone was used as the injecting fluid according to Ersner's method, with satisfactory results.

FIRST STEP IN OPERATIVE TECHNIC.

The incision is started at the anterior free lower border of the tonsil, the cut being made upward in the tonsillar tissue following the line of the an-

terior pillar, and severing the plica triangularis if necessary. The depth of the cut varies according to the type of the tonsil, enough depth being obtained to allow proper eversion. The incision is continued upward, sweeping around the grasp of the forceps and downward anterior to the posterior pillar until the lower free border of the tonsil is reached. In cases where there is a large submerged upper pole, it is necessary to extend the upper incision into the submerged portion of the tonsil. In making the anterior incision the knife should be directed as nearly as possible across the fauces from the opposite corner of the mouth, thus undermining, in a way, the anterior pillar. This incision may be made deeper than the posterior one where the position of the palatopharyngeus is such that if too deep an incision is made, or the knife directed from too near the middle of the mouth, the posterior pillar may be wounded by the knife point. (Note Fig. 7.) Figure 7 is not quite correct, as it apparently shows the knife inserted between the tonsil and the pillar instead of in the tonsil tissue itself as it should be.

This emphasizes the fact that the incision is at all times in the tonsil tissue and never between the capsule and the pillars, as it necessarily is in a true dissecting operation, either sharp or blunt.

SECOND STEP IN OPERATIVE TECHNIC.

After accomplishment of this first stage the forceps are released and reapplied with a deeper grasp, the upper blade being inserted if possible in the upper incision, traction being made toward the medium line of the pharynx. Previous to this the forceps had been threaded through the snare wire loop and the snare held with the little finger of the hand grasping the forceps, as is noted in Fig. 2.

This saves time and leaves the other hand free for the tongue depressor. As soon as the tonsil is grasped the depressor is withdrawn, the snare is transferred to the other hand and held so that the lower pole is first encircled. Traction on the forceps toward the median line combined in some cases with gentle pushing of snare wire loop against the pillars will cause the tonsils to evert. (Note Figs. 8 and 1.)

The tightening of the snare wire will sever the tonsillar attachments, the tonsil itself coming away lightly turned inside out, with the capsule intact.

Should there be a tendency to bleeding immediately following enucleation, it may be controlled very easily by pressure in the fossa, with a small gauze sponge that had been saturated in a solution of equal parts of tincture of ferric chloride, tincture of iodine and tincture benzoin comp. or a gauze sponge may be moistened, coated heavily with bismuth of nitrate, tucked snugly between the pillars and left inside for hours, if necessary. In our experience, no bleeding has been sufficiently alarming to necessitate ligation. In fact, in the majority of cases there is no afterbleeding at all, the fossae tonsillaris remaining practically dry after removal of the tonsil.

Snares in use in this clinic are the Tydings, and Beck-Miller. The latter may be more suitable because of the lock attachment which allows gradual severing at the base coincidentally favoring more

or less complete crushing of bloodvessels. After one becomes thoroughly familiar with the technic the procedure requires but a few minutes. The shock to which the patient is subjected is nil. Post-operative treatment consists largely of a liquid or soft diet, which has a caloric value of approximately 1,500 calories, for forty-eight to seventy-two hours. A tepid gargle of one in 4000 of potassium permanganate solution is used every three hours. In many of the cases also a five per cent. solution of dichloramine-T in chlorococane oil is applied twice daily to the fossae. But further trial must be made before the value of this is determined in this particular connection, though as yet there has been no contraindication.

SUMMARY.

1. Simplicity of technic.
2. Complete anesthesia.
3. Apothesine one per cent. solution is favored, and no toxic action noted; anesthetic value excellent. However, one-tenth of one per cent. cocaine, or one per cent. novocaine solution may be substituted for the injection. Normal salt solution has been used.
4. Complete enucleation of the tonsils with capsule intact.
5. Where desired, great speed can be obtained.
6. No assistants required.
7. The method is applicable to any type of tonsil, including a small submerged and even a type bound down by old peritonsillar scars.
8. Whenever a general anesthetic is objectionable, by reason of some preexisting pathological condition, this method is the one of choice.

1736 PINE STREET.

THE LIGATURE OF THE INTERNAL ILIAC ARTERY IN GYNECOLOGICAL OPERATIONS.

BY RAPHAEL MASSART, M. D.,
Paris, France.

Ligature of the internal iliac artery, in extensive abdominal hysterectomy for cancer of the neck of the uterus, is at times indispensable, at least to be advised in the majority of cases. This ligature affects all of the territory irrigated by the branches of the internal iliac artery, including the uterine artery; it prevents oozing in the vaginal section, facilitates the maneuvers of liberating the ureters, and relieves the surgeon from caring for a long and minute hemorrhage. Our master, Professor T. L. Faure, systematically practises the ligation of this vessel and uses an extremely simple technic which we shall describe.

The ligature of the internal iliac artery should not prolong the duration of an already lengthy operation and should be done without difficulty. The transperitoneal technic, which Quence and Duval have described in detail, is easily accomplished from the right side where the artery is covered only by the peritoneum; on the left side it is sometimes made more difficult by the low insertion of the sigmoid mesocolon which conceals the origin of the artery. The ligature should traverse the sig-

moid mesocolon prior to invading the prearterial peritoneum. In these cases the ligature is longer and tends to complicate the operation.

In all abdominal hysterectomies for cancer it is much more natural to ligate the internal iliac arteries after having sectioned the superior portion of the broad ligament and so cleared away from each side the tube and the ovary. All of the superior portion of the broad ligament is opened, and

ligature is the causing of a transitory anemia for the field of operation, and it has little importance otherwise. Ultimately the lumen of the vessel will regain its original form and function.

The method of fastening the tube and the ovary to one side is most convenient when operating in the ovarian region. If this is not done they tend

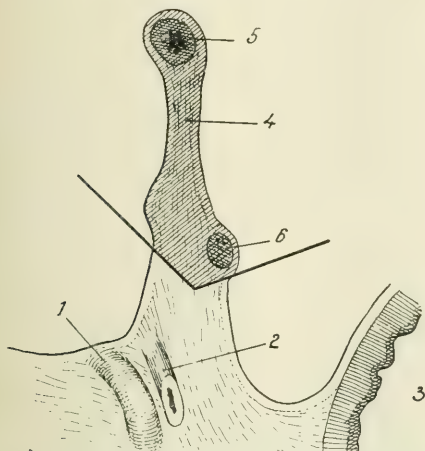


FIG. 1.—The tissues are moved aside, the base of the broad ligament is widely opened, and the internal iliac artery is accessible.

it is through this breach that the operator reaches the point of origin of the internal iliac artery (Fig. 1). Considerable light is added to the operator's field if the uterus is drawn to the side opposite to that on which the ligature is made. Forceps are used to grasp the posterior fold of the broad ligament which is drawn upward and backward (Fig. 2). The cellular tissues at the base of the broad ligament are separated with the finger to the point where the pulsations of the artery may be felt. During this manœuvre one can see the ureter, which, passing through the posterior fold of the broad ligament, is drawn away (Fig. 4). The ureter is used as a guide, for the contractions can be perceived. It is drawn backward and slightly outward toward the wings of the sacrum, where the bifurcation of the common iliac artery is encountered.

The artery is separated by means of a grooved director and a ligature is passed about the artery upon a long handled and extremely curved needle, as shown in Fig. 3. It is useless to draw the ligature too tightly. The only demand made upon the

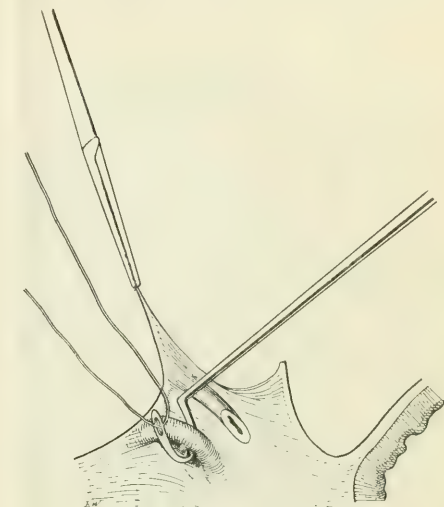


FIG. 2.—The forceps are grasping the posterior fold of the broad ligament which includes the ureter and the ligature is passed under the artery.

to fall back and obscure the operative field. It is also the most rapid procedure, for the essential parts are never lost sight of during the course of the operation. This is an important point, as it is essential that a clear field be maintained from the beginning to the very end of the operation. In making the ligature the ureter is isolated.

The greatest difficulty is encountered in extremely obese women and in women with narrow pelvises. This difficulty, however, is the same no matter what technic is employed. These obstacles are overcome by the use of the long needles and dissecting forceps devised by Professor J. L. Faure. This technic is similar to that employed by Altuchoff for the ligation of the uterine artery at its point of origin. The procedure which he described in 1896 consists of discovering the uterine artery in the ovarian fossa and opening the broad ligament between the fallopian tube and the round ligament.

But the opening of the entire superior portion of the broad ligament, in putting aside the fallopian



FIG. 3.—Long handled needle with small curvature as designed by Professor Faure: a, the thread carrying needle; b, curved portion of thread carrier

tube and the ovary, resembles the technic which we have just described, greatly simplifying the discovery of the internal iliac artery.

During this ligation two things to be avoided are injury to the iliac veins and ligation of the ureter. The iliac veins may be injured when the needle is passed about the artery, but it is to be noted that this accident rarely occurs; it is not extremely difficult to separate the cylindrical artery from the

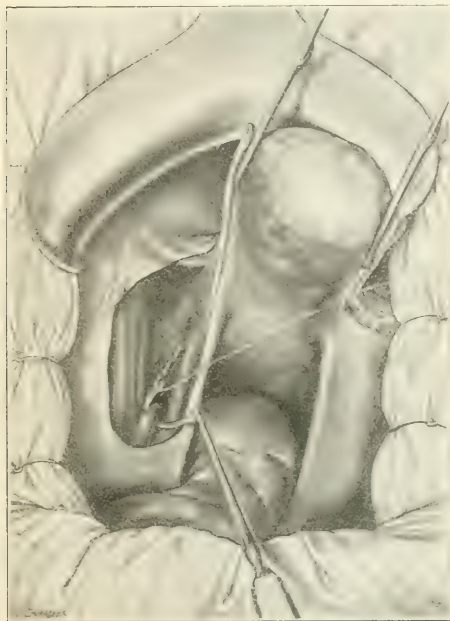


FIG. 2.—Showing the peritoneal fold reared, and the ligature being passed under the artery.

flattened vein and the extremely loose cellular tissue brings them together at the origin of the hypogastric sheath.

The ureter may be fastened in two ways: 1. The ureter may be bound into the ligature with the artery. This may be avoided by isolating the artery and following the artery a step at a time in the centre of the ligature. 2. The ureter may be confounded with the artery. Neither in its calibre, shape, nor direction does the internal iliac artery, the pulsations of which may be seen, resemble the ureter. In addition the course of the artery is short and has but little movement, while the ureter is long, flexible, mobile, and remains adherent to the posterior fold of the broad ligament. In making the ligature according to this technic it may be done in the same way on either the left or right side, and the insertion of the sigmoid mesocolon need not complicate the operation since it is not fastened to the wall of the posterior peritoneum. We thought it would be of interest to describe the details of this simple technic, which is of great service in total hysterectomies for cancer of the uterus.

HEMOSTASIS OBTAINED WITH SMALL RUBBER BANDS INSTEAD OF LIGATURES.

BY ANGELO L. SOREȘI, M. D.,
New York.

We have found that in obtaining hemostasis or for tying tissues small rubber bands instead of ligatures have been very satisfactory, and we therefore recommend their use. The *modus operandi* is as follows:

The nurse prepares several artery forceps ready for use, by slipping over them, at the hinge, one or more small rubber bands, as shown in Fig. 1. The forceps are then boiled, care being taken not to boil them too long so as to impair the resiliency of the rubber. Artery forceps prepared thus are used by the surgeon in the same manner as ordinary forceps, that is, he catches the tissues or blood vessels with them in the usual way (Fig. 2). He slips the rubber band over the blood vessel or the tissues held by the forceps with the help of the thumb forceps (Figs. 3 and 4), and removes the artery forceps. With a little practice this manœuvre can be accomplished so rapidly that the surgeon will find it advantageous to remove the artery forceps immediately instead of at the end of the operation, and prevent any inconvenience caused by their presence.

We recommend the placing of several bands on each forceps and then boiling them after being so prepared, and also to slip the band with the help of a thumb forceps, instead of using the fingers, in order to prevent any possible infection due to handling the rubber bands, which obviously could be sterilized separately and then mounted on sterile forceps and slipped over the blood vessels or the tissues with the help of the fingers.

Rubber bands are preferable to ligatures, except when the ligature may become the centre of a calculus, as in the bladder, whether the ligature material is absorbable or unabsorbable, for many reasons, as follows:

Their use makes possible the safest hemostasis because there is no danger of late hemorrhage due to the possible slipping of the ligature, the unraveling of knots, or the cutting of the tissues by the ligature itself. There is also no danger of hemorrhage from an imperfect ligature, the imperfection being due to loose knots, to slipping of the ligature while being tied or to any other cause. In fact the rubber band will grasp immediately and securely the tissues while at the same time it does not stop the flowing of the blood to the tissues by a really violent strangulation of the same, as happens when ligatures are used. The rubber band obviously can not cut the tissues, because its action is not due, as in the case of ligatures, to the tightness with which the thread, naturally inelastic, is knotted, but depends entirely on the resiliency of the rubber, which can not cut the tissues, no matter how resilient the rubber is.

The rubber band cannot slip when it is being put over the tissues or at any time afterward, because, while being placed on the tissues the forceps cannot be removed easily until the band is beyond the tips of blades of the artery forceps which are hold-

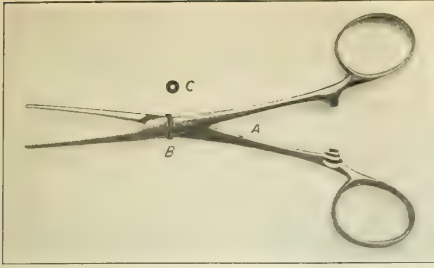


FIG. 1.—A, Ordinary artery forceps with rubber band applied over hinge; rubber band is applied over the hinge because it is not stretched when the forceps are opened and does not interfere with its perfect working; B, rubber band over hinge; C, rubber band as it appears before being put over forceps. Note the smallness of the hole, which allows a good compression of the tissues over which the band is applied.

ing the tissues. The moment the rubber band is beyond the tips of the blades of the artery forceps, the tissues are securely held by the band which, being round and elastic, tightens over them. The rubber band cannot slip any time afterward, because the tissues assume the shape of the figure eight; the groove found in the eight being made by the rubber band compressing the tissues, so that the rubber band, which is strongly elastic, can not pass over the tissues which are beyond the band, because they are much more voluminous than the tissues compressed by the rubber band. Moreover, the rubber band sets up a mild irritation of the compressed tissues, which helps in immediately securing its stability in the tissue themselves. Fig. 5 shows how rubber bands cannot slip and cannot cut the tissues, while ligatures can cut the tissues very easily.

In order to convince the reader of the efficiency of rubber bands and of their gentle progressive action, compared with the action of ligatures, we advise him to tie a thread of silk around one finger and put a rubber band around the corresponding finger of the other hand, so as to obtain the same degree of cyanosis in both fingers and feel the difference between the almost painless sensation in the finger on which the rubber band has been applied, compared with the extremely painful sensation in the finger tied with the silk thread.

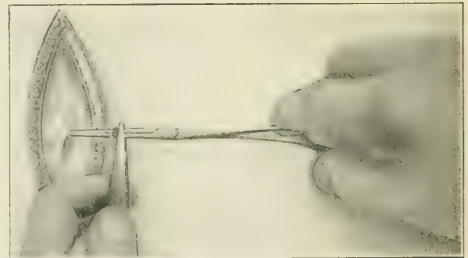
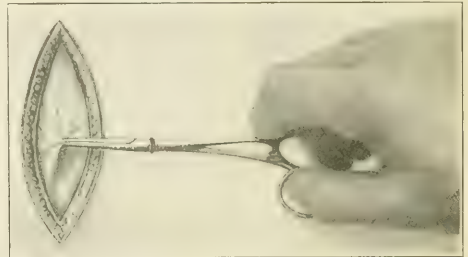
The application of the rubber bands is so rapid, when compared with the ligature method, thus saving the surgeon much time, that this advantage should be sufficient to make him discard the use of ligatures.



FIG. 2.—A, Artery forceps with rubber band over hinge catching tissues in the ordinary manner.

Hemostasis is always obtained with great ease. The slipping of the rubber bands over the tissues held by the artery forceps can be accomplished very easily, even when the tissues are located very deeply, with the added advantage that the surgeon avoids the difficulty of passing the thread behind the artery forceps, of tying securely two or three knots, and of cutting the thread properly; difficulties which at times make the mere ligature of a blood vessel located deeply the most difficult and dangerous step in the operation and the one giving most immediate and late concern to the surgeon.

Rubber, when pure, is better tolerated by the tissues than catgut, silk, or any other material now used for ligatures, and is also better tolerated because less foreign material is left in the wound, than when ligatures are used, because rubber bands do not have knots or ends of threads, as ordinary ligatures have. They are also safer because they avoid the possi-



FIGS. 3 AND 4.—Rubber band is pushed over artery forceps with point of a thumb forceps (Fig. 3) until (Fig. 4) it is slipped over the tissues and the artery forceps can then be removed.

bility which is inherent in all ligatures of having the ends act as setons. Moreover, if the technic we have recommended is followed there is no possibility of infection from the use of rubber bands, as there is from ligatures, because rubber bands are never touched by the hand and ligatures are.

The gentle action of the rubber bands in compressing the tissues allows a certain vitality or better viability to the tissues beyond the band, so that they are not condemned to a rapid death and sloughing. This fact is very important when tissues are ligated in the abdominal cavity, because the dead tissues beyond the ordinary ligatures are the centre of adhesions, as will be demonstrated in another paper. The viability of the tissues beyond the rubber bands is also important, because these viable

tissues do not help infection, as do the tissues that are beyond the ordinary ligatures on account of their rapid necrosis and sloughing. Rubber bands are so extremely cheap, as to be considered practically inexpensive, when they are compared with the cost of ligature materials, specially catgut.

Up to the present time we have used rubber bands on tissues and rather large blood vessels only, because we were unable to find on the market bands small enough for the small blood vessels. In certain cases we have tried with great satisfaction to double the rubber band, but naturally we prefer a single band proportionate to the vessels or tissues to which

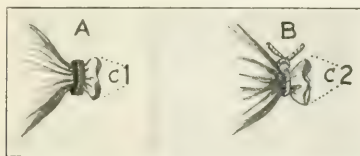


FIG. 1.—A, Rubber band compressing the tissues making a groove into them, so that the band cannot slip off; B, ordinary ligature. Compare action of rubber band and of ligature. The rubber band could not cut the tissues, while the ligature could do so very easily. However, the portion of the tissues beyond the rubber band C₁ are viable, while the tissues beyond the ligature C₂ are subject to rapid necrosis and sloughing.

it has to be applied. We hope, however, that very soon some surgical instrument manufacturer will be able to make rubber bands adaptable to any blood vessel, even the smallest. We may also suggest that the rubber bands would prove superior to ligatures, when large amount of tissues are to be tied, such as the umbilical cord.

As soon as we are able to do experimental work again, we shall study microscopically the action of the rubber bands and compare it with the action of ligatures. The clinical results obtained thus far, however, have been so good that we are induced to write this preliminary note in order to present the method to the medical profession, feeling that it represents many great advantages over the ligature method.

220 WEST FIFTY-NINTH STREET.

AN UNUSUAL CASE OF DWARFISM IN TWINS.

BY HYMAN GOLDSTEIN, M.D.,

New York,

Assistant Physician, Home of the Sons and Daughters of Israel,
Assistant Physician, Children's Clinic, Lenox Hill
Hospital, Out Patient Department,

AND

MAURICE SCHNECK, M. D.,

New York.

The illustrations in this article show an unusual condition in twins aged seven years. The smaller of the two is interesting in that half her body is uniformly smaller than the other side. The child was brought to our attention through a note from the school saying that she was dull, backward, and undernourished, needing medical care. Upon inspection we noticed that the child was under weight,

below height, limping, and had a peculiar condition of the right eye simulating a ptosis of the lid.

An examination of the children revealed the following anthropometric data about the smaller child as compared to the taller one:

CASE I. E. S., aged seven years; weight, twenty-nine pounds; height, thirty-five inches; circumference of head, seventeen and three quarter inches; length of palpebral fissure from the internal canthus to the external, right three quarter inches, left one inch; pinna, vertical dimension on the right side, two and one eighth inches; left two and three eighth inches; circumference of chest at the level of the nipple line, twenty and one half inches; midspinal to midsternal points, right side ten inches, left ten and one half inches; spine, marked right scoliosis; acromial end to the external styloid process, right eleven inches, left twelve and one half inches; pit of axilla to tip of middle finger, right thirteen and one half inches, left fifteen inches; midsternum to tip of middle finger with arms perpendicular to the body, right fifteen and three quarter inches, left seventeen and three quarter inches; anterior superior spine of the ilium to the internal malleolus, right side sixteen inches, left eighteen inches; umbilicus to the internal malleolus, right side seventeen and one half inches, left side, nineteen and one half inches.

CASE II. The taller child, C. S., aged seven years; weight, thirty-nine pounds; height, forty-three inches; circumference of head, nineteen inches; anterior superior spine of the ilium to the internal malleolus, right side twenty and one half inches, left twenty-one inches; umbilicus to the internal malleolus, right side twenty-two and three quarter inches, left twenty-three and one quarter inches. With the exception of the slight shortening of the right lower limb as compared to the left, this child was normal in every respect, mentally and physically.

Family History.—Father and mother are both Rumanian, free from personal and physical blemish and with negative heredity. The mother gave birth to seven children, one spontaneous miscarriage about the fourth month between the third and fourth child. The fourth child died six days after birth from an unknown cause. The other six children are living and well. No history of tuberculosis, lues, rheumatism, nervous disease, or hemophilia.

Personal History.—C. S. was born first, weighing seven pounds, a normal appearing infant. E. S. was born ten minutes later, weighing three and three quarter pounds; the difference in size of the different extremities was not noticed until the eighteenth month, when the mother consulted her family physician regarding the child's health. It was suffering from a cough. These children were the sixth and seventh, born at full term, labor without any complications or forceps. At two years they had measles, chickenpox at three. They also had frequent attacks of tonsillitis and difficult nasal breathing up to two years ago, when the tonsils and adenoids were removed. Since then the child breathed normally, and stopped coughing; the appetite was poor; bowels irregular; slept well; nursed until twenty months of age; no

hereditary atavism. Mother brought the child, stating that she was undernourished, and did not grow.

Physical Examination.—General condition of the taller child, C. S., was fair, normal intelligence for a child of seven years, half inch shortening of right lower limb, heart and lungs normal.

E. S. was undersized, underweight; the Simon

labia somewhat hypertrophied, otherwise normal; heart and lungs normal.

Laboratory Tests.—Wassermann tests of blood of father, mother, and smaller child were all negative. X ray plates showed a normal sella turcica, no enlargement of the pituitary gland, skull thickening and proportionate size to the sella turcica, about twelve to one, was normal. All the bones of the right hand were smaller than the left; the right wrist showed four carpal bones, the left six. (X ray laboratory of Dr. J. S. Diamond.)

The fluoroscopic examination showed no abnormality of the thymus, no fractures, but revealed a uniform shortening of the other long bones and ribs of the right side as compared to the left.

DISCUSSION.

There has been reported in medical literature several cases of dwarfism with shortening of an arm, of metacarpal and metatarsal bones showing no other abnormalities. Some severe examples including mental and spinal defects were reported, but these patients did not survive. Brachymelia metapodia congenitale where the third, fourth and fifth metacarpal bones were stunted showing no other abnormality were common among the reported cases. These partial so-called achondroplasia cases or chondrodystrophia (Kaufman) have been grouped among the many forms of cacomelia. Of the various cases reported we failed to find one similar to this case of twins. Had the x ray showed an encroachment on the cavity of the sella turcica by bony projections from the anterior and posterior clinoid processes and from the base of the sella turcica, we would have in mind the

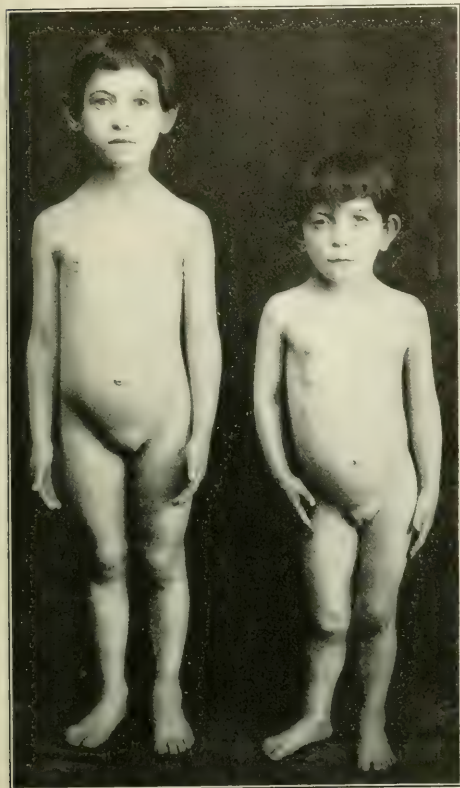


FIG. 1.—Slight shortening of right lower limb of taller girl; marked difference in size of the two children; apparent shortening and undeveloped half of smaller child's body.

Binet test showed the child to have an intelligence equal to four years. Eyes were normal, except the right eye appeared smaller; pupillary reflexes normal; right lid was narrow, but longer than the left, and appeared drooping, no paralysis or paresis of lid. Teeth—the upper central incisors appeared somewhat notched, not exactly peg shaped, to a degree simulating Hutchinson's teeth. Lymph nodes were not enlarged. Right upper and lower limbs were two inches shorter; deep and superficial reflexes were normal; sensorium normal; ears and mastoid normal; tongue normal; nose and throat free from tonsils and adenoid tissue; good breathing; skin normal; abdomen normal; genitals, right



FIG. 2.—Showing undeveloped half of smaller child's body.



FIG. 3.—Showing marked scoliosis.

condition known as infantilism due to disturbed function of the pituitary gland and perverted internal secretion from the pressure of bone upon it. Cretons have remarkable retardation of the develop-



FIG. 4.—Bones of right hand are all smaller than the left; right wrist has four carpal bones, left six. A, One and one eighth inches; B, five eighths of an inch; C, one and one quarter inches; D, three quarters of an inch.

ment and retention of the infantile state. But they are characterized by their myxedematous skin, large tongue, thick *alae nasæ*, prominent abdomens, thick and short hands and feet, undeveloped and pudgy. They are weak, sluggish, and have poor mentality. Progeria or continuous youth with premature old age: ateliosis or delay rather than arrest of development either the asexual or sexual form need not be mentioned here. Chronic diarrhea, cardiac defects, perverted pancreatic internal secretion and syphilis also give rise to various degrees of stunted growth. Careful history, physical ex-

edness of the bones as in rickets or osteomalacia; nor the result of multiple fractures as in osteogenesis imperfecta; congenital deficiency of the femur or of distal parts as amputations (hemimelia) or absence of the proximal parts phocomelia. All the bones are present but simply too short.

Parrot in 1876, introduced the name of achondroplasia to dwarf growth characterized by hypoplasia; Porak in 1891 and P. Marie in 1900 reported several cases using the same term. Later Kaufman of Berlin applied the term of chondrodystrophia to the same type of cases which he reported.

In conclusion it seems to us that this case is one of a class of dwarf growth, showing no evidences of any perverted internal secretion or defective constitutional condition as shown by the physical, laboratory, fluoroscopic and x ray examination. The uniform stunted growth of the bones of the right upper and lower extremities of the smaller child, and the somewhat stunted growth of the right lower limb of the taller one with normal skull and sella turcica point to achondroplasia *per se*, or chondrodystrophia (Kaufman) in a case of twins of rare occurrence and therefore of interest to report.

111 SECOND STREET.

79 SEVENTH STREET.

THE HISTORY OF PATIENTS SUFFERING FROM RECTAL DISORDERS IN RELATION TO DIAGNOSIS.

BY ARTHUR A. LANDSMAN, M. D.,
New York,

Associate Surgeon, Rectal Department, Post-Graduate Medical School and Hospital; Attending Rectal Surgeon, Philanthropin Hospital; Deputy Surgeon Diseases of the Rectum. Out Patient Department, New York Hospital.

The physician who is dealing with the diagnosis of disease needs all the help he can get, and will do well not to disregard such essential evidence as may be obtained from careful histories. This applies particularly to the diagnosis of rectal disorders, because not a few of these, though appearing innocent enough on the surface, are really the beginning of serious affections, in which only early diagnosis and radical treatment offer any hope of relief. Hence, nothing which might furnish a clue to the nature of the trouble should be slighted, and there is little doubt that in many cases such help may be found in a detailed history. By this is not meant the confused account of a worried patient, but an orderly arrangement of facts from which conclusions may be drawn, which are consistent with good judgment and in harmony with the objective findings.

In accordance with this plan, every history should furnish data which will give the required information in a systematized form, by preference under suitable headings, followed by a brief summary of the principal facts. The writer has found the following classification to answer the purpose:

- Family history:
- Previous history, including operations:
- Personal history:
 - Venereal history.
 - Menstrual history.

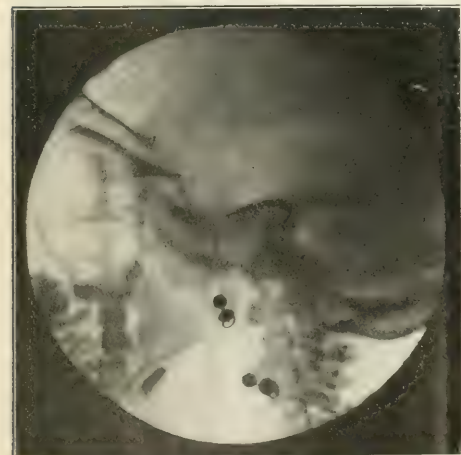


FIG. 5.—Showing normal sella turcica.

amination and Wassermann tests will help to differentiate these.

In our case you will notice that the shortness of the extremities is not due to any bowing or crook-

Marital history.

Habits: stimulants, tobacco, narcotic drugs.

Present history:

A.—Duration of illness.

B.—Principal symptoms:

1. Pain: location, nature, relation to stool.
2. Change in function: constipation, diarrhea, loss of control.
3. Character of stool: number, consistency, shape.
4. Presence of pathological discharges: blood, pus, mucus, parasites, foreign bodies.
5. Protrusions: character, replaceable (?), accompanied by subjective or objective phenomena (?).
6. Reflex symptoms: urinary and genital disturbances, radiating pain in distant parts, gastrointestinal symptoms.
7. Constitutional symptoms: loss of weight, cough, nervous derangement, pruritus.
8. Laboratory findings.
9. Objective findings, including physical examination.

Before taking up in greater detail an analysis of the information brought out in this scheme, it is well to go over certain routine and statistical data which the historian ought to have for his records; these relate to questions of age, occupation, nativity, race, and social conditions, which though having but an indirect bearing on the patient's trouble, nevertheless contribute in no small measure to our general knowledge of morbidity from various rectal diseases in certain group units.

Because of the limitations of this article, it would be futile to attempt to cover all the items under their respective headings with that wealth of detail which would suggest itself to the fertile mind: hence we shall have to content ourselves with those, which, because of their broader scope and general application, best fulfil the purpose of this discussion.

In the family history the physician may be able to discover a drift toward certain morbid tendencies, and obtain an insight into weaknesses and faults which are common in the particular group to which the individual belongs. To illustrate this point, we shall refer to two concrete examples.

A man thirty-three years of age presented himself for advice because of occasional bleeding from the rectum. He was anxious to marry and wanted to be given a clean bill of health. His habits and his personal and present history were good, his blood examination negative, and he considered himself in normal health, though somewhat uneasy on account of the bleeding. Proctoscopic examination revealed a few projecting teatlike bodies attached to the lower rectal wall, which, upon microscopic examination, were found to be benign polypi. In going over his family history the fact was brought out that a brother and a sister, who had suffered from a similar trouble, had died at an early age of carcinoma of the rectum. He was thereupon placed under observation, and within the next two years myriads of similar growths developed in the colon and the rectum, which bled profusely with every stool. The patient lost considerably in weight, and finally died of carcinoma of the colon at the age of thirty-five.

A young woman requested an opinion as to the need of an operation for a rectal complaint which was annoying rather than painful or dangerous.

She was advised against it because of suspected hemophilia in two members of her immediate family. A few months later she was operated upon in another city and almost succumbed from repeated hemorrhages.

In the light of the two cases recorded above, it can hardly be asserted that the family history has merely an academic interest to the man who treats disease. The physician will be well repaid for the time spent in going over the previous medical and surgical history in a given case, as this may throw considerable light on the present illness, indeed may stand in direct causal relation to it. It is generally conceded that the existence of uncured tuberculosis or syphilis subjects the individual to a tendency to various diseases of the nervous, circulatory, osseous and other systems; this applies with equal force to their complications and sequelæ in the anorectal region. To be more specific, the occurrence of ischiorectal abscess in an individual who is subject to frequently recurring colds, persistent cough, and chronic gastrointestinal derangement, should be viewed with suspicion. It is the experience of men who know, that in over ten per cent. of subjects of pulmonary tuberculosis rectal complications of one sort or another—abscess, proctocolitis, ulceration, enteritis, and recurring anorectal fistula—occur sooner or later. An appreciable proportion of the latter are really localized expressions of constitutional tuberculosis, and may be so diagnosed on such clinical evidence as is usually present. In some instances, however, the trouble may go on for months before its true nature stands revealed to the astounded practitioner, by the development of characteristic local lesions, or the discovery of a focus of infection in some other part of the body. (1)

In an investigation of a patient's illness it is needless to state that the personal history frequently contains data from which obvious conclusions may be drawn. These refer to menstrual and marital history in women, venereal diseases, vicious habits, excessive indulgences, the use of stimulant and narcotic drugs, all of which contain suggestions which might well be profitably followed out. Gonorrhea in the female may lead to infection of the rectum by dribbling vaginal discharges, while in the male it is by no means uncommon to find proctitis whose source is the rectal massage carried out roughly in the treatment of prostatic disease. The effects of the poison of syphilis are too well known to require more than passing mention—mucous patches, condylomata, ulceration, stricture, and proctocolitis—on which the first ray of light is often shed by a history which has been taken carefully.

Of all questions concerning the illness of a person suffering from rectal disease none are more important than those dealing with his present condition. In the first place, the examiner should inquire how long the symptoms have lasted, whether they are progressive in character, and in what respect they are most annoying. Any ailment which is of recent origin, especially if its onset is acute, is by that token almost certain to be benign; but it does not follow that merely because it has lasted a considerable time without showing any signs of malignancy that it will remain so, for we know that innocent

lesions sometime most unexpectedly become the seat of malignant degeneration, especially if they are subjected to some form of chronic irritation.

Pain.—The presence of pain in connection with illness is so significant, and has such far-reaching consequences, that it is difficult to escape the conclusion that but for its timely warning many people would perish from the consequences of disease affecting even nonvital structures. Experience teaches us that some of the most serious rectal diseases are not generally accompanied by much pain, at least not until they are too far advanced for curative surgery, for the reason, that while sensation at the anocutaneous margin is quite acute, above the white line of Hilton it is extremely dull. By this we do not wish it to be understood that there are no other symptoms present by which one may possibly suspect grave mischief, aside from those revealed by physical exploration: the alert examiner may time and again make a diagnosis of malignant tumor from the history alone, in advance of the proctoscopic examination. There may be no pain; there may be no bleeding; there may be no loss of weight; there may be no constipation; there may be any number of negative symptoms, but there is generally at least one positive symptom, which does not fit into the assumption of an innocent lesion and is incompatible with other than a true diagnosis.

On the other hand, if there is pain, the examiner should find out something of its nature, location, character, and degree; whether it is constant or intermittent, dull or sharp, throbbing or sticking, increased by bowel movement, or diminished by functional activity. It is quite characteristic of fissure of the anus that the pain due to it occurs after stool, is acute in character, and lasts from one to several hours, diminishing gradually until the next movement. Pain due to sharp foreign bodies may be increased by stool, but is never entirely absent, giving a sensation of sticking associated with diarrhea, painful tenesmus, especially if low down. The pain arising from abscess is throbbing, and moreover accompanied by a sensation of heat in the perianal parts, swelling, and constipation.

Change in function.—As the function of a part depends upon the integrity of the tissues and organs concerned in it, it follows that there can be no perfect function without perfect health. Disease of the rectum may so change, modify or interfere with its function as to bring about constipation, diarrhea or loss of control more or less marked. Before we can set down the delay as pathological, we must bear in mind that there is of course no set interval for the occurrence of bowel movements which applies to all people at all times, and that constipation is relative, and must be judged in the light of the previous habits of the individual. If in a person whose bowels moved regularly twice in twenty-four hours before the onset of his illness, delayed bowel movements occur which result in but one movement in two or three days, that person undoubtedly suffers from constipation; but as there are any number of healthy, normal beings whose bowels habitually move only once in three days, it becomes evident that what must be regarded as pathological in one individual is clearly but a normal expression of physiological function in another.

Delayed bowel movements are not inconsistent with the enjoyment of a fair degree of health, provided that they are brought about gradually enough to permit nature to adapt herself to the changed conditions; they may go on to an extent which is perfectly amazing and well nigh incredible. We are in possession of an authentic case of this kind in a physician, who in the course of four years suffered from constipation to such an extent that before his operation for the relief of the trouble, he had only one bowel movement in forty days! Yet he enjoyed a fair degree of good health.

Increase in the number of stools consisting of soft, fluid, or watery discharges is, generally speaking, not characteristic of disease of the rectum, but is due to some cause which acts on the higher portions of the bowel, unless the movements contain in addition blood, pus or mucus. This points to lesions accompanied by destruction of tissue such as is seen in cancer, tuberculosis, amebic or other forms of dysentery, multiple polyposis, etc. Nature's attempt to expel this material sets up an intolerable irritation, with frequent, irresistible desire to evacuate the bowels, accompanied by painful tenesmus and partial or complete loss of control.

Incontinence, as the proctologist sees it, results from operations upon the rectum for extensive abscess or complicated fistula, or follows rough or unskillful dilatation of the sphincter for hemorrhoids; less rarely from diseases, injuries, or neoplasm of the cord involving the centre of defecation.

Character of the stool.—We shall refer here to gross physical characters, which are evident to the patient and incorporated in his complaint, such as size, shape, consistency, and odor, all of which may be influenced by disease of the terminal bowel and give rise to deviation from normal standards. Writers have so often referred to ribbon shaped stools from stricture or malignancy that it has become fixed in the medical mind that these must necessarily be present in every such case. This is far from being true, because the shape of the stool naturally depends upon its consistency, and the size and location of the obstruction through which it must pass before it is expelled, factors which vary in different cases. For example, we know that carcinoma of the rectal ampulla may exist for some time and yet because of the size of this part of the bowel the feces need not be compressed in passing it; moreover, even if they were so compressed, they could still reform below the seat of the lesion if allowed to remain long enough. Sooner or later there is ulceration from stricture or malignancy, resulting in frequent passages of blood, pus, and mucus, and these have insufficient consistency to be molded into anything possessing definite shape. Long, thin stool, or feces shaped like spaghetti may occur in stricture of the anal margin, compression of the rectum from spasm of the levatores, or pressure from without, as in retroverted uterus and related conditions.

Normal feces have an odor which is perfectly characteristic but not necessarily offensive, excepting as this may be imparted to them by certain articles of diet, such as eggs, onions, or garlic, but the presence in the stool of pus from a ruptured abscess causes odors which are disgusting, and in

carcinoma so foul as to have been truthfully described as cadaverous.

It might be of interest in this connection to note that occasionally a patient presents himself for treatment because of what he terms peculiar and offensive odor of the intestinal gases, which preys upon his mind to such an extent as to become an obsession. We have never been able to agree with our patients on the character of the odor, and conclude that it is a mental symptom not due to an actual impression on the olfactory apparatus.

Pathological discharges.—We do not know of any one symptom which taken by itself may be set down as being more characteristic of disease of the intestinal tract than the presence of substances in the evacuations which are absent from the normal stool. Of these perhaps the most significant is the finding of blood in the dejecta, the cause of which requires careful study, as it may ultimately result from rectal disease, benign or malignant. We can not deal with this subject at present in greater detail, except to emphasize the disastrous consequences which follow when mistakes are made and an innocent cause is assigned upon insufficient evidence; instances in which rectal carcinoma has been mistakenly operated upon for hemorrhoids, or in which the two coexisted and operation was performed for the lesser trouble, are only too frequent in medical history.

Broadly speaking, rectal bleeding occurs more commonly in adults than in children, but by no means from the same causes. In adults hemorrhoids, stricture, various forms of dysentery, malignancy, fissure and multiple polyposis predominate; in children, solitary polyp, prolapse, parasites, colitis and proctitis—very rarely hemorrhoids—furnish by far the largest number of cases. When a patient gives a history of the passage of blood mixed with pus and mucus, we suspect destructive lesions such as are found in malignancy, ulceration from structure, multiple polyposis, tuberculosis, amebic dysentery, etc., whereas pure blood points to benign lesions, such as hemorrhoids, polypi, fissure, and proctitis. This, however, is not an invariable rule, since there are cases on record in which the first evidence of malignancy has been a copious hemorrhage of unmixed blood. The passage of clotted blood or tarry material with the stool is not to be taken by itself as clear evidence of malignancy, but means simply that the lesion, whatever it may be, is high up, or that the blood has been retained long enough to have become altered.

A purulent discharge from the lower bowel is only secondary in importance to the loss of blood. Sooner or later it is a part of the picture in every case of ulceration, no matter what its origin, from the invasion of the intestine by the pus forming germs; hence its presence in those disease processes characterized by destruction of tissue. A history of swelling, acute throbbing pain in the rectum followed by a free discharge of pus from the parts, points to a rupture of an abscess into the bowel. A drop or two of pus obtained by "milking" the rectum, or after pressure of the anal margin, calls for a careful search for a blind internal fistula, or small submucous abscess.

Mucus is secreted by the goblet cells of the in-

testine, and should be sufficient to lubricate the bowels but not to accumulate in strings, tubes, or casts; excessive quantities indicate irritation of these cells from mechanical or chemical causes, such as occur in colitis, proctitis, polypi and papilloma of the rectum.

Parasites.—Patients who refer their complaints to the rectum should be questioned about the presence of anything resembling the common intestinal worms, or better still be asked to bring a specimen of the stool for examination. Chronic proctitis, with ulceration and bleeding from the bowel and a host of other symptoms, may be caused by helminthiasis, which will not yield to treatment unless its cause has been removed. Stubborn cases of pruritus ani in children are often traceable to threadworm or other parasites.

Foreign bodies.—Intestinal concretions, sand, gravel, gallstones, indigestible material from food swallowed, generally give no symptoms referable to the rectum unless they accumulate in sufficient quantities to cause obstruction; when they do, there may be a history of recurring abdominal pain, as in gallstones, followed by obstipation more or less complete. Paradoxical as it may seem, such patients complain as frequently of diarrhea as of constipation; the mass becomes channeled through its center, and gives rise to a frequent desire to expel a thin, soft sometimes blood tinged stool, from the irritation of the bowel or necrosis of its walls.

Protrusion.—From the patient's viewpoint, every protrusion from the rectum is classed as piles, an opinion, which, sad to relate, is not infrequently shared by the medical attendant. In children and infants these are likely to consist of prolapse of rectal mucous membrane, pedunculated polyps, very rarely hemorrhoids. In adults, on the other hand, the most common cause is piles, less frequently fibroid polyp, true prolapse of the rectum, papilloma and even carcinoma. As bearing on the history, inquiry should be made as to the nature and character of the protrusion, the time of its occurrence, relation to stool, and the subjective symptoms which accompany it.

Reflex symptoms.—They occur at more or less distant points from the seat of the local trouble by reflection of impulses, and may assume a variety of manifestations. Among the most common are functional disturbances of the genitourinary apparatus, such as burning and stinging in the urethra and bladder, frequent and painful micturition, and even urinary retention; dull aching sensations in lower spine, sacrum and coccyx; shooting pains in the leg and heel, and less frequently gastric disturbances, ranging from painful sensations in the epigastrium, to soreness, abdominal cramps, and attacks of diarrhea which cannot be accounted for on any other basis, and disappear with the correction of the rectal disease.

Constitutional symptoms.—Under this heading we shall discuss loss of body weight, cough, functional nervous disturbances, and for want of a better classification, pruritus ani. Loss of weight may result from insufficient intake, improper assimilation of what is taken, excessive losses arising from drain on the albuminous constituents of the body, or from wasting diseases accompanied by

tissue destruction. Of these the last named is of particular concern to us, because of the frequency of malignant disease in the rectum and colon, and the rôle which they play in the causation of this symptom. We must be careful, however, to remember that while they are often accompanied by loss of weight, this is not an invariable part of the picture of malignancy; sometimes it may be absent because the patient is seen very early in the disease, the tumor is of slow growth, or destruction and repair balance each other.

Cough.—The significance of a chronic cough in a person suffering from rectal disease lies in its relation to possible pulmonary tuberculosis, which not infrequently develops complications in the form of ischiorectal abscess and fistula; if in addition, the history brings out other corroborative symptoms, diagnosis and treatment must be materially influenced thereby.

Functional nervous derangement.—Some patients are so constituted that their nervous system is unable to stand up against painful impressions without the loss of that fine equilibrium which is essential in the conduct of one's daily life. The constant annoyance and misery which accompany some forms of rectal disease prey upon their minds to such an extent as to put them into mental states which result in their being set down as confirmed neurasthenics; before committing one's self to such a diagnosis, it is advisable to make a searching proctoscopic examination to exclude the existence of possible organic disease of the rectum.

Pruritus ani.—We do not know of any benign disease of the rectum which is capable of causing so much distress and results in so much physical and mental suffering as a marked case of pruritus ani. It is small wonder that some of these patients are reduced to such desperate straits that they contemplate selfdestruction. It is futile to expect a cure of this disease unless we succeed in finding the cause, in which the history may sometimes be helpful, as in a recent case under our treatment. The patient, a child, had been suffering from a most stubborn pruritus ani. The mother recollected that one year before she had been visiting friends in a nearby city whose child had been similarly troubled. Repeated sigmoidoscopic examination in conjunction with minute activating doses of san-tonine finally located the threadworm as the cause of the itching, and resulted in relief. The friend later also brought her child to the city, and it was likewise found to harbor the same parasite. Of course there are many other causes, from local disease of the rectum to constitutional conditions like diabetes mellitus.

Laboratory findings.—These form an essential part of the story without which no diagnosis is possible in some cases; this is true of such patients as require laboratory examination of stool or pathological discharges for tubercle bacilli, hookworm, ameba, etc., smears for gonorrhea or spirochetes, or microscopic examination of excised tissue to differentiate conditions which are similar in appearance; examination of blood and urine, and in an increasing number of cases x ray examination of the gastrointestinal tract must be carried out to safeguard

properly the patient's interest. As these require technical training quite beyond the reach of the average physician, and as they are in some cases the only facts by which we can determine the true nature of the trouble, the proctologist must have the cooperation of a trained group with expert qualifications, at present unfortunately unavailable for a majority of sick people requiring such service. It is only as we are able to provide these in a modern, welltrained organization that we may hope to clear up many obscure conditions, which would otherwise remain unrecognized.

Other objective findings.—These include a general physical examination. No proctological examination is complete which does not take into account the underlying cause of the local trouble, as manifested on the intestinal tract. It needs no argument to prove that the rectum, being an essential unit in a complicated whole, is necessarily affected by disorders of related organs, in response to which it shows definite changes in structure and function, often enough reflected in a careful medical history.

The physician who proceeds with the study of his patient in an orderly and systematic manner will uncover one fact after another, which when pieced together and assigned its proper value, will point unerringly to the goal for which he is striving.

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310 WEST EIGHTY-SIXTH STREET.

ANALYSIS OF EIGHTY CASE RECORDS OF BRONCHIAL ASTHMA.

From the Wards of the Jefferson Hospital, Philadelphia, 1910-1916.

By ALEXANDER STERLING, M. D.,
Philadelphia.

Those who are interested in solving the secrets and mysteries of that capricious disease, bronchial asthma, will appreciate our endeavors in this study. We were fortunate in procuring the voluntary services of Miss Dissel, who compiled the hospital records, the necessary material for our study, and who spent a great deal of time and money looking up every one of the asthmatics at their homes with the purpose of ascertaining the present health condition of the patient.

Four patients were well and free from attacks up to date (five per cent.); seven were still suffering from asthma (nine per cent.); two had died from asthma (2.5 per cent.); forty could not be located (fifty per cent.); twenty-seven were out of town and we did not make any attempt to locate them.

Ages.—Tables I and II show the ages of the patients admitted to the hospital and the ages of the patients when their asthmatic attacks began. The number of admissions according to age gradually increased reaching the maximum of twenty-seven patients, or thirty-four per cent. between thirty and forty years of age. Fifteen patients, or nineteen per cent. were admitted between twenty and thirty years of age. Forty-two patients, or fifty-three per

cent., were suffering from asthma in the prime of life when people are supposed to be most productive and useful members of the community.

Fifty out of eighty patients gave the exact beginning of their asthmatic paroxysms. Thirteen patients, or sixteen per cent., began to suffer from bronchial asthma between twenty and thirty years. In sixteen patients, or twenty per cent., the asthmatic attacks began between thirty and forty.

TABLE I.

Age of asthmatic patients admitted to hospital.	Number of patients admitted.	Percentage.
1 to 10 years of age.....	three	4
10 to 20 years of age.....	five	6
20 to 30 years of age.....	fifteen	19
30 to 40 years of age.....	twenty-seven	34
40 to 50 years of age.....	thirteen	16
50 to 60 years of age.....	nine	11
60 to 70 years of age.....	none	
70 to 80 years of age.....	three	4

TABLE II.

Age of patients when asthma began.	Number of patients.	Percentage.
1 to 10 years of age.....	seven	9
10 to 20 years of age.....	six	8
20 to 30 years of age.....	thirteen	16
30 to 40 years of age.....	sixteen	20
40 to 50 years of age.....	five	6
50 to 60 years of age.....	three	4
Not recorded.....	thirty	

In other words, in thirty-one patients, or fifty-eight per cent., the asthmatic attacks began between twenty and forty years of age, or the most productive years of life. The youngest patient admitted was five years old. The youngest age given at which bronchial asthma began was two years. The oldest patient admitted was seventy-eight. The oldest age given as the beginning of asthma was fifty-five years.

Sex.—According to sex in this series we have forty-nine men, or sixty-one per cent., and thirty-one women, or thirty-nine per cent. The women were all white, and there were only two colored men, the proportion being three men to two women.

Occupation.—While there were twenty-seven different occupations among the asthmatics admitted, from the data at hand there is nothing to show that any particular occupation produced more asthmatics than another. The highest on the list were: Housework, twenty-one, or twenty-six per cent.; street laborers, seven, or nine per cent.; tailors, four, or five per cent.

In the case of women, while housework might play an important part as a direct or indirect etiological factor in producing asthma, on account of the dust, which acts as a respiratory excitant, it would seem wrong to disregard other factors which could be a possible cause for asthma. Among these might be considered the cooking and preparation of different foods which could be producing allergic asthma. Consider also the woman whose husband's business is connected with the living apartment, such as shoemaker's shops, fruit dealers, furriers, chicken stores, etc.; in which case the woman may be having an allergic sensitiveness to different grasses or animal emanations; in other words, the husband's occupation, if elicited or brought out in the history, would perhaps in some cases be more important from an etiological point of view than the actual housework done by the patient. As it stands

in the case of twenty-one women out of thirty-one, or sixty-five per cent. of the women suffering from bronchial asthma, housework is given as an occupation, but it could not be definitely ascertained whether housework or other factors were probably responsible. Forty per cent. of the patients had a more or less dusty occupation. Dust of any kind is strongly suggestive as an exciting factor. I have seen time and time again that toilet powders aggravate the asthmatic and make the cure very difficult and I therefore do not hesitate to forbid their use.

Urine.—This series does not include any apparent renal or cardiac asthma; any records suggestive of some cardiac or renal abnormality were discarded, but the following urinary findings may be of some interest:

Nineteen patients had no albumin.....	22%
Fifty-three patients had a slight trace of albumin....	75%
Seventy-five reactions were acid.....	94%
Four reactions were alkaline.....	5%
One reaction was neutral.....	1%

In all of the eighty patients the different tests for sugar were negative. While their specific gravity varied from 1.005 to 1.040; the majority were from 1.015 to 1.025. (See Table III.)

TABLE III.

Specific gravity.	Number of patients.	Percentage.
1.005 to 1.010.....	four	5
1.010 to 1.015.....	eleven	14
1.015 to 1.020.....	twenty-six	32
1.020 to 1.025.....	twenty-three	29
1.025 to 1.030.....	fifteen	18
1.030 to 1.035.....	two	2

TABLE IV.

Percentage of urea.	Number of patients.	Percentage.
.5 to 1 per cent.....	one	3
1 to 2 per cent.....	thirteen	43
2 to 3 per cent.....	eleven	37
3 to 4 per cent.....	nine	30
4 to 5 per cent.....	two	6

Urea was studied in thirty-six patients.

Nineteen patients had an occasional hyaline or granular cast in the whole slide. Seven men had pus cells in the urine. Three women had pus cells in their urine. Eleven patients or thirty per cent. (see Table IV) had a relatively high urea—four to five per cent., while all the others, twenty-five, or seventy per cent., had from .8 to three per cent. urea. The high percentage of albuminuria in the asthmatic cannot be passed unnoticed. Is it possible that the very same metabolic factors responsible for the production of albumin could also probably be directly or indirectly responsible for the production of the paroxysm? Or, if not actually producing the paroxysm, may perhaps be directly responsible for the very poor power of resistance and recuperation that the asthmatics always show, especially as far as the respiratory instability is concerned. That the presence of a trace of albumin in the urine in seventy-five per cent. of the asthmatics, suggests very strongly the probability of an acute or chronic, endogenous or exogenous intoxication, with its selective affinities for the kidney substance, producing a mild parenchymatous degeneration, at the same time being responsible for some vascular or parenchymatous degeneration in the lung structure, which disturbs the proper functioning power producing the paroxysmal dyspnea. It

would be very interesting to note here the very recent animal experimentation by Doctor Broughton, of Chicago (1), who induced chronic protein intoxication in animals and found abnormalities in the structure of kidney and lungs which consisted of degeneration and some necrosis of the parenchymatous cells, round cell infiltration and fibrosis, edema, and thickening of the walls of the smaller arteries. I do not mean it to be understood that asthma is produced by chronic protein intoxication only. Not at all, but I do think that asthma apparently is the result of an intoxication, such as:

1. Animal—animal food or animal emanation.
2. Vegetable—vegetable food or vegetable pollination.
3. Bacterial infection.

The probable etiological factors mentioned above as producing bronchial asthma could be demonstrated in only about forty or forty-five per cent. of patients, while in about fifty to fifty-five per cent. the causes could not be detected even with our modern methods of diagnosis. In other words, fifty to fifty-five per cent. of the patients suffering from asthma do not show sensitiveness to animal, vegetable, or bacterial infection; if they do show sensitiveness to some particular intoxication, it may not be the only etiological factor, because the patient does not improve even if the particular apparent intoxication is corrected.

To summarize: The etiology in about fifty per cent. of the cases of bronchial asthma is rather obscure. Could any theory of intoxication explain the following phenomena: A girl in perfect health, sitting in her parlor entertaining friends, had a spell of laughing which resulted in an asthmatic attack lasting several hours. She has been suffering from asthma since, for the last five years. This and similar cases would lead one to look for some other etiological factor. I shall discuss other etiological possibilities in another paper.

Temperature.—In twenty-three patients the temperature was 99.5° on admission; in three patients the temperature was 101° on admission, and in three patients the temperature was 103° on admission. Twenty-two patients had temperatures fluctuating between 99.5° and 96.4°. Thirty patients had normal temperature on admission and throughout their stay in the hospital.

Blood examination.—A careful blood study was made in thirty patients. Eight patients, or twenty-five per cent., had a hemoglobin content of from sixty to eighty per cent.; nineteen patients, or sixty-five per cent., had a hemoglobin of from eighty to one hundred per cent.; three patients, or ten per cent., had a hemoglobin content of from one hundred to 112 per cent. One patient had a red blood count of two million and one patient had a red blood count of seven million. Twenty-eight patients, ninety-four per cent., had a red blood count from four to five million, and twenty-nine out of thirty patients had a leucocyte count from twelve to twenty-four thousand. The differential count is interesting in that it shows a marked lymphocytosis from twenty to forty per cent. in twenty-five patients, and from five to thirteen per cent. eosinophilia, in the same number of patients.

Sputum.—A careful study of the sputum of

thirty-seven patients was made. In none of the patients were tubercle bacilli found in the sputum on repeated examinations. Only two had shown Curschman's spirals, five per cent. Thirty-five patients had not had any Curschman's spirals or Leyden's crystals on careful and repeated examinations. Nine patients had staphylococci, streptococci, and diplococci in their sputum, eight patients had pneumococci, five patients had Micrococcus catarrhalis, one patient had Friedländer bacillus, and one patient had pseudodiphtheria. In other words, twenty-four patients out of thirty-seven, or sixty per cent., showed some mixed infection. The necessity of an asthmatic being given a thorough trial with an autogenous or stock vaccine could not be too strongly emphasized in view of the high percentages of leucocytosis and mixed infection demonstrated by the laboratory findings among them.

Asthma following infection.—Five patients stated that asthma started after they were caught in the rain and got wet; three patients had asthma following pertussis at ages of four, five, and twenty-five years; three patients had asthma following pneumonia at ages of twenty-nine, thirty-five, and fifty-five years; one patient had asthma following measles, and one had asthma following pleurisy.

In regard to asthma resulting from other causes, I should like to record the following facts and the reader may take them for what they are worth:

A colored patient stated that asthma started at the age of twenty-five, while working as a teamster two years prior to admission to the hospital. The odor and dust from the horses immediately brought on an attack.

Another stated that attacks of asthma were brought on by traveling in a high altitude out west, three years prior to admission. Another patient said that attacks were brought on by going from a cold room into a warm room, and vice versa. Still another said that asthma started five years ago when the patient was nearly drowned at the age of twenty-five. With one patient asthma commenced two years prior to admission at the age of nineteen while in a laughing spell, the attack lasting several hours. This patient has been suffering from asthma since then. One patient in whom asthma developed after an operation at the age of fifty-six, attributed it to the ether. One patient after being cured of asthma in the Jefferson Hospital, Philadelphia, went to Florida where the disease started again. Another patient went to Arizona, got well while there, lived in Arizona for nine months, free from asthma, but on returning to Philadelphia, his asthma returned in a month or so. One patient having had asthma in Russia for eight years, after crossing the ocean, to Philadelphia, was free from it for ten years, but asthma finally returned. Another patient suffered from asthma as soon as he arrived in Philadelphia from Europe being absolutely well before.

Thus bronchial asthma is a mystery and should be a fascination for many an internist to solve its peculiarities.

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1531 NORTH SIXTH STREET.

POLAND IN THE WORLD WAR, FROM THE MEDICAL ASPECT.*

By FRANCIS E. FRONCZAK, A. M., M. D., D. P. H.,
Buffalo, N. Y.,

Health Commissioner of Buffalo; Late Major, Medical Corps, U. S. Army; Lieutenant Colonel, Medical Corps, American Red Cross; Member of Polish National Committee, Paris; Medical Counsellor, American Red Cross Commission to Poland.

(Concluded from page 64.)

While a year ago there was no such thing as a Polish National Army, there is now a formidable, thoroughly equipped one of a million able-bodied young men under arms. They were selected and examined physically with great care and were protected from detrimental influences; above all from the ever present liability of communicable diseases in epidemic form. Before being fitted out, all underwent the process of delousing, which included removing all the hair from the body, thorough bathing and separation from those awaiting.

Incidental to this particular proceeding, I had considerable difficulty in prevailing upon the health department authorities and the people themselves (civilians) of its absolute necessity. Jews in particular objected to the removal of beards and hair from the head, and it was only through a general order and the assistance of the American Red Cross and the military and civil authorities, together with an intensive educational propaganda, that the desired results were brought about. As there is no part of the entire country where typhus does not prevail—though more extensively so in the eastern part—the securing of this prophylaxis will go a long way towards its eradication.

Pardon the digression, but little is known of the Polish army, what she is fighting for, and under what harrowing conditions. The army is fighting with a morale inspired by the justice of its cause and the great stake of civilization against anarchy. To preserve this morale, help must come, and come quickly, for it is tottering. One can stand just so much. Cold and hunger are invincible. Rations are needed. Want is stalking the ranks and will kill any morale. The necessity should be known to the world, and the deplorable results in the event of an armistice, which would liberate an army that would be rushed to overpower Denikin and Kolchak.

What the Polish army is fighting, we, at a distance, do not fully realize and appreciate. The greatest unrest of today, the unhappiness, the discontent, the poverty consequent upon the war, are everywhere in evidence. Disaster to the Polish army would carry the belief that Bolshevism was successful.

The morale of the Polish army, therefore, must be kept up. It is threatened, the conditions indicated are near; forty per cent. are without shoes; there are less than 10,000 complete winter outfits and with one fifth of the transportation that is necessary; medical aid is but a shadow. Every soldier knows that if he should fall, he would die of neglect unless near a field hospital. The field hos-

pitals, themselves, are pitiable, for there is a dearth of antiseptics, if any at all, and no anesthetics. The conditions beggar description, and yet, with it all, this heroic army is holding on, fighting for civilization while praying for help.

The army have their backs against the wall, which they will do as long as it is possible, but there comes a time when gaunt want cannot be withstood. The possible will these Polish heroes accomplish, the impossible they cannot nor can any one overcome. In commenting on conditions, it seems well that the true facts be made known.

The homeward migration of war prisoners and refugees had to be handled with a strong hand and vigorous regulations. A regulation sanitary cordon was organized and put in effect, especially on the eastern frontier, and maintained notwithstanding the great danger from the Bolsheviks menacing the section. One was thrown out extending from the southeast of Poland, from what was formerly Galicia, following a line northeast through Wladimir Volynsk, Kovel, Brest-Litovsk and Bialystok, and which was later moved eastward and combining and covering each of the places mentioned.

Regular delousing stations and shower baths were installed throughout, and a most thorough diffusion campaign carried on. Stations of this character are now established along the cordon of each frontier at every terminal, barring none—east, west, north, and south—in order that the migration of returning war prisoners may not bring another new epidemic into the country. My belief is that with the present sanitary organization and scrutiny the protective measures against epidemic disease will be successful, and through its educational influence the sanitary standards of towns and villages and rural districts will be raised.

Mobile epidemic hospitals are also utilized and placed in localities beyond the reach of permanent hospitals. In connection with this, I have advised a house to house cleaning of cottages in all villages, and that every inmate have himself and clothing deloused and that he be given a bath.

It is to be regretted that the most pressing needs of the country cannot be carried out with the promptness, dispatch and satisfaction that is indicated, and so urgently desirable for the following reasons:

First.—Poland of today is a new country and much of it partly a wilderness. The treasury is deficient in funds, and without means, and in sufficient amount, nothing can be accomplished, even in matters of sanitation.

Second.—There is a great deficiency of medical men. Although the country has 38,000,000 population, the number of physicians is less than 4,000, or about one to 9,500. A ratio of one to 2,500 is the proper amount, and in the United States the average is nearer one to 750. As a matter of fact, there has always been a lack of physicians, because the facilities for taking up the study of medicine have been limited. In Russian Poland there was but one university, the one at Warsaw, and, incredible as it may seem, everything was done to prevent the Poles from receiving an education or degree not only in medicine, but in any of the professions. In

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consequence, there has been a great deficiency of medical men. There always has been a deficiency of sanitary inspectors and disinfectors and, therefore, of sanitation. All this is further aggravated by the recent mobilization of the army whereby physicians up to the age of forty-five have been taken in large numbers for service in the medical corps of the now standing Polish army.

Third.—There is a great lack of transportation and intercommunication. This is a serious handicap and hindrance to everything and especially to medical men, health officers, and epidemiologists and to sanitary work. Railroad transportation, at all times bad, has naturally been made worse by the war, inasmuch as the railroads, especially in the Austrian and Russian sections, have always been few and none have been added since. Railroad equipment is in bad condition. Cars have been broken up and destroyed, and, with the exception of less than a dozen, all the locomotives should be in the repair shops. There are practically no modern automobiles to supplement deficient railroad conditions.

In the city of Warsaw, with a million population, the only cars last spring were the few used by the army and the American Red Cross, and their maintenance was difficult—tires cost 8,000 marks apiece and gasoline fifty marks a litre. In relation to horses, there are very few left, great numbers having been absorbed by the army, others died of starvation, and many used for food purposes.

Fourth. There is a great lack of proper nourishing foods, disinfectants, linen, disinfecting apparatus, and, above all things, of soap. As for bread, I have a specimen brought from eastern Poland. It is an awful black substance, made of bark from oak trees, acorns, chaff and heather, but not one particle of flour. Now and then, in rare and fortunate instances, it is made more palatable with potato parings. Every effort is being made to correct conditions, but everything has to be imported at present, and the only route by which to get materials in is by way of France, Switzerland, Lichtenstein, Austria, and Czecho-Slovakia. The trains here are but few in number, only two a week, and run with a limited number of cars.

The port of Gdansk (Danzig) is closed at present, as the Germans, notwithstanding and in defiance of the orders of the Peace Conference, have not vacated the city and are doing everything to prevent and obstruct the importation of all kinds of necessary goods into the country through the Baltic.

It is believed that within a very short time, however, this will be remedied—it will have to be—after which accomplishment will be more rapid. In view, though, of the approaching winter, the lack of food, clothing and fuel, the suffering will be very, very great. It is deplorable but inevitable. There is hardly any coal in Poland, the mines in upper Galicia are in possession of the Germans and those in the Duchy of Cieszyn in the possession of the Czecho-Slovaks. Coal, therefore, cannot be obtained, but in instances where it is obtainable, it is at a price almost beyond belief. We pay ten or eleven dollars a ton for coal and object to the price. In Poland a hundred-weight brings over three times

the price we pay for a whole ton, viz., \$720 a ton. In relation to wood for fuel, the forests have been devastated, and wood is far from being plentiful. The Teutons run true to form. When they plunder and destroy nothing escapes, so they devastated the forests and removed millions upon millions of cords of wood into Germany.

When I was in Poland there were 113 hospitals in the country, though since that time a number of mobile epidemic hospitals have been provided, and the American Red Cross have opened a few additional ones. A hospital, however, requires and means something more than a building. It requires equipment and supplies to functionate. To say they are taxed to capacity does not express it. I want to say they are actually overburdened and overwhelmed.

In the largest one in Poland, the Ujazdowski Hospital, in Warsaw, during last April, I saw 1,800 cases crowded where the facilities were but for 800, with necessary appliances and utensils for less than 200, the Germans having actually stripped the institution of every vestige of cooking utensils for the sake of the copper, inhumanely leaving it destitute.

The food for all these sick and wounded is yet being prepared with the small house kettles and pans given and being given by self-sacrificing loyal people of the city, who, though in want and starving, deprive themselves to do so. Had it not been for this, the patients would have perished. Imagine the task of preparing meals for 2,000 sick not with modern steam jacketed appliances and apparatus, but with small individual kettles and pans, intended for household use, and with but few of these.

Warsaw in March last contained twenty-seven hospitals and seventeen dispensaries for out patients. The total number of beds was 5,570—635 being in private hospitals, a total of 6,205, this not only with which to meet the demands of the city itself, but of the whole district which is the size of one of our large states; 2,500,000 days of hospital care were provided for the sick in 1918 in these hospitals at a cost for maintenance of 18,567,679 marks as compared to 3,231,953 rubles, the cost in 1914. A mark normally is about twenty-four cents, and a ruble fifty-two cents.

Owing to the lack of food and money to get it, the diet in the Polish hospitals has from the very beginning been progressively failing in nutritive value, and patients are receiving insufficient calories, and especially in the form of albumen. The consequences are obvious. In 1900, the cost per diem for each patient in the principal hospitals was eighteen kopeks (a kopek is about a half a cent—two of them equalling a cent). In 1909 it had increased to twenty-seven and a half, by 1914 it had reached forty-four and a half, and in April of this year it had reached two marks a day, and this with a diminished amount of food.

I personally made a rather close investigation of the matter of diet in the largest hospital and found that in not a single one were the patients sufficiently fed or had sufficient nourishment since 1914. They are not receiving it today. With the best showing, the patient does not get more than forty grams of albumen, whereas he should have 123, twenty-five

of fat, where he should have forty-six, not more than 200 grams of hydrocarbon, whereas he should have 277—in other words, he was receiving a total of about 1,200 calories a day instead of 2,500. These amounts according to Rubner's tables.

I have before me prices of the necessary staple articles of food furnished the hospitals:

One kilo of beef, eleven marks.
 One kilo of pork, twelve marks.
 One kilo of bacon, nineteen marks.
 One kilo of butter, twenty-two marks.
 One kilo of sugar, twenty marks.
 One kilo of wheat meal, seven marks, twenty pfennings.
 One kilo of rye meal, three marks, sixty pfennings.
 One kilo of grits, seven marks, twenty pfennings.
 One kilo of peas, seven marks, twenty pfennings.

The cost of the elementary basic foods—milk and wheat—is prohibitive to the masses who require them the most, and the want and deprivation has determined a definite physical deterioration in the health of the entire population. In many places the patients are practically starving on hospital diet, especially where they do not receive assistance from the outside which happens only to the fortunate. The general mortality has increased in some cases to 100 per cent., and the morbidity has increased immensely, while convalescence from every disease occupies a very much longer time than ordinarily.

In connection with this, a disease is appearing heretofore unknown in Poland. It is very noticeable among returning prisoners who return in a condition called famine dropsy, edema ex inanitione, and with what was seldom met with in Poland previously, osteomalacia, or softening of the bones. Then there is osteoporosis, or atrophy of bones, and osteoarthropathia dysalimentaria, and various menstrual disturbances, all dependent on famine. These conditions are being studied at the hospitals, physicians' meetings, and by medical societies. In a general way they are clinical manifestations of systemic deterioration. The mortality from tuberculosis has increased enormously, in many parts of the country reaching seventy per cent. of all deaths where formerly it did not exceed twenty to twenty-six per cent.

The mortality from tuberculosis in children is almost beyond belief, and rachitis is deforming the entire generation of children—the adults of tomorrow. Schools have had to be closed either because, in some instances, all the school children have died or are in no condition to attend on account of anemia, general debility, depraved nutrition from want of food, and, in addition, from want of clothing and shoes. Want and destitution—alas everywhere!

During the past winter and early spring, while the snow was yet on the ground, I frequently witnessed men, women and children, and especially women and children, walking barefoot through slush and snow with swollen and bleeding feet, some of them endeavoring to protect themselves by wrapping their feet in straw or rags held together with strings made of paper or straw.

Soap for the past three or four years has been unknown. A five cent cake of soap, as sold in the United States, could be exchanged on the banks of the Baltic for a handful of amber, and in the in-

terior of the country for heirlooms worth hundreds of dollars. Where soap could be obtained, which was rarely the case, the cost was from twenty to forty marks a cake.

There is a complete neglect of cleanliness therefore. In many cities, which I visited when I was in Lemberg in eastern Galicia, there was not only an absence of soap, but a lack of water in consequence of the mains having been broken and the reservoirs emptied by the army. A pail of water at that time was worth from fifty to 100 Austrian crowns. A crown before the war was worth about twenty-three cents, now about two cents, but even at two cents you can see how expensive a pail of water has become.

There is a great increase in diseases of the skin, especially scabies, pediculosis, and eczema. I have personally seen hundreds and thousands of cases of trachoma and from the reports received by the minister of health in Warsaw, and from the number of cases I saw in the various parts of the country, I judge there must be between eighty to 100 thousand cases of trachoma, and there are no means of treating it.

The want of food, the dirt, and the lousy condition of the population, together with the complete absence of soap, of medicines and antiseptics, disinfectants, and especially formalin, of which there is none in the country, has been and continues to be a cause of enormous increase in the various diseases.

Typhus through war conditions has become endemic and carries away thousands and thousands of victims, not only among the proletariat, but among the educated class—ministers, doctors, teachers, and the like.

Some may think that possibly there are no hospitals with their staffs in Poland that are equal to meeting the conditions. This is incorrect. There have been and are hospitals, and I present a list taken from the municipal records in the City of Warsaw, which alone has the following:

1. Infant Jesus Hospital, founded in the year 1732—removed to the present establishment in 1901—contains at present 966 beds for internal and surgical patients.
2. Hospital of the Holy Spirit, founded in 1413—removed to the present establishment in 1861—contains 360 beds for internal and surgical patients.
3. St. Roch Hospital, founded in 1706—removed to the present establishment in 1745—contains 119 beds for internal and surgical patients, but at present has several hundred patients.
4. St. Lazarus Hospital, founded in 1595—removed to the present establishment in 1841—contains 400 beds for skin and venereal diseases.
5. St. John's Hospital (Bonifrates), founded in 1648—removed to the present establishment in 1736—provides for 320 beds for mental diseases, but at present greatly overcrowded.
6. Ophthalmological Institute, founded in 1821—removed to the present establishment in 1871—for 82 patients; overcrowded greatly.
7. The Obstetrical Institute—being part of the Infant Jesus Hospital—founded in 1807, removed to the present establishment in 1901, for 80 women

in childbed. (Here I saw at least 200 lying-in women, many in corridors because of lack of bedding and linen).

8. Obstetrical Institute in Karowa Street, founded in 1912—for 86 women in childbed, now having 300 to 400 patients.

9. Obstetrical Hospital of St. Sophia—founded in 1912—for 50 women in childbed, a modern institution, but greatly overcrowded with patients.

10. Obstetrical Hospital at Praga, founded in 1888—for 30 women—in April had several times the number.

11. Hospital (in the country) founded in 1796, for 40 tuberculosis patients, now hundreds of them.

12. Hospital of the Transfiguration, founded in 1867—for 473 internal and surgical patients.

13. St. Stanislaus Hospital, founded in 1881—for 400 patients for communicable diseases—greatly overcrowded.

14. Wolski Hospital, founded in 1875—for 75 patients with internal diseases—has five times the number.

15. Children's Hospital of Charles and Maria, founded in 1912. The most modern and best arranged hospital for children seen anywhere in my travels in three continents.

16. Jewish Hospital, founded in 1794—removed to the present site in 1902—for 876 internal and surgical patients. Now crowded like the proverbial sardines in the box—help needed here badly, and I have aided it a good deal.

17. Hospital of the Zlota Street, for 100 internal patients—had 350 to 400 patients.

18. The Hospital for Communicable Diseases in Pokorna Street—for 300 patients—had 700 patients.

19. The Hospital for communicable diseases in Brzeska Street, Praga—with 100 beds, much overcrowded with all kinds of communicable disease patients.

20. The Hospital for Tuberculosis at Otwock (in the country) with 150 beds—has 600 patients and nothing much to take care of them, though before war was well provided.

21. The Hospital for Public Women in Zakroczyńska Street—with 300 beds.

22. The Wolski Hospital was enlarged by the addition of the workshops in memory of Staszyc, from the number of 75 to 238 beds—greatly overcrowded.

23. The Evangelical Hospital—145 beds.

24. Hospital for Christian Children at Kopernicus Street—170 beds.

25. Hospital for Jewish Children at Sliska Street—100 beds.

26. Hospital for Mental Diseases in Drenica—170 beds.

27. Hospital for Mental Diseases (Jewish) in Otwock—50 beds.

Total number of beds in municipal hospitals is 5570, number supported in private hospitals 635—total 6205.

Total number of sick in 1917 in Warsaw hospitals 78,000 who spent 1,966,580 hospital days.

Besides the institutions mentioned above, the city administration manages dispensaries for out patients, as follows:

1, Dispensary at Holy Spirit Hospital (general); 2, St. Lazarus, venereal and skin; 3, St. Roch (general); 4, Wolski (general); 5, Jewish (general); 6, Ophthalmic Institute (ophthalmic); 7, Hospital of the name of Charles and Maria (children); 8, Szeroka Str. (general); 9, Jerusalem Str. N. 113 (general); 10, Mala Str. (children); 11, Mokotow (general); 12, Sielce (general); 13, Kaskada (general); 14, Ochota (general); 15, Pelcowizna (general); 16, Nowo-Dzika (general).

Total cost of maintaining the hospitals in 1914 was 3,231,953 rubles.

The total cost of maintaining the hospitals in 1918—18,557,679.63 marks. There is in addition the Ujazdowski military hospital, of which I spoke before.

In order even in a small degree to meet or improve conditions, it will be necessary to establish at least a dozen large hospitals for children, and, if the same were provided the cost of maintenance would amount to hundreds of thousands of dollars a month. The immediate indication is to open at least twelve large hospitals for adults, each with a thousand beds. There is a terrible need for institutions for invalids, and convalescents, and urgently for those suffering from trachoma and for the blind.

For the country's safety and welfare, present and prospective, there is also imperative need for numbers of institutions in the larger cities to care for young boys and girls, who, having no place to go, and many with nothing to do, are rapidly deteriorating and being demoralized, and commit all manner of degrading and more or less criminal acts.

At a conference in Paris with representatives of the Polish Charity Organization Society and many eleemosynary agencies throughout the country, it was estimated that as soon as possible Poland should be supplied monthly at least 500,000 kilos of bacon, a million cans of milk, and, additional, a supply of the various infant foods, etc., also starches, rice, peas, butter, and, above all, though not a food, soap, the necessity for which is as urgent as the food.

In order to take care of the sick, hospitals and institutions require to be provided with large amounts of ether, quinine, cocaine, formaldehyde, glycerine, iodides, the various opium preparations, castor oil, vaseline, chloroform, phosphates, all kinds of oils, surgical dressings, absorbent cotton, muslin gauze, bandages, rubber nipples; in fact everything staple and standard in the pharmaceutical and surgical lines.

The country is devoid of rubber goods of all kinds, pads, gloves, water bottles, rain coats, overshoes, etc. An ordinary automobile tire cost in Warsaw, last April, 8,000 marks, and for a set of Ford tires, which were brought into Lemberg (Lwow) in the latter part of April, there was paid the sum of 140,000 crowns. As I said before, there is also an absolute lack of hospital and field stretchers and tents.

As a sample, Poland needs today for its hospitals alone nearly a quarter of a million bed sheets. In April, 1919, in the whole of Warsaw, there was but one small x ray machine and but two in the whole

of Poland, all others being destroyed or being carried away by the Germans.

A few days before leaving Poland for France by way of Czecho-Slovakia and Austria, I was requested by Mr. Paderewski to find out if I could not buy certain drugs and chemicals. My investigation showed that every chemical factory had been dismantled or destroyed by the Germans except one, and that one was near Warsaw. It escaped because the establishment had been used by the enemy for the preparation of the various poisonous gases. I took the matter up with the owners, and finally made a contract with him for some drugs and chemicals. I submit the prices which were the best possible obtainable and were without profit: collodium, sixty marks per kilo; creolin, twenty marks; lysol, twenty marks; Fleming's solution, fifteen marks; tincture of belladonna, one hundred and twenty marks; solution of aluminum acetate, twenty-five marks; spirits of camphor, used in great amounts in typhus cases, one hundred and twenty marks; simple tincture of quinine, sixty marks; tincture of iodine, 180 marks; simple tincture of opium, 140 marks; tincture of sabidilla, for lice, 120 marks; valerian, used to a great extent for quieting typhus patients, compound tincture of valerian, 120 marks; ichthyol, 120 marks; ichthyol with six per cent. of iodine, 180 marks.

I know I have drawn a disconsolate and desolate picture, but I want every one to know the real facts, for a personal presentation at first hand brings an appreciation not obtainable otherwise. I know, however, that Poland will not give up hope, nor is she idle.

The minister of public health is now Dr. Peter Janiszewski, former health commissioner of Krakow and professor of preventive medicine and hygiene in the University of Jagiello at Krakow, founded in 1364.

Incidentally I might state that in every city I am familiar with, but one, where there is a university with a medical department, the health officer of the community, who has shown himself to be a capable and efficient man, is connected in some way with the university, generally in the capacity of professor of hygiene and state medicine.

I have known the present Minister of Public Health of the Polish Republic for nineteen years, and, while there, had daily discussions with him on preventive medicine and problems in hand, and the country is fortunate in having one of his caliber to cope with conditions that now confront them. A great number of pamphlets and booklets were published during the past few months, lectures delivered, and I am happy to say that I was able in a great measure to aid him and the surgeon general of the Polish army and obtain some indispensable necessities for the civil and military hospitals and for the improvement of the sanitary conditions generally.

Local committees have been formed, instructed in adaptation, and especially how to improvise and erect shower baths, and every one in the community is obliged to bathe whether he wishes to or not. Delousing plants have been built and epidemiologists who have been sent to study the conditions, al-

ready have established disinfecting plants at the places of greatest danger. Abandoned and dismantled disinfecting apparatus are being repaired and new apparatus of the latest type is gradually being brought into the country.

In May of this year, 1919, through the kindness of Mme. Paderewski, wife of the premier, with the aid of the Polish National Committee at Paris, and representatives of the Polish government, and with gifts and contributions received from Poles in the United States and elsewhere, we have been able to buy considerable disinfecting apparatus from France, England, and the United States, also drugs and instruments, and these are now being slowly carried to Poland. The total contracts amounted at that time to about \$72,000,000. Of course, a large percentage of this is in the form of a credit, which, in due time, will be taken care of by floating loans.

Bacteriological laboratories and institutions are being organized in order to make a thorough research and conduct a scientific campaign against prevailing epidemics. Dysentery, cholera, smallpox, and cerebrospinal meningitis are being eradicated and the necessary vaccines are either being manufactured there or brought from France and other places. Special cholera stations have been organized to protect against the danger of this disease getting a foothold in the country.

I have not mentioned the new danger from malaria. A great number of Polish soldiers fought in the Balkans, and especially in Macedonia, where they contracted malaria, and are now returning with the infection, and there is apprehension that Poland, which heretofore has been exceptionally free from this malady, may become infected.

A most thorough fight is now being organized against tuberculosis and venereal diseases. At the time I left Poland, there had been opened six special hospitals for tuberculosis and eleven for venereal diseases, which are reportable as other communicable diseases.

A person in Poland who marries without notifying the other party that he has or is suffering from venereal disease is liable not only to a fine and imprisonment, but it is sufficient cause to obtain a divorce. In some districts in the eastern part of Poland, near the Bolshevik frontier, venereal disease has almost become pandemic, and a great battle is being carried on against them.

The housing problem is very acute. I sent several cablegrams from Warsaw to Mr. Veiller, secretary of the National Housing Association in New York city, and also communicated with the War Department at Washington in relation to it, and, through this association, interested parties, together with the United States and the British governments, have not only promised assistance, but have actually sent people to study conditions at first hand preliminary to further action. It is suggested that great numbers of collapsible buildings be erected, but the cold climate and strong winds do not favor such construction, unless it is for temporary relief only. A special decree of the health department provides for the protection of tenants, and a systematic house inspection is carried on. Steps have been taken for municipal housing and town planning.

I hope the mortality among infants will be held in check by means of the new institutions which are being erected and are being contemplated, and that the help promised by the American government, especially, and from that given by the American Red Cross and American Relief Commission whereby children especially will be taken care of, I trust and pray that results will be as we wish. Medical relief for the poor and medical school inspection is also being organized, all these functions having been completely exterminated by the Germans during the war.

Sanitary statistics are being maintained and communicable diseases reported so that the start taken, and with the aid which is expected to be forthcoming, there is no reason why, within a short time, the sanitary conditions of Poland should not be under proper administration and equal to the standard of any existing in the great countries of the world.

Poland has suffered much, has suffered throughout the years of the world war's duration, and today she is yet at war on all her frontiers. Her material losses exceed by many billions the property loss in Belgium. She lost between six and seven millions of people on the battlefield, through diseases and by starvation, but with her great energy and indomitable spirit which has been her characteristic and pride for centuries, under proper leadership she will rise to her proper position materially, morally, and physically, and forever be a barrier against the anarchy, Bolshevism, and Nihilism and all social disorders that are bred and disseminated from eastern and central Europe.

Poland's sanitary conditions during the world's war have been very, very unfortunate and lacking, but in five years at the most, the detrimental conditions should be completely remedied and eliminated.

Poland is not dead nor dying; she has lost much, but is inspired with new vigor and strength for the development of a healthy and powerful nation.

CLINICAL NOTES FROM FRANCE.

BY CHARLES GREENE CUMSTON, M. D.

Geneva, Switzerland.

SARCOID TUBERCULOSIS OF THE SKIN.

(Concluded from page 68.)

"4. *Sarcoid tuberculosis, lymphosarcoid type.* In one case Gougerot—who was the first to describe this lesion—found a typical tuberculous follicle in the centre of a neoplastic nodule which itself resembled a mycosis fungoides, but inoculation remained negative. In the second case all the tissue was that of lymphosarcoma or of a mycosis fungoides; there were no tuberculous follicles or giant cells to be found, but inoculation was positive.

"5. *Sarcoid tuberculosis, bacillary sarcoma type, or sarcomatiform tuberculosis.* One case has been observed by Gougerot. It was a nodule of fusiform cell sarcoma, characteristic from its structure, vessels, etc. The bacillary origin was demonstrated by the presence of a typical tuberculous follicle at

the border of the lesion and by a positive inoculation in this guineapig.

"6. *Sarcoid tuberculosis, bacillary lymphadenoma type.* Gougerot has observed a case which began on the lip and acted like a malignant neoplasm by extending over the entire face and to the buccal cavity and giving rise to metastases in the lower limbs. Histologically, no follicles could be detected, the microscopical structure was impossible to differentiate from a malignant lymphadenoma, and still the tuberculous nature of the lesion was proved by the presence of bacilli in the lesion, and some months later the patient died from pulmonary tuberculosis."

Let us now examine, from the clinical viewpoint, the three best known types of the classification outlined above, namely, the Boeck-Darier type, Gougerot's lymphosarcoid type, and the Darier-Roussy type.

The Boeck-Darier type, still called the *disseminated milium lupoid type*, is an eruption of hemispheric blotches the size of shot to that of a large pea, at first rose colored, later livid or brown, with a smooth surface or very slightly squamous and semisoft in consistency. By vitropressure their tissue is less translucent than that of a lipoma and often appears to be composed of separate grains. The eruption is always symmetrical, but the symmetry is imperfect, while its sites are the face, shoulders, wrists and, in general, on the extensor aspect of the upper limbs, less commonly on the scalp, back or lower members. It appears in a few weeks but increases during months or years by growth and multiplication of its elements. After a time the component elements flatten out, spread in nummular patches which are occasionally margined, and end by becoming effaced, leaving behind an atrophic cicatrix often not apparent. They never ulcerate. The duration of the process is variable, from five to ten years or more. It is more common in females, between the ages of fifteen and forty years. The lymph nodes are sometimes enlarged. In many cases the patient has at the same time tuberculous lesions elsewhere.

The histology of lupoid tuberculosis is characteristic. Large collections—lobulated or ramified—are found in the dermis, composed principally of epithelioid cells, lymphocytes and a few sparse giant cells. These collections are separated by connective tissue trabeculae in which hardly any trace of inflammation can be detected.

The Gougerot type, still called lymphosarcoid, is an example of neoplastic reaction similar to the tissue of certain lymphosarcomata or mycosis fungoides developed around tuberculous follicles. It forms the intermediary between the Boeck type, lymphadenoma, and mycosis fungoides.

Clinically, it appears in young or adult subjects, almost always on the thorax, the face and neck are rarely involved, and the limbs only exceptionally. The character and aspect of each lesion are uniform. They are small, round, dermic nodules, the size of a pea, projecting above the surrounding surface, hemispheric, pale rose color with a darker centre and distinct borders. They possess no clinical malignancy. Their surface is smooth, never squamous nor with crusts. Their centre is translucent; macules

never occur. The eruption is very monomorphous.

Histologically the neoplastic zone which surrounds the tuberculous follicle is very broad, much more so than the follicle, which is more often than not absent in the section. It is composed of a reticulated stroma infiltrated with cells. The stroma is composed of hypertrophied and inflamed connective tissue cells, anastomosed by their protoplasmic prolongations. Collagenous fibrillæ are added to this protoplasmic cellular reticulum. The connective tissue cells are in a state of intense reaction and many of them assume a monstrous aspect. A few giant cells may be seen here and there.

The Darier-Roussy type is frankly hypodermic. The process is characterized by the presence of multiple nodosities seated in the hypodermis, sometimes isolated, round or oval, at others united together, forming knotty cords which follow the distribution of the vessels of the region; or the lesion may be in the form of large patches, irregularly bosselated and attaining fifteen to twenty centimetres in length. The size of these isolated tumors varies from that of a pin's head to a large nut. Histologically, typical tuberculous follicles are usually seen.

Regardless of the fact that all cases are not exactly alike, a general description of the pathology can be offered. The neoformed mass is sometimes distinctly circumscribed and most always adherent to the surrounding structures; at others it is diffuse and in all cases difficult to enucleate. On section, the tissue, according to the case, is grayish, whitish, rose, or yellowish white in color; fibrous and very resistant. It is represented by trabeculæ of connective tissue sending off prolongations into the surrounding structures and including portions of tissue in its meshes having a tubercloid aspect.

Histologically, the component elements are: 1. Epithelioid cells which are in majority. They have a large oval nucleus staining poorly, an irregular cell body, polygonal or fusiform in shape, sometimes furnished with prolongations. Their protoplasm is granular and more or less acidophile, sometimes vitreous or, on the contrary, spongy. They are frequently manifestly degenerated and then they appear to be agglomerated or confluent in order to form giant cells. 2. Giant cells in abundance and of varying size; the number of their nuclei is also variable. 3. Lymphocytes which are grouped in masses at the border of the lesion or form rings around the giant cells.

To sum up, it is the grouping observed in elementary tuberculous follicles but not always so characteristic and very often the neoplasia is not follicular. The surrounding connective tissue reacts, returns to the embryonal state and composes the thick trabeculæ which surrounds the lesion and, in the ensemble, forms the hard fibrous collections which can be detected clinically.

The search for the bacillus of tuberculosis is often negative, a fact probably due to the low vitality of the bacilli present who are either consumed by the phagocytes or being dead do not give place to typical reactions to stains.

Is sarcoid tuberculosis of the skin caused by the toxins or the bacillus itself? The fact that the bacillus can be rarely demonstrated might lead to the

supposition that the lesions are the result of a reaction to the toxins. However, Darier could not reproduce typical tuberculides by injecting animals with soluble toxins, while on the contrary, Gougerot and Laroche obtained positive results by inoculating the guinea pig with slightly virulent or dead bacilli. As a conclusion it is generally conceded that the process consists of neoformations produced in a resistant soil, by dead or attenuated bacilli, acting locally by their insoluble secretions.

Several treatments have been proposed for dealing with sarcoid tuberculous processes in the skin. Many writers, and Boeck in particular, have advocated arsenic. This is at best a long treatment, but the form in which the drug is given may be left to the choice of the practitioner. However, sodium cacodylate given hypodermically seems to be preferred by the majority. Others advise hectine given at the same doses as in syphilis. Some prefer arphenal at the daily dose of five centigrams with a rest of one week in each month. It is logical to vary the arsenical products in a case and often-times a change from one form to another will be beneficial.

Darier has obtained good results from injections of Koch's old tuberculin, others extol radiotherapy, still others recommend intramuscular (gluteal) injections of calomel.

All these therapeutic measures are unquestionably good if, at the same time, proper hygienic measures are followed and the general health of the patient carefully watched.

The Cure of Bilharzia Disease by Intravenous Injection of Antimony.—J. B. Christopherson (*Journal of Tropical Medicine and Hygiene*, November 1, 1919) states that antimony and potassium tartrate given to a patient suffering from the bilharzia infection has two effects, viz., it kills the mature, adult worms in the portal vein and its tributaries, and it sterilizes the contents of the ova which have been deposited in the rectum, bladder, and tissues, and renders them harmless. The first of these effects probably takes place early in the course of the injections, viz., after three to five grains have been injected. Enough antimony has not been given, however, until all the ova coming away in the urine or feces are blackened, shrunken, with shapeless interiors, and incapable of hatching out under any conditions, in fact, until there is good evidence that all the ova which have been deposited by the worms before death are sterilized. An opinion on this point can only be given after careful examination with the microscope, which, however, is no difficult matter. The optimum dose of the drug lies between twenty and thirty grains. The precise number of grains depends upon what is seen taking place inside the ova under the microscope. Although both blood and ova may be absent from the urine after a course of injections, this is not an important point for both blood and ova may be present after the patient is cured. The ova acting as foreign bodies in some cases take over a year to ulcerate through the mucous membrane.

Editorial Notes and Comments

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THE WATER SUPPLY OF THE SMALL TOWN.

Usually residents of small cities have implicit faith in the water supply which they receive. If questioned about the quality of the water they are using they will say that their water supply is better than that of any other city in the country. This exhibition of local patriotism is much the same in the inhabitant who says, "You may have a very nice moon in your city, but you should see our moon."

There are times, however, when filthy water and startling hospital statistics break down the pride of even the staunchest citizen. This has occurred in Montclair, New Jersey. It seems difficult to conceive how it was possible for the residents of this beautiful city of homes to accept blindly the situation as it has existed in the past. Hordes of bathers polluted the stream which furnished Montclair's water. Bungalows and summer residences flanked the river's edge and the stream instead of being protected so as to insure a clean water supply was used as a playground and refuse drain.

Now the residents are aroused; many unsavory truths have come to light showing how the pollution went on and no effort made to remedy the condition. The water which the inhabitants have been using in addition to being polluted is discolored and offensive.

We realize full well that the condemnation of a city's water supply is detrimental to the fair name of the city, but under present conditions we feel

that the health of the people inhabiting the city should be the first consideration. Throughout various parts of the United States epidemics have been traced directly to the water supply of the community, scarlet fever and typhoid being the most prevalent diseases caused by polluted water. When the authorities discovered the harm that was being done the conditions were remedied at once and the water supply improved with a lessening of the mortality rate.

As usual the owners of the water company are making a strong defense for the quality of water supplied. They state that the water is equal in quality to that of any other municipality in the surrounding country. It seems that the mayor, Louis F. Dodd, and Commissioners Barclay, McConnell, Phillips and Pichen do not agree to this. They have asked the physicians to cooperate with them and state whether any of the digestive or intestinal disturbances, especially among children, were caused by the water supply which came from the Passaic River.

It is not the policy of this journal to interfere in politics, but this is a question of health and lives and we make no apology. The only thing to be regretted is that the complaint did not originate from the medical profession of the city.

It might be well if the physicians in other cities in the same situation as Montclair would cause an investigation with the end in view of improving the water supply and safeguarding the health of the community.

THE DIAGNOSIS OF CHONDROMATA.

Chondromata are tumors occurring in young subjects. Their development is slow, their surface bosselated, and they are firm and elastic in consistency. Regardless of their size, the neoplasms do not contract adhesions with the skin, give rise to pain, or react upon the neighboring lymph nodes. The patient's general health remains good and there is not the slightest evidence of cachexia. When a chondroma arises in the bones of the hands or feet the diagnosis presents no difficulty because the signs are quite distinct. The tumors are round, slightly bosselated, multiple, indolent, very hard and nonadherent to the skin. In the large bones the growth is often softer and larger in size so that the diagnosis is not so readily made. Besides, other neoplasms may simulate chondromata and vice versa. There is little distinction between the clinical signs, the seat of the growth being the same. Radiography will reveal the finely

denticulated structure, the lobular aspect due to the presence of bony walls in the midst of transparent cartilaginous tissue, so that a diagnosis of chondroma can be made with certainty.

The differential diagnosis, however, must not be neglected, the most important being that between sarcoma and chondroma. The former neoplasm usually gives rise to pain, and this symptom is prone to be the first one noted. By its consistency and even its shape, when seated in the epiphyses, a sarcoma may be mistaken for chondroma. But in such a vascular structure as an epiphysis an expansion of the tumor mass may be noticed by palpation or even by sight, with an intermittent soft blowing sound on auscultation, isochronous with the pulse. A local hyperthermy may likewise be noted as well as evidences of a rapid evolution indicating malignancy and the approach of cachexia. Radiography will determine the diagnosis.

In chondroma the bone will be visible. In sarcoma the bone will be seen less distinctly, but as the evolution of the growth progresses, the penumbra becomes marked and finally the bone will become invisible.

Chondromata of the fingers should not be mistaken for a spina ventosa the latter process is painful and is accompanied by phenomena of arthritis. The tumor is hard, fusiform in shape, regular in outline, is not bosselated or irregular in surface, and is situated on a side of the bone like a chondroma. Osteomata are found as subcutaneous projections of an exceptional hardness. They vary considerably in size but never become larger than an apple. Almost always painless, they only become painful when they press upon important organs. The differential diagnosis with chondroma is rather delicate and should be based upon the special hardness of osteoma.

Lipoma and fibroma of the bones are so very rare that they need not be considered, but if the chondroma is seated near a joint it must be differentiated from a tuberculous process. The latter generally begins with pain, either spontaneous or provoked; there will be functional joint disturbances and muscular contracture. Palpation will sometimes elicit softness to the point of fluctuation, and an important point is that the regional lymph nodes will be enlarged. The diagnosis of bone syphilis may be discussed when the tumor is seated in the lower limb, but if any doubt remains, specific treatment will settle the diagnosis. Cysts of the bone and hydatid cysts are extremely rare processes whose diagnosis will probably only be made at operation.

MELANURIA IN MELANOTIC NEOPLASMS.

Certain malignant growths are accompanied by a blackish pigmentation, and for this reason are called melanotic cancer. The primary growth usually starts in the eye or at some spot in the skin; the secondary growths select the liver for their development. Melanotic cancer of the liver is often an autopsy finding, and although occasionally the process offers a clinical history, this is not enough to lead the physician to suspect melanosis. Digestive disturbances and a rapidly enlarging liver with a smooth surface are about the only symptoms noted. A decrease of the red blood corpuscles, leucocytosis with grains of black pigment in the leucocytes or serum, and pigmentation of the skin are not signs which draw attention to the processes as much as melanuria.

The pigment which gives the very special aspect and reaction to the urine is eliminated intermittently, therefore the necessity of a daily examination of the urine until it is at last detected. This pigment, which is quite similar to that found in the neoplasm, is still poorly understood, and the term melanine does not designate a body having a definite chemical makeup. The coloring matter normally present in choroid, in the basal stratum of the Malpighian layer, in the hair and in the skin of numerous fish and reptiles, the mucosæ and neoplasms of man is called melanine, and is without doubt not the same substance, since the iron and sulphur content varies in each. They have, however, one common character, namely, that they are insoluble in cold water, alcohol, ether, acids, and alkalies.

Melanine, which is usually seen in the shape of round or angular granulations of varying colors from a fawn yellow to dark brown or even sepia, is an albuminoid substance usually containing sulphur, and iron rarely, and the origin of which is imperfectly known. The pigment is found in the urine during the evolution of melanotic new growths and is derived from the tumor itself. After absorption, the melanotic pigment is reduced in the organism and the resulting melanogen is eliminated in the urine. When first voided the color of the urine is normal but changes by oxidation of the melanogen—at least this is the theory generally accepted. Just where the reduction takes place is yet a moot question. Ganghofner and Pribram assume that the unchanged particles reach the blood directly and then pass through the kidneys, while Nepoen and Eberth, having found grains of pigment in the blood and the fact of the frequency of secondary melanotic growths in

the kidneys, would seem to support their view. Melanotic urine is clear and transparent at the time of emission, but after contact with the air it assumes a brown hue at first, which later becomes black. A five per cent. chromic acid solution, nitric acid or perchloride of iron cause this black color to disappear rapidly. Sulphuric acid and potassium bichromate make the black color return. Such are, briefly, the clinical characters of this urine. From the viewpoint of prognosis it seems difficult to attribute melanuria as an indication that a generalization of a melanotic growth is taking place, although it must be admitted that at autopsy of subjects who had presented melanuria, visceral metastases have usually been found. If, however, melanuria occurs after excision of melanotic growths of the skin or eye, even before any other clinical manifestation is present, the onset of a generalization of the process should be suspected. From the viewpoint of diagnosis, we can only insist upon the almost decisive importance of the appearance of melanuria in a subject who has shortly before been operated on for a cutaneous or ocular neoplasm and who at the same time presents a greatly enlarged liver.

SCIENCE AND POLITICS.

We will not attempt to prove any relationship between science and politics. The attempt would be futile, for not only is there no connection, but in the very nature of things they are antagonistic. To be a successful politician one does not require exact knowledge. In fact, a glib tongue and cunning camouflage are possessions more used by and presumably more valuable to the politician than exact knowledge and truth. The really scientific man is truthful because real science is truth, while the politician is a prevaricator or truthful just as it suits his purpose. And yet the politician is as a rule infinitely more successful from the materialistic point of view than the scientific man, and, sad to relate, reaps greater fame. Generally speaking, the path of the man of science is strewn with thorns, and compared with the politician his life is hard. The man of science is of greater value to the human race and his generation by far than he who makes his living mainly by playing upon and exploiting the weaknesses of his fellowmen. Of course, this is obvious to any one who takes the trouble to consider the matter. At the same time, few take that trouble, and the blatant selfadvertising peddler in politics is applauded and acclaimed, where the inventor or the discoverer of a germ is allowed

to struggle in poverty, or, at any rate, is oftentimes disregarded or sneered at as a crank. As a matter of fact, he who makes two blades of grass grow where one grew before is worth more than all the statesmen and politicians put together.

Pasteur was a much greater man and wrought more benefit to man than Napoleon or Bismarck, and it is a curious commentary on the fallacy of human reasoning, or, perhaps, rather to the lack of reasoning, that while the latter two, essentially immoral and destructive, occupy foremost positions in the public estimation, the immortal Frenchman, just as essentially a saver of life by preventing disease and a promoter of agriculture, is, outside his own country, unknown to the man in the street. In computing the value of men of science, those who have shone in medical science must be accorded the first position. No more useful service can be rendered to mankind than to prevent disease. Perhaps the most conspicuous example of medical science triumphing over disease from the preventive viewpoint was the eradication of yellow fever. This deadly disease was destroyed in its endemic form. An American, Reed, was mainly responsible for this inestimable boon to mankind, although Laveran, Manson, and Ross pointed the way by showing that a mosquito was the means of transmitting malaria. To have practically abolished yellow fever and to have demonstrated that, given the facilities, malaria can be exterminated, are deeds to be prouder of and which more deserve to be handed down to posterity than any which have ever been accomplished in the arena of politics. The events of the war have proved, if it has proved anything, that the civilian population must recognize that its welfare and progress, both socially and industrially, are the affairs of men of science and not of politicians, and will prosper in proportion as it is accorded due authority and allowed a free hand. If men of science can do such wonderful things in war, they can do as much in peace, if they are given the same opportunities and authority.

THE EXPANDING PUBLIC HEALTH SERVICE.

The past eight years have witnessed a marvelous expansion of the Public Health Service. Its present status and future potentialities are such as to warrant the belief that this growth will proceed unchecked. Eight years ago the Public Health and Marine Hospital Service, as it was then called, was an old and very able corps performing its relatively small tasks with efficiency in spite of the existing policy by which it was personally conducted. It

was little known except along the seaboard. Its appropriations were so meagre that its officers became expert makers of bricks without straw.

Today its efforts are felt in every home. It treats more patients in a week now than it formerly did in a year. It has boldly attacked that *nolle me tangere*, the venereal peril. School sanitation, public water supplies, the antituberculosis movement, the standardization of antitoxins and serums, mental hygiene, health insurance, safe milk, and a hundred other problems of national and international importance have been successfully undertaken by the Public Health Service. Its legislative program has been broad; Congress has wisely increased its appropriations and added far reaching duties in connection with the sickness and disability which came from the war with Germany, and has provided a much needed reserve corps. It is true that even these stupendous advances have not kept pace with the desires of many amateur enthusiasts and a few professional publicists, but even the most pessimistic obscurantist must admit that the nation may well be proud of what its health agency has accomplished in the past eight years.

News Items.

New Public Health Service Hospital.—A U. S. Public Health service hospital will be established at Great Lakes, Ill. The barracks of several naval units will be remodeled for the new hospital.

Death from Anthrax.—A man who contracted anthrax from a slight cut in the cheek while being shaved in a Bowery barber shop died a few days ago at Bellevue Hospital.

Seeks Sanatoria for Veterans.—Surgeon General Rupert Blue, of the U. S. Public Health Service, has appealed to the American Legion for assistance in finding sanatoria for the treatment of tuberculous soldiers and sailors who served in the war.

Influenza in Chicago.—One hundred and six cases of influenza, with one death, were reported to the Chicago health department on January 14th, and department heads of the health department are considering means of combating the spread of the disease.

Smallpox Spreading in Ontario.—Although the number of cases of smallpox under treatment in Toronto is decreasing, it is announced by the provincial health officer that the disease has broken out in twenty-six new centres throughout the province. Ontario is still practically under quarantine, and persons entering are required to produce a vaccination certificate.

Harvard Wants Doctor Finney.—Dr. J. M. T. Finney, associate professor of surgery in the Johns Hopkins Medical School and chief consultant of the American Expeditionary Forces during the war, has been offered the chair of surgery at Harvard University Medical School. Doctor Finney was offered the presidency of Princeton in 1911, when that office was left vacant by the resignation of Woodrow Wilson.

Care for Teeth of School Children.—Sixteen students from the department of oral hygiene, Columbia University are to work for six weeks with the dental staff of the New York Association for Improving the Condition of the Poor in caring for the teeth of 1,200 children in two public schools in the downtown Italian district of New York city.

Navy Station Quarantined.—Influenza has caused a partial quarantine of the Great Lakes Naval Training Station. There are about 6,000 men ill at the station, and 150 new cases developed on one day early in the week. Most of the cases are said to be mild. All places of amusement have been closed, congregating in numbers forbidden, and classes abandoned for the present.

Personal.—Dr. Edward T. Wentworth, of Rochester, has resumed practice, with offices in the Professional Building. His practice will be devoted exclusively to orthopedic surgery.

Dr. A. S. Robinson has been appointed city bacteriologist of Geneva, N. Y.

Dr. MacNaughton Wilkinson has opened an office at 258 Alexander Street, Rochester, for the practice of obstetrics.

"Winter Cholera" in West.—The epidemic disease which is spreading rapidly through Oklahoma and part of Kansas has been diagnosed by the Oklahoma State Board of Health as "winter cholera," according to press dispatches. There are more than 1,000 cases in Topeka, Kansas. An epidemic in Kansas City has attacked only children. A similar epidemic swept Oklahoma in 1915 and was followed by an epidemic of typhoid.

The American Dietetic Association.—The next annual meeting of this association will be held in New York city, October 22, 23, 25, and 26, 1920. Plans under consideration now promise to make this one of the most worth while meetings of interest to all groups of people whose special work is connected with nutrition and dietetics. The officers of the organization are: President, Lulu Graves, professor of home economics, Cornell University, Ithaca, N. Y.; first vice president, Ruth Wheeler, Goucher College, Baltimore, Md.; second vice-president, Marguerite Deaver, Mt. Sinai Hospital, Cleveland, Ohio; secretary, E. M. Geraghty, New Haven Hospital, New Haven, Conn.; treasurer, Margaret Sawyer, Bureau of Dietitian Service, American Red Cross, Washington, D. C.

Johns Hopkins Hospital Building to Be Rebuilt.—Word comes from Baltimore that the pathological building of Johns Hopkins Hospital, which was partially destroyed by fire on January 10th, will be rebuilt as soon as possible. The loss of the building, apparatus, and specimens will approximate \$100,000, but it is impossible to state the value of the cultures and records which were kept there. A number of rabbits, guineapigs, and dogs which had been inoculated with various toxins and which were under observation by the bacteriological staff were suffocated or burned to death. In addition to improving the pathological building, other improvements are being planned. A five story dispensary will be erected shortly to replace the inadequate one story structure formerly used.

Vaccination or Quarantine.—Dr. L. Conwell, head of the Delaware State Board of Health, has issued an order that smallpox vaccination must be enforced at Georgetown, Del., or the town will be quarantined. Georgetown evidently does not want to be vaccinated, and a crowd of several hundred ordered one of the health department's commissioners out of town. A railroad quarantine was to be instituted the latter part of the week, according to the mayor of Georgetown, and no passengers could leave town.

Health Districts in New Jersey.—Dr. I. W. Knight, formerly assistant epidemiologist to the New Jersey State Department of Health, has been appointed district health officer of the district embracing the counties of Camden, Gloucester, and Salem, N. J., with the exception of the city of Camden. This is the first attempt on the part of the State Department of Health to put into effect a plan for dividing the State into separate health districts and assigning a trained sanitarian to each district. At present there are sufficient funds available for only the initial district.

Epidemic in Oklahoma.—An epidemic which has caused the illness of 500 persons and the death of five at Skiatook, Okla., is engaging the attention of health authorities there. The epidemic began several weeks ago with light attacks of dysentery and reached its height last week with sudden attacks of indigestion and symptoms resembling cholera. Seventy-five per cent. of those taken ill have been men and children over fifteen years. W. A. Walters, state chemist, said that analysis of water taken from Deer Creek, which supplies Skiatook, shows it to be unfit for use. Between thirty and fifty persons were ill at last reports.

Pediatrics in Rochester.—Pediatrics as a specialty in Rochester has made rapid progress since the close of the war. Dr. John Aikman, who has been engaged in general practice for nine years and who was secretary of the Medical Society of Monroe County in 1917-18, Dr. Albert D. Kaiser, and Dr. Paul Beavers are to devote a major portion of their time to pediatrics. This branch of medicine has been recognized as a specialty at Rochester Homeopathic and Hahnemann Hospitals, and it is understood that dispensary and hospital pediatric departments are planned for the Rochester General Hospital.

State Hospitals Lack Help.—According to the reports of State Health Commissioner Biggs and Dr. Pearce Bailey, chairman of the Commission for Mental Defectives, regarding the needs of the Brooklyn, Central Islip, and Manhattan State Hospitals for the insane the shortage of employees has seriously crippled these institutions. In the Central Islip Hospital there is reported a shortage of 200 attendants and eight doctors; in the Brooklyn Hospital a shortage of seventy-seven attendants and three doctors. Doctor Bailey is reported to have said in a letter of transmittal to the governor that whereas one attendant should be employed for every eight to a dozen patients, one attendant was now required to look after as many as twenty-five or fifty.

Shortage of Nurses.—The shortage of nurses received the attention of hospital superintendents and heads of training schools for nurses during the meeting of the advisory council of the National League of Nursing Education during the past week in New York. Raising the educational standards of the nursing profession so as to attract the best element of young womanhood, standardization of the nurse's workday not to exceed eight hours, and other problems were discussed. The statement was made by one delegate that 400,000 children died last year of diseases that could have been cured through proper nursing and medical attention.

Civil Service Announcements.—The United States Civil Service Commission will hold an examination on February 24th for the positions of field supervisor of reconstruction aides in occupational therapy (salary, \$1,800) and of superintendent of aides in occupational therapy (salary, \$2,400). Vacancies in the Public Health Service and at St. Elizabeth's Hospital, Washington, D. C., at the salaries indicated, and positions requiring similar qualifications will be filled from this examination. Competitors will not be required to report for examination at any place but will be rated on education, training, and experience, and on a written discussion of a given topic, to be filed with the application.

Measles in New York City.—Dr. Royal S. Copeland, commissioner of health for New York City, has turned his attention to the 200 to 300 cases of measles which are reported daily in the city. In a letter to Dr. William H. Park, director of laboratories, he called attention to the fact that no progress in the knowledge of measles had been made in the last thirty-five years, and suggested that the health department laboratories make a serious study of this particular communicable disease. In 1916, Doctor Copeland said, 21,603 cases of measles were reported, with 490 deaths; in 1917, 27,419 cases and 516 deaths, and in 1918, 28,675 cases and 790 deaths, while in the year 1919, due to the prevalence of influenza, only 8,194 cases, with 218 deaths, were recorded. In the last twelve days 2,221 cases have been reported.

Child Welfare Legislation Proposed.—A bill "to promote the care of maternity and infancy in the several States" has been introduced into the New York legislature by Representative Towner. This bill, which was drafted by the Federal Children's Bureau, provides an appropriation of \$2,000,000 for the fiscal year ending June 30, 1922, and progressively increasing amounts until the sum of \$4,000,000 annually is reached, this appropriation to be apportioned among the States in proportion to population, provided that each State appropriates an equal sum. Administration of the act is provided by a Federal Board of Maternal and Infant Hygiene, to consist of the Secretary of Labor, the chief of the Children's Bureau, the Surgeon General of the U. S. Public Health Service, and the U. S. Commissioner of Education. It is the intention of the agencies promoting the bill, if it is passed, to provide proper medical and nursing care for all mothers who, through ignorance or poverty, are at present unable to secure such care.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

(Continued from page 34)

In a previous issue reference was made to a form of rheumatism involving the spinal column mainly, featured by continuous or paroxysmal lumbar pains and the absence of normal lumbar lordosis. This condition has been recognized by Léri, who observed many cases of it among soldiers in active service, as a "chronic lumbar rheumatism." Somewhat similar is the disturbance known as trench back. In this affection, however, an active traumatic cause existed, the disorder being largely the result of injury to the back in the lumbar or sacral regions owing to a fall or blow on the parts, including, e. g., the impact of heavy masses of earth or sandbags. The clinical manifestations in this condition were those of a subacute lumbago, and the resulting prolonged disability, coupled with the frequency of the disorder, made it a matter of considerable importance from the viewpoint of general military efficiency. Doubtless owing to the concomitant exposure to unaccustomed conditions of cold and dampness, the disturbance failed to pass off as promptly as it might have been expected to under civil conditions, and the need for an effectual method of treatment made itself felt.

That some condition allied to true rheumatism existed would seem to be suggested by the success obtained with salicylic treatment by Sandes, 1915, in these cases. X ray studies showed, however, that the majority of the patients had no lesion of the spinal column, and that contusion or sprain of the muscles or fasciæ was alone present, to account for the disturbance. In order to exclude from the ionization treatment employed by Sandes all instances of actual injury to the spinal column or pelvis, x ray examination was adopted as a routine procedure before applying treatment. To avoid serious blistering, patients with an injury giving rise to anesthesia of the lumbar and sacral regions were likewise excluded from ionization. In applying the latter, a pad eight or ten inches broad, was used, extending across the entire back, and consisting of at least six layers of lint. The patient having been placed face downward in recumbency, the pad, saturated with a one per cent. solution of sodium salicylate, was applied over the painful portion of the back, covered with a mail chain or copper gauze, a bandage used to hold it in place, and connection made with the negative pole of an electric battery. The other electrode was placed frequently in the upper dorsal region, and was moistened with a solution of sodium chloride. A current of thirty milliamperes, later progressively increased to 100 milliamperes, was used, and the

current passed for fifteen to thirty minutes. Benefit was often noticeable even from the first application, and in some instances two or three applications sufficed to cure. Treatments were given twice weekly, and in most instances recovery was obtained within three weeks.

In civil practice cases allied to trench back sometimes occur, in the sense that injury to the lumbar or dorsal region may be followed by a more or less persistent rheumatoid condition of the injured parts. Pometta, 1919, notes that in the construction of the Simplon Tunnel laborers were not infrequently struck on the back by pieces of stone while bending over at their work. Although a condition resembling lumbago resulted from these injuries, pain subsided in two days in uncomplicated cases in which no outside factor existed to postpone the process of repair. Where, on the other hand, recovery was delayed beyond the usual time, pain continuing without any evident reason, the condition was considered to be an actual muscular rheumatism or lumbago.

The same question as to whether actual rheumatism exists arises in cases of lumbar pain with a history of exposure to cold or dampness. Here the distinction between rheumatic and nonrheumatic is less easily made than in connection with traumatism, for the fact must be borne in mind that a person free from rheumatic taint, if overheated and then abruptly cooled by a draft of cold air, may suffer from a rheumatoid "stiff neck" or temporary facial palsy. In such a case the distinction would doubtless be necessarily based on a careful inquiry for previous rheumatic symptoms and upon the relative severity of the chilling which preceded the painful disturbance; slight chilling as the cause of pronounced and persistent pain suggesting the existence of a rheumatic element in the case, while pronounced chilling would allow a greater possibility of the patient's being a normal individual in whom rheumatoid manifestations had developed owing to the operation of an exciting cause.

Some cases have been termed "traumatic lumbago" in which the traumatic factor has been actually rather unimportant, if, indeed, operative at all. Lumbago often comes on under circumstances which lead the patient to consider it of traumatic origin when, as a matter of fact, it is not. Evidence to this effect is afforded in that frequently in such cases activity of the muscles and joints through early resumption of work is of marked therapeutic benefit. Pometta emphasizes the fact that in many instances the best treatment of lumbago is not rest, but massage. In a few cases, however, in which actual, pronounced trauma must have occurred, x ray examination has revealed definite injury of one of the vertebræ. Malling, 1918, has reported such cases, in which traumatic lumbago developed after the subject had slipped on ice or lifted a heavy weight.

(To be continued.)

Complete Colectomy in Cancer of the Colon.—Pierre Duval (*Presse médicale*, November 1, 1919) reports the case of a woman aged fifty-six years, in whom he operated for a small stenosing cancer of the hepatic flexure. Clinical examination had shown a large movable mass, which was revealed by the operation to be an accumulation of fecal matter occupying almost the entire transverse colon. A subtotal colectomy, stopping at the iliac colon, was performed, followed by end to end ileocolostomy. The patient recovered. In employing colectomy for cancer, the ascending and descending portions of the colon should be considered independently. In cancers of the ascending colon, dealt with in a one stage operation, and easily reached through a median incision, subtotal colectomy, as in the reported case, is a very acceptable procedure, permitting of end to end anastomosis and avoidance of an end to side ileotransversostomy and the annoyances attending the colonic culdesac which is almost certain later to form. Cancers of the descending colon, on the other hand, dealt with in two stages, are only with difficulty removed through a median incision. The splenic flexure is removed blindly and is practically torn out. A double incision would constitute a complication and entail a less favorable prognosis. Finally extensive colectomy would sacrifice too much of the sigmoid flexure and result by contre-coup in retrodilatation of the segment of small intestine anastomosed with the terminal colon. This is a serious objection to low ileocolic anastomoses, and a source of distressing pain to the patient. It is therefore always important to preserve a considerable portion of the descending colon. In the author's patient, x ray examination after a bismuth meal, four months after the operation, showed the anastomosed small bowel apparently normal and free from any tendency toward dilatation. Lane's method is thus indicated in cancer of the ascending colon, but to be employed only with great caution in growths on the left side.

The Suprapubic Transverse and Lateral Incision in Unilateral Salpingoöophorectomy and Appendectomy.—F. Jayle (*Bulletin de l'Académie de médecine*, November 4, 1919), who has been using transverse incisions for twenty years, recommends the lateral transverse incision because it affords a way of circumventing the difficulty in clinically distinguishing chronic appendicitis from right-sided oöphoritis or salpingitis. Many a woman has remained unrelieved by the removal of a more or less abnormal appendix because ovarian or tubal disease had not been recognized at the operation. The transverse, lateral incision prevents this mistake because it gives access both to the adnexa and the appendix, which is usually situated lower than its theoretical site and is often even in the pelvis. Among twenty patients received within two years with a diagnosis of appendicitis, two showed normal adnexa on the right side; five, hematic oöphoritis; four, cystic ovary; one, a small ovarian fibroma, and eight, chronic nonsuppurative salpingoöophoritis. The incision recommended is made in the hairy suprapubic area and is six or seven centimetres long. The fascia is cut transversely the rectus muscle exposed and retracted inward, the

hypogastric vessels likewise, the peritoneum incised, and a small, narrow bladed retractor installed. The patient having been placed in the inverted posture at an angle of 45°, the right ovary and tube come into plain view and are readily dealt with. The table being then restored to the horizontal position, the cecum appears and the appendix is regularly removed, even if not diseased. A pursestring suture is then passed through the peritoneum and the overlying tissues apposed by means of two or three sutures and a half dozen Michel clamps. The transverse incision is likewise advantageous in reducing traumatism to a minimum. The surgeon works less deeply in the abdomen than through the median incision, or at least, the narrowness of the opening leads to his using forceps rather than his fingers. In cases of salpingitis and oöphoritis complicating a one to three months' pregnancy, the incision permits of carrying out the operation without touching the uterus. The esthetic result of the incision is perfect, the hairy covering, when restored, concealing the scar completely.

Physiotherapeutic Treatment of Fibrosis.—George E. Deering (*American Journal of Electrotherapeutics and Radiology*, October, 1919) in considering the treatment of any condition by physiotherapeutic measure gives the following factors: The anatomy of the part to be treated; the physiology of the part to be treated; the pathology of the condition under observation, and, the physiotherapeutic methods available for treatment. Among the available electrotherapeutic measures the following classes of physical effect are obtainable from electrical currents: 1, Heat and light; 2, mechanical; 3, chemical, and 4, either vibrations or actinic rays. These correspond to the four methods used in commerce: 1, Electric currents for heat and light; 2, mechanical use of electric currents in motors and electromagnets; 3, chemical effect in electroplating and for electrolysis, and 4, ether vibrations or actinic rays in the form of x rays for the destruction of parasites or germ life in tobacco and the ultraviolet light in the sterilization of milk.

Fibrosis belongs to the syndrome of nerve irritation, in which there are more or less marked circulatory, metabolic, and nutritional changes, giving rise to an infiltration of fibrous tissue, in or about the nerve or nerve sheath, the muscle and fascia, the tendon and tendon sheath, the joint capsule and the blood vessels, and elsewhere in the soft parts and to other trophic changes and is accompanied by a decalcification of bone apparently out of proportion to the amount of disuse of the part. The problems in the treatment are to improve the general condition and to overcome the various pathological changes that have taken place. The improvement in circulation, metabolism, and nutrition is best accomplished by heat, massage, and the use of one or more of the electrical currents, having a mechanical effect physiologically. Where diathermy is available it is the best form of treatment. The next best form of heat is the whirlpool bath, this, when properly used, is relatively safe. The danger is in blistering the epithelium over delicate scar tissue. The third method of choice is the hot paraffin bath. Here the temperature is more accurately gauged than by any

other method and with proper apparatus a burn is next to impossible. Radiant light and heat are mostly used. In cases where there is loss of sensation burns may occasionally occur in spite of the skillful use of the apparatus. Heat and massage and in suitable cases the mechanical effects of the static wave current are the best means we have for directly improving circulation and nutrition. Muscle fascia and tendon fibroses are best treated by currents having a mechanical action physiologically.

The details of physiotherapeutic treatment depend on the case, but there are certain principles which must be followed.

1. The parts should be heated thoroughly before any manipulation or electrical treatment.

2. In flexing movements there must also be traction, this is especially true when attempts are made to stretch the shortened capsule.

3. Massage and passive, assistive and restive exercises are used in every case.

4. The vibrator should be used for it enables a greater amount of flexion without pain and it gives an active massage to the joint capsule when it is under tension.

In treating fibrosis by physiotherapy three classes of electrical applications are used, heat, mechanical, chemical. The first aim is to improve the general condition of the part involved. This is accomplished by means that promote circulation and nutrition. The treatment of local pathological conditions caused by fibrous infiltration and degeneration depend on the anatomy, physiology and pathology of the part affected. In many cases both physiotherapeutic and orthopedic treatment are necessary for best results.

Mesothorium in Therapeutics.—P. Carnot and A. Guillaume (*Paris medical*, November 1, 1919) experimented clinically with mesothorium bromide in an isotonic solution containing one thousandth of a milligram of the mesothorium salt per ml. of fluid. Series of ten to twelve daily intravenous injections were given, renewed if necessary after two or three weeks. The daily doses ranged from two to five thousandths of a milligram. Injections were administered in several cases of inoperable cancer—of the rectum, stomach, and velum palati. In all cases there was definite improvement of the general condition. Anorexia disappeared and pain was reduced or even completely relieved. The growth itself usually showed some degree of softening; it seemed to become edematous and then diminished in size, and life seemed to be prolonged, at least in some cases. This, in a case of cancer of the stomach recurring after operation, the treatment caused disappearance of the previously inveterate pain and manifest reduction in size of the recurrent growth. Trial of the remedy in incipient growths should prove of much interest. Mesothorium was also injected in obstinate gonococcal rheumatism, with serous or purulent joint effusions and a tendency to ankylosis. After the third injection the pain diminished or disappeared and inflammation subsided, permitting massage and mobilization to counteract the ankylosis as soon as the improvement in the acute process permitted. In case of gonococcal orchitis five injections each of

five thousandths of a milligram were administered. The pain, redness, and swelling rapidly disappeared and the fever fell from 39° to normal. In several cases of chronic deforming arthritis subsidence of pain followed treatment, but no permanent cure. In an obstinate case of infectious erythema multiforme, the eruption gradually disappeared under the treatment, the temperature descending by lysis; diuresis occurred, and simultaneously the joint pains disappeared. In a case of hypertrophic cirrhosis of the liver, refractory to several months' dieting and ordinary treatment, a series of injections of thirty thousandths milligram of mesothorium was given, with the result that the vertical diameter of the organ diminished by five centimetres, the pain disappeared, the general condition improved, and the intense, recurring jaundice almost completely passed off. Three months later, the improvement was still being maintained. The liver was much softer, more elastic, and painless, and jaundice had not recurred. No local or general untoward symptoms ever followed the mesothorium injections, and the authors have resorted lately to subcutaneous administration, with the same results as had previously been obtained by the intravenous route.

Rectal Surgery Under Local Anesthesia.—Charles J. Drueck (*International Journal of Surgery*, December, 1919), asserts that the knowledge of the field of usefulness of regional anesthesia and also its limitations has materially widened in the last few years, and much of this knowledge is due to careful selection of the patients and also the method and anesthetic employed. To be practical the anesthetic must meet the following conditions:

1. It must be suited to the individual patient; this requires frequent modification from any described technic.

2. It must have a minimum effect on the blood pressure, respiration, and color reflex of the patient.

3. The anesthesia must be maintained as long as required by the surgeon and the recovery of the patient from the narcotic effect must be without nausea, vomiting, or undue suffering.

The advantages of regional anesthesia are:

1. Elimination of the terror associated with a general anesthesia.

2. Lessening of postoperative pain, distress, and complications.

3. Encouragement of gentle handling and careful sharp dissection of the tissues, both of which tend to prompt and better repair of the wound.

4. Thorough blocking of the operative field which prevents surgical shock.

Various salts are used as anesthetics, 1, cocaine; 2, betacaine, and 3, novocaine. The methods used in applying the local anesthetic are: 1. Infiltration, in which the solution is injected into the field of operation and well beyond the site of the traumatism. This method is applicable in superficial structures about the anus. 2. Conduction: a, topical and by deposit of the solution in the spinal canal or on a nerve trunk supplying the given area. This method is used for more extensive operations. A combination of both methods is often advisable in rectal work. In rectal abscesses the infiltration is made into the skin and between its layers, care be-

ing taken not to carry the needle into the abscess cavity. After five minutes the abscess may be opened painlessly. In excising anal fissure the area anesthetized need not extend beyond the quadrant in which the ulcer exists. In all cases the sphincter should be anesthetized and the infiltration carried below the base of the fissure. In fistula, when the operator feels certain that the sinus is straight without branches and with but one internal opening, the work may be attempted under local anesthesia.

In plastic operations about the anus for relief of anal stricture as sometimes occurs after operations for hemorrhoid operation or x ray burns. The pain of x ray burns is agonizing. Every movement of the body and each defecation is painful and the sufferer soon becomes a morphine addict. These conditions are soon relieved by excision of the scarred area and closure of the wound with suture, which may be accomplished under local anesthesia. Hemorrhoidectomy is satisfactorily performed under local anesthesia, but the pile tumor and the mucous membrane above and around it should be infiltrated to block the sympathetic nerves which descend in the mucosa. Malignant disease should not be treated by this plan for fear of dissemination.

Amebic Abscess of the Liver Cured by Emetine and Nearsphenamine Without Operation.

—Chaufard and Françon (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, July 17, 1919) note that a few cases have already been recorded showing the possibility of curing amebic hepatitis by means of emetine treatment. In most of these cases, however, doubt remains as to whether the condition was not merely a congestive condition of the liver with actual abscess formation. In the few cases in which pus was obtained on exploratory puncture, a curative action of emetine can be considered to have taken place, while in the others an abortive action of the treatment is indicated. The authors report a new case in which treatment cured an abscess from which three mills of pus had been obtained by puncture. The patient was given daily injections of 0.08 gram of emetine for a week, another series of 0.06 gram injections after an interval of two weeks, and five injections of nearsphenamine, the first of 0.15 gram and the others of 0.3 gram. Fever and dyspnea passed off after the first emetine injection, pain was markedly reduced, and the patient's appetite was restored. In a very short time the patient was completely cured, save for an eosinophilia of five per cent. and leucocytosis of 10,500. The Bordet-Wassermann reaction—often positive in amebic cases—became negative after the first series of emetine injections. This and other cases show that dysenteric abscess can be cured by emetine and nearsphenamine, without surgical intervention becoming necessary. In large abscesses, a cure should not be expected from such treatment; emetine should, however, always precede the operation, causing it to be more promptly and certainly effective through arrest of the amebic hepatitis. In circumscribed abscesses up to the size of a mandarin orange, which was about the size of the abscess in the authors' case, operation is indicated only when it has become clear that success from emetine is incomplete.

Treatment of Neurotic Vomiting.—P. Le Noir (*Bulletin de l'Académie de médecine*, October 28, 1919) refers to the mental factor now known to exist in many cases of vomiting. Even excluding true hysterical vomiting, this factor is often operative in vomiting associated with gastric disorders, postoperative vomiting, and vomiting of pregnancy. Pathogenic modalities, such as emotion, imitation, habit, and mental images of the act, may severally be concerned in different cases. In all instances there is manifestly a predisposition, and the mental concept of vomiting is easily translated into actual execution. Even a slight feeling of nausea or of gastric repletion, an odor or taste, the sight of a receptacle in which the patient has vomited or might vomit, or a story or act suggesting the idea of emesis, may suffice. Isolation and psychotherapy, as in hysteria, sometimes give good results in these cases, but at times fail, either because the physician is lacking in authority or the patient is refractory to psychic influence. Under these conditions the mental concept and the habit of vomiting are the features to be antagonized in the treatment. The author's patients are usually placed in isolation, but the isolation is seldom very strict.

An important measure is that the patient shall be put to bed and not allowed to get up on any plea whatever. All things which might awaken the idea of vomiting or facilitate its execution are kept out of reach and sight of the patient. This includes all vases, cuspidores, and bowls and even, in some instances, handkerchiefs, napkins, pads, and newspapers, so that the patient, in vomiting, would have to do so either in bed or on the floor. Washbowls and bedpans are left at the patient's disposal only during the time required for their use and at the longest possible interval after meals. To break the habit of vomiting, water in small quantities should alone be allowed on the first day, unless contraindications to such restriction exist. The diet should at first be limited to sweetened water, vegetable soup, and whole or diluted milk, administered only in small amounts at a time. A moist, hot compress is kept continuously over the epigastrium. The diet is increased gradually, being restored nearly to the normal mixed diet in the course of a few days. Under this treatment vomiting nearly always disappears in one or two days, unless some definite gastric disorder coexists.

Drugs are used only where there is present a recognized gastric disease, or some temporary cause or suggestion of emesis, such as nausea in pregnancy, exists and interferes with the institution of the treatment. Under these conditions the author excludes all food or fluid by the mouth until evening. An enema of water, intended for absorption, is given in the morning, a cleansing enema late in the afternoon, and immediately after, an enema of chloral hydrate and potassium bromide. A little while later, when the hypnotic effect is expected soon to set in, a complete, rather generous meal is given, the patient continuing to eat until drowsiness occurs. Quiet and darkness are then imposed, and the meal will usually be retained. In the morning, if vomiting occurs, the food will already have passed from the stomach to the bowel.

Treatment of Acute Appendicitis.—Témoïn (*Bulletin de l'Académie de médecine*, October 28, 1919) asserts that the main factor in successful operative treatment in appendicitis is that the surgeon shall have to deal exclusively with an appendicitis and not, in addition, with peritonitis. Peritonitis in appendicitis is nearly always a result of temporizing. All cases of appendicitis should be at once placed under a surgeon's care and the patient promptly taken to a hospital or clinic. Little attention need be paid to the number of hours that has elapsed from the onset of symptoms. The average mortality after prompt operation during whatever stage of the disease the patient is first seen is but 3.5 per cent. Particularly in country practice, temporizing with appendicitis is fraught with disappointment. Even were the ultimate mortality the same, prompt intervention offers great advantages in sparing the patient weeks and months of waiting, recrudescences, the anxiety of a future operation, impairment of general health, and expense. Of 177 patients operated upon by the author during 1919 while in the acute stage of the disease six were dealt with within two days after onset and 171 from the third to the twenty-second day. Of the first six patients, two already had pus in the peritoneal cavity; yet, all recovered. Of the 171 received later, ninety had lesions confined to the appendix and all recovered. Eighty-one had pus in the abdomen. Of the forty-two with localized peritonitis, all but one recovered. Of the remaining thirty-nine with diffuse peritonitis, eleven died. Of these eleven, two were not operated upon, succumbing at the time of admission.

X Ray Treatment of Scar Tissue Due to Wounds.—John J. Grace (*American Journal of Electrotherapeutics and Radiology*, October, 1919) gives a report on x ray treatment of disabilities due to wounds and other causes. Numerous adherent scars were treated, the usual treatment by chlorine ions took a long time and did not give satisfactory results. The results in these cases were rapid and satisfactory except in cases where the scars were adherent to bone. In scars adherent to nerves and causing trophic changes, pain and other manifestations, the results were fair. It is probable that the conditions varied. It was not to be expected that the x ray would lead to the absorption of Cargile tissues and other foreign bodies wrapped around nerves to protect them. The patients had come from many sources and had had many types and qualities of operations performed upon them. Often there was much to contend with.

In one case, where the flexor carpi radialis tendon which was involved, the condition improved. In neuritis where a nerve distribution was painful after a wound, or where the scar itself was painful more reliance was placed on x rays. Many of these cases showed good results. In the case of painful stumps the results were irregular. The stumps often included pieces of cloth, minute fragments of metal, partially absorbed sutures, fragments of bone, and other foreign material and in many of these cases pain could not be eradicated by the x ray or any other treatment. In one case of pain in the sciatic nerve distribution not due to any obvious

cause the patient improved after twelve exposures over the sciatic notch and lumbar region. A patient with chronic septic eczema did very well. Subcutaneous, painful thickenings following tenotomy of the tendoachilles or the plantar tendons and fascia yielded readily and rapidly to x ray exposures.

The x ray acts by its selective action upon poorly organized tissue and in view of this in many cases it may be applied with hope of benefit. In chronic mastitis its use has been followed by gratifying results. As there is no hurry to get results and the conditions dealt with are not of grave nature safety should be the first consideration. For this reason it is best to use a filter one mm. of aluminium for the superficial cases and two mm. for the deeper. A hard tube is used, one equivalent to a six inch spark gap, and exposures for ten minutes with one m. a. through a tube at a distance of twelve inches. Exposures are given as a rule on alternate days.

Radium Treatment of Uterine Cancer.—Harold Bailey (*American Journal of Obstetrics*, September, 1919) reports his conclusions as to the value of this treatment from experience in 356 cases. Practically all cases given a complete radiation of the local lesion and the lymphatic and other involved parametrial tissue pass through a period of improvement, with disappearance of ulceration, lessening or cessation of discharge, gain in weight, and general improvement. Undoubtedly their lives are lengthened. After a period of well being following the treatment, many of the cases have further development of cancerous tissue behind the vault of the vagina. In an effort to save these patients, the author pushed radium treatment of the parametrium, both by vaginal and surface radiation, to the highest limits of safety, and thereby caused in many who at the time of writing appeared to be free from cancer, various types of pelvic sclerosis, mild or severe. The method in use permits of the entire treatment being given in forty-eight hours, with only moderate discomfort to the patient. In cancer of the uterine body it seems necessary to remove the uterus after a preliminary radiation, or where this is inadvisable to radiate the entire pelvis as completely as is done with a cervical tumor. Results in recurrent cancer after hysterectomy are very promising. It is as important to radiate these cases at once after operation as it is to operate early in the course of the disease. Twenty-six per cent. of recurrent cancer cases treated up to 1918 were still living at the time of writing, and of the cases treated in 1918, fifty-nine per cent. So great has been the palliation from radium that it may be said, no uterine cancer case receives proper treatment without thorough radiation of the tissues of the pelvis. Problems regarding the best dosage and methods of application are, however, as yet unsolved.

Neuralgia of the Trigeminal Nerve.—Chavez (*La Cronica Medica*, September, 1919) advises the administration of aconitine in doses of one to two milligrams, with morphine if this is ineffectual. He practises alcohol injection in stubborn cases, with, if necessary, later, retrogasserian neurectomy according to the technic of Frazier.

Miscellany from Home and Foreign Journals

Rectovesical Fistula due to Syphilitic Ulceration.—P. Péveniez (*Bulletin de l'Académie de médecine*, October 28, 1919) reports the case of a man aged sixty-nine years who had been sent to him with a diagnosis of cancer of the rectum and the recommendation that an artificial anus be instituted. In March, 1918, this patient had had a sudden attack of bladder disturbance with frequent and painful micturition, followed in four or five days by discharge of gas through the urethra and turbidity of the urine. Three months later, fecal matter began to appear in the urine and the frequency and pain increased. There were no rectal symptoms. Cystoscopy revealed an elliptical perforation behind the trigone, slightly to the left of the median line. The opening was of a punched out type, and fecal matter was seen passing from it into the urine. Proctoscopy showed a similar opening about fifteen centimetres above the anus, without any marked abnormality of the surrounding mucous membrane. There was no history of a syphilitic sore, but fifteen years before the patient had been troubled with psoriasis of the nose and cheeks, which had yielded in a few days to specific treatment. Five years before, a movable mass had appeared in the epigastric region, and been complicated twice by jaundice, later yielding completely to antisiphilitic measures. The author now administered injections of mercury and iodhydrine, and in about two months the condition so improved that fecal matter seldom passed into the urine. Cystoscopy a month later showed that the ulceration had healed. After a second, later cystoscopy, a little gas passed into the urine for a few days, but subsequently recovery was complete. Upon examination some months later the urine was found quite clear, and frequency and pain were absent. In spite of the fact that this patient's ureteral orifices were bathed for months in fluid containing fecal matter, the kidneys seemed to escape involvement entirely. Cases of syphilitic rectovesical perforation are rare, but should be borne in mind to obviate unnecessary radical intervention under the impression that rectal cancer exists.

Pseudoangina of Venous Origin.—R. Moulier (*Journal de médecine de Bordeaux*, September 10, 1919) reports the case of a man aged fifty-three, who frequently had anginose symptoms when walking after meals. During one of these attacks, voluntarily induced to permit of the author's making a detailed study of the condition of the circulation during the attack, reduplication of the aortic first sound was noted. The pulse rate and rhythm remained normal. The aortic second sound was accentuated; both pulmonic sounds weak and distant; both mitral sounds distant and muffled, and both tricuspid sounds accentuated. These manifestations are taken to show a rupture of equilibrium between the pulmonary and aortic systems, indicated by the reduplicated first aortic sound; a forceful blood wave in the aorta, indicated by the accentuation of the second aortic sound; a rise in the right intraauricular pres-

sure, indicated by the accentuated tricuspid sounds; absence of reaction of this hypertension on the left auriculoventricular leaflets, indicated by the muffled second mitral sound; absence of unusual activity of the myocardium, indicated by the distant mitral first sound. Since these conditions exclude the left ventricle, aorta, and arterioles as the cause of the sudden increase of the blood wave in the greater circulation, the latter must have had its origin in the venous system. The whole course of events suggests that unusual resistance to blood flow had developed in such a way as to increase capillary pressure and, secondarily, aortic pressure, this resulting, in turn, in painful distention of the aorta or painful effort on the part of a barely sufficient myocardium. Difficulty of return circulation was manifest in this patient, who exhibited a network of dilated veins in the extremities. Embarrassment of venous circulation was more definitely demonstrated by study of the blood pressure in the arm, first held out at the level of the heart, and later, raised above this level. The cause of the temporary venous hypertension—the pain lasting only three minutes—is thought to lie in the post-prandial plethora in the abdomen, coupled with the standing posture and locomotion. The muscular activity entailed passage of an increased amount of blood into the return circulation, already overburdened, thus bringing on the conditions already mentioned. The capacity of the veins is so great, however, that equilibrium was soon reestablished, and the attack in these cases of venous pseudo-angina is far more evanescent and less serious than in the cases of true arterial angina.

Neighborhood Lymphatic Enlargements in Tuberculous Osteitis and Osteoarthritis of the Extremities.—Lance (*Presse médicale*, October 25, 1919) notes that tuberculous osteoarthritis reacts upon the deep lymphatic chains in the limbs. In the lower extremity the iliac ganglia, particularly the external retrocrural ganglion, react. In knee involvement the popliteal glands may also, though much less frequently, become enlarged. These ganglionic reactions are actually of a tuberculous nature. The glands remain small, hard, and movable, when the bone focus is dormant, but when recrudescence occurs, enlarge, become sensitive, diffuse, and adherent, and may even soften and suppurate. During the intervals the glands remain diseased, and the alternate quiescence and sub-acute attacks impart a typical character to the glandular disturbance as a whole. These enlarged glands are of diagnostic import but are not always present, often appearing late, i. e., only after manifest clinical signs and x ray evidences have been afforded. Furthermore, the glandular enlargements are sometimes inaccessible and hard to detect with the fingers. Again, they may occur in the majority of nontuberculous cases of osteitis or osteoarthritis, in all cases of subacute arthritis, and in the acute exacerbations of many cases of chronic arthritis. Primary tuberculous glandular enlargements may be encountered in the same groups of nodes.

Causes of Nonunion and Pseudarthrosis in Fracture Cases.—Dauriac (*Bulletin de l'Académie de médecine*, November 4, 1919) notes that 15,000 cases of nonunion in the French Army during the war are officially on record. One cause of this was probably the almost exclusive meat diet supplied to the army, coupled with the excessive use of wine, alcohol and vinegar. This diet produced in all French soldiers a chronic, deepseated toxic state which interfered with proper bone repair. Nonunion was by no means always due to suppuration, for the author alone saw fourteen cases of simple fracture among soldiers in which consolidation never occurred, even though syphilitic infection did not exist. A second factor of nonunion was the lack of nervous reacting power resulting from the marked and repeated stress under which the nervous system was placed during the war. The incessant danger and commotion induced a state of almost complete indifference and atony which made of the wounded men brought to the hospitals inert creatures without nervous reactive power, profoundly depressed, and therefore unable to carry out extensive tissue repair. Decalcification and softening of injured bones resulted from the sudden, complete cessation of demand for the normal bone function of sustentation. In the same fashion, a tooth becomes decalcified and undergoes caries when the tooth opposite it is extracted. In bone grafting operations, the graft should be very long, in order that it may extend beyond the dormant, decalcified portions of the bone, become vascularized in contact with healthy bone, and be forced between the two united fragments, thus restoring the normal dynamic conditions of axial pressure on bones. The bone graft will thus become actually substituted for missing bone tissue, and will tend to acquire the resisting power and size of the lost segment.

Conservation of Smallpox Vaccine.—D'Arsonval and Bordas (*Bulletin de l'Académie de médecine*, October 28, 1919) refer to investigations in which they found that by distillation and desiccation of vaccine in a vacuum produced by low temperatures albuminous material, including serums and vaccines, could be dried unchanged within a few minutes to an absolutely anhydrous powder. These dried powders keep for a very long time if sealed in glass tubes under Hittorf's vacuum. The procedure of desiccation consists in condensing the vapors produced by distillation and solidifying them in a condenser immersed either in liquid air or in carbon dioxide snow dissolved in acetone. To keep track of the vacuum during the operation, a Crooks tube is used in place of the customary, less sensitive mercury manometer. Samples of dried vaccine thus prepared were sent to various parts of the world, including the tropics, and found to retain their protective power for prolonged periods. Additional safety is insured by wrapping the tubes in insulating material. Tubes containing five, ten or fifteen grams of dried vaccine are thus prepared. The vaccine powder will retain its activity for several years even in torrid climates in which the temperature in the sun exceeds 55° C., and may be used with safety.

Experimental Study of Buried Bone.—Leonard W. Ely (*Annals of Surgery*, December, 1919) made a study of buried bone fragments which were buried deeply in the thigh muscles of dogs, and presented the summary as follows: Twelve experiments, seven with raw bone, five with boiled. Of the seven with raw bone, in two the bone could not be found, one after 975 days, one after 694 days. Of the five with boiled bone, in four the bone could not be found, one after 720 days, one after 930 days, one after 790 days, one after 544 days. In the five other experiments with raw bone, the fragments were recovered after seventeen days, 473 days, 374 days, 1,103 days and 922 days. In the other experiment with boiled bone, the fragment was recovered after 150 days, but it was very small. Raw bone resisted absorption better than boiled bone, but it also was slowly absorbed. A decrease in the size of the fragment was almost invariable. It also generally decreased in density. The experiment also showed that both bone and marrow in the buried fragment died. The marrow was then reformed by blood vessels pushing in from the surrounding tissues, and a certain amount of new bone was laid down upon the old especially along the margins of the trabeculae.

Temporary Sterilization of the Female.—Augusto, Tureme (*Surgery, Gynecology, and Obstetrics*, December, 1919) states that the voluntary limitation of procreation is a problem not to be neglected. The disadvantages of anticonceptual practices most frequently used have been largely studied. The violation of the natural laws of copulation, of which coitus interruptus is the type, brings on serious danger of nervous inequilibrium in both sexes and psychic disturbances. The use of substances fatal to the spermatozoa is impracticable, especially in the customary mode of conjugal life; and the mechanical means of cervical occlusion, in particular the intrauterine pessary, are dangerous, often giving rise to uterine cancer, in the etiology of which traumatism and infection seem to be preponderantly important and this is brought on by the trophic epithelial deviation with a rigid stem which constantly irritates the mucosa. Most men find it difficult to use a condom. There are a group of indications for which the occasion for sterilization of the female can be considered. The progress in pathology and obstetrical technic has reduced their number, but still there exist circumstances, in which an affection, susceptible of contraindicating pregnancy or childbirth temporarily, is cured, or rather the contraindication disappears. The cases must not be forgotten in which a marital psychosis can justify a temporary sterilization which would have no reason for being in the event of the death or divorce of a sick husband.

The procedures which have been used heretofore have the disadvantage of sterilizing permanently, and when they have not done so it should not be laid to the operator; to these belong ligation and simple section of the tube. More radical are tubal resection between two ligatures, resection of the proximal tubal end and a wedge out of the corner of the uterus, the resection of the ostium with a piece of the tube and its inclusion between the

layers of the broad ligament, and the extraperitoneal fixation of the tube in the inguinal canal of the round ligament. While these procedures produce definite mechanical sterilization, they are accompanied with relative frequency, by degenerative disturbances of the ovary; no insignificant matter if the capital endocrine function of this organ is taken into consideration. Every procedure for temporary sterilization should meet the following requirements:

1. It should be easy of execution.
2. It should reduce to a minimum the danger to the life of the patient.
3. It should avoid producing degenerative lesions of the ovary.
4. It should not modify substantially the nutrition and the functioning power and topography of the different segments of the genital apparatus.
5. It should permit of the reestablishment of cervicoovarian communication.

The following technic is described.

The patient in the Trendelenburg position. Pfaunstiell's incision is used. The pelvic and abdominal organs are explored and if necessary operations on the adnexa and appendix performed. The broad ligament is held by two hooked forceps in a way to amply present its anterior surface; ten or fifteen mm. from the lower tubal border and near the ostium a fifteen or twenty mm. incision is made in the anterior layer of the broad ligament. The edges of the incision are separated and in the cellular space which separates the two layers of the ligament a small pocket is hollowed out to contain the tubal ostium. This is folded in and sutured; for greater security it is fixed to the ligament at a separate point near the tube. The abdomen is closed by peritoneal and aponeurotic sutures, intradermic cutaneous suture or with clips.

Amebic Dysentery.—H. A. Haig (*Lancet*, November 8, 1919) gives the important points of the microscopical diagnosis of amebic dysentery. Specimens of fresh stool or of a stool which has been kept in an icebox, should be examined. If cooled, warming will bring back motility. Select portions of stool which contain blood or mucus. Since *Entamoeba histolytica*, *Entamoeba coli*, *lamblia*, and dysentery bacillus may coexist in the same stool, differentiation must be made, especially when dysentery persists after emetine therapy. Of these organisms, only *Entamoeba histolytica* and *Entamoeba coli* are difficult to differentiate. The following points of difference are important. The motile form of *Entamoeba histolytica* is more active; it engulfs the erythrocytes, is able to erode tissues, and so produces bloody stools. *Entamoeba coli* is sluggish, never engulfs erythrocytes, and never alone erodes tissues to produce bloody stools. The cysts of *Entamoeba histolytica* measure constantly ten to fourteen microns, contain usually four indistinct nuclei, though occasionally only one or two, and contain an iodine staining rod. The cysts of *Entamoeba coli* are larger, fifteen to twenty microns, and are often more numerous than the cysts of *Entamoeba histolytica*. They contain eight clearly defined nuclei and do not show the iodine staining rod. A method for fixing and staining is given.

Hernias of the Ovary, of the Fallopian Tube, and of the Ovary and Fallopian Tubes.—Aime Paul Heineck (*Western Medical Times*, December, 1919) makes the following statements, based on a study of literature and on his clinical experience. A hernia may contain the fallopian tube, the ovary, or both, in part or in their entirety. The degree may vary from a complete descent to a condition in which the viscera lie just outside the abdominal ring. The organs may be normal, or may present changes of an atrophic, inflammatory, or neoplastic nature. Hernias of the uterine adnexa are often overlooked, not uncommonly incorrectly diagnosed and subjected to injudicious treatment. The tube, the ovary, or both may be the sole content of a hernial sac, or the sac may contain in addition one or more of the following structures: Meckel's diverticulum, appendix veriformis, omentum, urinary bladder, small or large intestine, rudimentary or fully developed uterus. Tubal, ovarian, and tuboovarian hernias may be congenital or acquired, unilateral or bilateral. If an inguinal hernia in a female first appears late in life, it is difficult to state that an incompletely obliterated canal of Nuck did not predispose to its occurrence.

These hernias may exist alone, or be associated with other hernias of similar or dissimilar anatomical type and clinical characteristics. In a small proportion of cases these hernias coexist with malformations, underdevelopment, or absence of other internal or external genitalia. Pathological conditions may be present in the genital or other bodily organs without being related to the hernia. These hernias may become manifest at any period of life, in nulliparæ, primiparæ, and multiparæ. They may be postoperative, ventral, gluteal, sciatic, obturator, femoral or inguinal, reducible, irreducible, noninflamed, inflamed, strangulated, or containing a pedicle which is the seat of torsion. Torsion of the pedicle of an ovary or of a tube and ovary, is a not infrequent accident peculiar to hernias of the uterine appendages which presents the same clinical symptoms as strangulated hernias; all of the reported cases were irreducible, congenital, and inguinal. All of the bilateral tubal, ovarian, or tuboovarian hernias recorded during the last twenty years were inguinal; all of the femoral were acquired.

If the adnexa are of normal development, free from disease, and reducible, hernias of the uterine appendages do not of themselves prevent conception, interfere with gestation, nor unfavorably influence parturition. The etiology is that of hernias in general; as main factors should be cited, 1, all conditions associated with or allowing an increased mobility of the uterine appendages; 2, all conditions that tend to increase the intraabdominal pressure; 3, all conditions which weaken the abdominal wall. The organ in the hernia may be the seat of gestation. The hernial sac and its contained organs may be the seat of various forms of inflammation or disease; some of these inflammations may have originated from an inflammation in the vagina. Truss treatment for hernia of the uterine appendages is not curative, and often productive of discomfort.

The Mechanism of Immunization with Special Reference to Lipase.—J. A. Shaw-Mackenzie (*Lancet*, November 8, 1919) suggests that fat splitting ferments in the blood are an important factor in the defense of the body in cancer and in bacterial conditions. When serum is added to pancreatic juice or to glycerine extracts of the pancreas, the fat splitting power of these substances is greatly accelerated. Serum from advanced cases of cancer shows much less activating capacity, and serum from cases of cancer in which there is improvement shows increasing activity capacity. He gives experiments which show the effect of adding bacteria (vaccines) and a pancreatic extract (coenzyme) to serum in terms of increased lipolytic action. It is argued that the results suggest as a possible factor of immunity, the increase of lipolytic action due to bacterial inoculation. He concludes:

1. The addition of pancreatic coenzyme and of vaccine to serum or to blood *in vitro* exerts a lipolytic action.

2. Serum so treated has bactericidal properties.

3. The resulting tissue lipolysis in the case of vaccine appears in certain details different from pancreatic lipolysis.

4. Preliminary experiments indicate that serum (autoserum), diluted and heated, in which the coenzyme or coenzymes of the serum is present, activates in a similar way, the inactive prolipase of fresh serum.

5. In indirect tissue lipolysis an explanation in part is afforded of natural and therapeutic immunization.

Postoperative Suppurative Parotitis.—William H. Fisher (*Annals of Surgery*, December, 1919) found that suppurative parotitis did not belong exclusively to the realm of surgery from operations performed on other organs of the body; that it occurred with great frequency in many medical diseases. Pyogenic microorganisms that produced septic parotitis had a natural habitat in the human system; that they were innocuous as long as the individual resistance of tissue and blood plasma conferred an immunity or held them in check; that they were called into activity by any insult or injury to the tissues; that they were disseminated rapidly through the lymph channels into the blood stream or directly into the circulation producing bacteremia, from which no organ, if susceptible, escaped their virulence; that cachexia and malnutrition from whatever source were predisposing factors by lessening resistance. The salivary glands were dependent upon nerve stimuli for their secretion; that a lowered nerve tone from disease or inhibition of the nerve stimuli from surgical shock might so impair the salivary secretion that partial or complete stasis resulted. It was at this stage that circulating bacteria, having a predilection for gland tissue, produced their lethal results. The following conclusions were drawn:

1. That septic parotitis was of hematogenous origin.

2. That cachexia and malnutrition by lowering resistance were predisposing factors.

3. That the susceptibility of the gland was favored by stasis.

4. That the secretion of the gland was under the influence of nerve stimuli and that the incidence of the postoperative parotid involvement was neurologically dependent upon surgical shock or inhibition of the secretory and trophic fibres from higher psychic centres.

5. That the gland must be susceptible to pyogenic microorganism and when affected bacteremia existed in all cases.

6. That early incision and drainage were indicated.

7. That the surgical technic advised by Lilienthal and Blair should be employed.

Diverticulitis and Intestinal Obstruction.—H. L. Rocher (*Journal de médecine de Bordeaux*, September 10, 1919) reports the case of a boy of thirteen years who while at supper was suddenly stricken with sharp pain in the epigastrium and in the left iliac fossa. Ten minutes later food was vomited. From that time on complete retention of feces and gas was noted, with continuous vomiting. Nine days later the child was taken to a hospital and subjected to operation. A persistent Meckel's diverticulum, seven centimetres long, was found to have become inflamed and adherent to the mesentery gripping tightly two loops of bowel. The diverticulum was removed and the patient recovered. The specimen was one centimetre thick at its distal extremity but perforation had not occurred.

Glycemia and Glycosuria.—L. Ambard (*Presse médicale*, October 25, 1919) accounts by hyperglycemia in diabetes as follows: One of the conditions insuring proper carbohydrate metabolism in the normal human subject is a glycemia of about one in 1,000. The diabetic patient differs from the normal person merely in that, to insure carbohydrate metabolism, a larger amount of sugar in the blood is required. According to this conception, any artificial reduction of the glycemia below this critical ratio must be attended with manifestations of disturbed carbohydrate metabolism. The fact that acetoneuria appears in the normal subject upon restriction of carbohydrate intake just as it does in the diabetic subject would seem to support this view.

Dupuytren's Contracture versus Fibrous Tenosynovitis.—Reynès (*Presse médicale*, October 25, 1919) states that cases of contracture of the finger unaccompanied by disease of the palmar aponeurosis are frequently confused with Dupuytren's contracture. The essential lesion in these cases is a more or less extensive fibrous and retractile synovitis, which blocks motion of the flexor tendons, these in turn being shortened through faulty position but not through inherent disease. Operative correction consists in palmar incision of the fingers, opening the sheaths, and liberating incisions to permit straightening of the fingers. Absolute asepsis is required. Prolonged orthopedic treatment by means of a board splint supporting the fingers in extension is essential, but should alternate with periods in which the fingers are set free to move. Cases of this type are rather frequent and must be distinguished from neuritic or rheumatic disorders.

Proceedings of National and Local Societies

SOUTHERN MEDICAL ASSOCIATION.

Thirteenth Annual Meeting, Held at Asheville, N. C., November 1, 2, 11, 12, and 13, 1913.

The President, Dr. LAWRENCE F. BARKER, of Baltimore, in the Chair.

Scientific Teamwork in Diagnosis and Treatment of Diseases of the Eye, Ear, Nose, and Throat.—Dr. E. M. CARY, of Dallas, Tex., said that group practice was desirable whether from the point of view of a surgeon dominating the situation, of a medical man, or of an ophthalmologist. In recent years he had devoted from four to six hours, as a morning's work, in an operating room in a general hospital where every possible means for concluding a diagnosis and every facility for operating provided. There was a trained anesthetist, a graduate in medicine, who limited his activities to his service while he was in the hospital, and although he had interns and a well organized training school, the hospital provided a graduate nurse who had complete charge of all the details in the operating room. There was an associate who reached the hospital at an early hour, and who saw that the patients were properly classified and placed. The operations were planned in such a way that all the clean cases were taken care of first, and the others afterwards.

The Treatment of Visceroptosis.—Dr. F. W. WILKERSON, of Montgomery, Ala., stated that the chief factors in the production of the acquired type as given by Kemp were, 1, various skeletal deformities, such as spinal curvature, rickets, kyphosis and kyphoscoliosis; 2, intrathoracic pressure on the diaphragm from effusions, tumors, etc.; 3, intraabdominal tumors of leucemic enlargement of the spleen; 4, chronic dilatation of the stomach; 5, adhesions attached to movable viscera; 6, compression of the thorax by tight lacing, badly fitting corsets, etc., and 7, relaxation of the abdominal muscles and consequent diminution of intraabdominal pressure.

Fairly marked grades of visceroptosis might exist without the production of symptoms and, on the other hand, severe symptoms might result from slight ptosis. This was probably a result of the underlying condition and depended, too, on whether or not there was interference with the motor functions of the gastrointestinal tract.

For purposes of treatment patients might be classified as, 1, those which could be given ambulatory treatment and, 2, those which required a preliminary period of rest in bed. The general principles of treatment were followed in both cases; the mild cases coming within the first class, the severe ones in the second. All cases of visceroptosis could not be cured, but about two thirds of the patients could be given permanent relief and the other one third temporary relief. This meant much to a large class of sufferers. The condition was so easily recognized and could be so readily treated that it was a great pity more attention was not paid to it by the majority of the profession.

The difference between a case before and after treatment was striking. Most of the nervous symptoms were gone, the patient felt stronger, more energetic, had a better appetite, a more cheerful outlook on life. He could do his work with comparative comfort and was more grateful for his improvement than were patients suffering from almost any other disorders of which the speaker knew.

The Intestinal Protozoa; Methods of Diagnosis and Treatment.—Dr. S. K. SIMONS, of New Orleans, La., said that in only one instance did we possess a specific remedy against intestinal protozoa. The various morbid conditions, which developed as a result of the penetration of the *Entamoeba histolytica* into the tissues, were promptly controlled by the use of ipecac or its alkaloid constituents. Emetine merited a high place in the treatment of the acute or active phases of all forms of entamebiasis, but could not be depended upon for the complete clearing of the intestinal tract in chronic cases. For this purpose the writer believed that the entire powdered ipecac root was needed. This drug must be administered, however, daily in full concentrated doses covering a period of from ten days to two weeks. If given by mouth in one dose in the form of enteric coated pills, the ipecac could be made to reach the large bowel where absorption took place directly within the confines of the disease producing area.

In the past few years the introduction of transduodenal lavage by the Jutte method, it was thought, might offer new hope for the removal of intestinal protozoa. This plan constituted in effect the irrigation of the entire intestinal tract from above down with a hypertonic or unabsorbable salt solution. Unfortunately the early optimism in regard to this method had not proved justifiable as the writer had convinced himself from numerous and repeated observations.

The Effect and Maintenance of Intraabdominal Pressure.—Dr. J. B. FITTS, of Atlanta, Ga., emphasized the following principles: 1. Normal intraabdominal pressure was a necessary physiological entity. 2. Low intraabdominal pressure was a factor in general physical inefficiency. 3. It was of particular importance in disease of the gastrointestinal tract. 4. It could be maintained by the application of physiological principles.

Concerning Focal Infection.—Dr. THOMAS D. COLEMAN, of Augusta, Ga., said that in the treatment of cases of focal infection the following points were essential: 1. The focus or foci should be removed where the end justified the means, and one should keep in mind the possibility not only of not doing good, but also of doing harm "non nocere." 2. Every agency both in building up the bodily defenses and ameliorating symptoms as they arose should be employed. 3. To all those who leaned to radicalism, he would suggest a motto, "festinate lente." The following conclusions were noted: 1. The fact of focal infection is not disputed. 2. Focal

infection is caused by pyogenic organisms that are distributed through the body by means of the blood and lymph streams. 3. Foci of infection, when removable, should be removed, but that removal should be a treatment and not a diagnostic procedure.

Lesions of the Fifth Cranial Nerve in Connection with Auditory, Vestibular Disturbances.—

Dr. E. R. CARPENTER, of Dallas, Tex., thought that the otologist should never be contented with making a diagnosis of nerve deafness, but he should determine whether or not the lesion was of intracranial origin. The prognosis and treatment depended on this point. The neurologist or brain surgeon might not be consulted until the disease had advanced too far to prevent deafness or loss of life, as often occurred with tumors, abscesses, syphilis, circulatory disease, toxemia, etc.

In Cushing's book on *Tumors of the Auditory Nerve*, the sad fact stared us in the face that in every one of his thirty-five cases, the first symptoms were disturbance of hearing, yet all of the patients came to him in an almost hopeless condition, being either paralyzed, blind, or nearly blind, or they had some other equally as serious complication, which rendered the operation exceedingly dangerous and the prognosis serious even if they survived the operation. In most of these cases, an early diagnosis would have offered the patients a very good chance to have escaped the terrible complications and many lives might have been saved.

Summary: The otologist was not required to make absolute diagnosis of intracranial disease, but auditory vestibular diagnosis had been developed until we could usually determine whether or not we were dealing with an intracranial lesion. This ability entailed some knowledge of the other cranial nerves, and the object of this article was to call particular attention to the importance of carefully considering the fifth cranial nerve in auditory vestibular investigation.

Intranasal Surgery Without Packing.—Dr. WILLIAM T. PATTON, of New Orleans, La., asked the question, What were the advantages of leaving out packing? 1. Greater comfort to patient, who often was able to breathe through the nose continually. 2. Much less reaction to disease in the nose. Usually twenty-four hours after operation, if clots were clearing out of the nose, it was surprising to see how little reaction remained. 3. There really seemed to be less bleeding without packing in most cases—that is, provided the adrenalin spray was used, cold compresses, and the patient kept in the reclining position. The advantages were: Occasionally hematoma between the flaps occurred. This was rare, however, if a counter opening was made near the floor of the nose. If it did occur, it was a simple matter to curette and again seal flaps. Apply compound tincture of benzoin. In a few cases bleeding was more free than we liked and it might become necessary to pack. Again no harm was done.

Vincent's Disease.—Dr. JOHN J. SHEA, of Memphis, Tenn., drew the following conclusions: 1. Vincent's disease is a degenerative con-

dition and not an inflammatory condition. 2. A smear should be made and studied of every acute throat and gum disease and not depend entirely upon a culture. 3. Medicinal treatment is only temporary and surgical intervention is indicated for permanent relief. 4. To make the infection reportable, and in armies, schools and institutions to consider it contagious and quarantine. 5. Always work in conjunction with a competent dentist.

Indications for Radical Mastoid Operation.—

Dr. ELBURNE G. GILL, of Roanoke, Va., drew the following conclusions: 1. The radical mastoid operation is not indicated in all cases of chronic aural suppuration. 2. It is possible to get dry cavities in most cases. 3. The hearing in the average case should be improved. 4. With proper technic the operation is not dangerous. 5. The condition calling for operation is usually a very dangerous one and it is too frequently dealt with lightly.

Gastric Motility.—Dr. HARVEY G. BECK and Dr. JOHN EVANS, of Baltimore, Md., stated that in a comparative study of gastric motility as determined by the ordinary test meal and six hour barium retention, their observations indicated that frequently in adhesions involving the pylorus and duodenum the power of the stomach to empty itself, was at first increased and later diminished. The degrees of gastric acidity seemed to have little or no influence upon the amount of gastric contents after a test breakfast or six hour retention. No interpretation should be made on this point without studying the acid curve by Rehfus's method of fractional gastric analysis. A discussion of the motor mechanism of the stomach and the factors influencing this function had been purposely omitted, since it did not come within the scope of the paper.

The results of these studies might be summarized as follows: 1. The motor function of the stomach can be determined by the complete removal of a standard test meal with the partial vacuum method. 2. There is no constant relation between the motor function, as determined by the test meal method and six hour barium. 3. Six hour barium retention occurs after a motor meal if the stomach contents exceed 200 c.c. in fifty minutes, or 150 c.c. in sixty minutes. 4. The comparative results of the two methods are most uniform and constant in duodenal ulcer. 5. Six hour barium retention occurs more frequently in adhesions involving the pyloroduodenal region than in either duodenal or gastric ulcer. 6. There is very little evidence to show that the secretory function has any influence on the motor function in pathological conditions affecting the stomach and duodenum.

Considerations in Interpreting Muscular Imbalance.—

Dr. HIRAM WOODS, of Baltimore, Md., read a paper on this subject, which he summarized as follows: 1. The meaning of muscular imbalance cannot be determined by the balance test alone. 2. Functional force of muscles should be determined by their power to overcome prisms. 3. Owing to the close relation between accommodation and convergence prism strength must be regarded as the extent to which this separation is possible, not as indicating the intrinsic power of the

interni. 4. In horizontal heterophoria the basis of calculation should be divergence power (abduction) because of the single nerve supply of the externus. 5. The minimum of abduction should be five degrees, the minimum of positive relative convergence about three degrees to four times as great. 6. The vertical recti should practically balance each other at two and a half degrees to three degrees. 7. In prescribing prisms for constant wear the muscle to be helped should be weaker than normal and its antagonist stronger, otherwise there is danger of converting one form of heterophoria into another.

Signs and Symptoms of Hypopituitarism.—Dr. STEWART R. ROBERTS, of Atlanta, Ga., said that undergrowth, dwarfism, dysgenitalis, feminine hirsuties, feminine type skeleton, lack of secondary sexual characteristics, genital atrophy and impotence, headache, languor and weakness, might appear in varying degrees in different cases at different periods. The classical signs and symptoms of hypopituitarism were subnormal temperature, dry skin, adiposity, low blood pressure, slow pulse, constipation, amenorrhea, drowsiness, and inactivity. Lack of attention, impairment of memory, actual dullness, mild psychoses, and actual convulsive seizures with epileptic attacks might occur. The cause might be glandular deficiency of one or both lobes, a pituitary tumor with damage of the gland, a tumor or hydrocephalus with pituitary pressure. The symptoms of intracranial tumor might be more prominent than those of pituitary deficiency. Infantilism, dysgenitalism, obesity symptoms of intracranial tumor, warranted pituitary study.

Responsibility of Physicians Who Treat Malaria Cases.—Dr. C. C. BASS, of New Orleans, La., stated that the important duties or responsibilities of physicians who treated patients suffering from malaria were: 1. To begin promptly proper treatment with the specific remedy for the disease, viz., quinine, not neglecting it for spectacular methods of treatment. 2. To advise the patient of the proper diagnosis and nature of the disease. 3. To advise him of the mode of transmission of the infection and of the great danger of transmission to other members of his family and associates, endangering their health and perhaps their lives. 4. To advise and prescribe specific treatment which would disinfect the patient so as to avoid relapse and prevent transmission.

Coccidioidal Granuloma.—Dr. KENNETH M. LYNCH, of Charleston, S. C., said that no successful treatment had been devised and in all cases save one the patients had died within from a few weeks to nine years. The only patient who recovered was one in whom the infection was recognized in an extremity and the infected member amputated, apparently before dissemination had occurred. The first case of coccidioides immitis infection in South Carolina and east of the Mississippi had been reported, this being the forty-fifth case on record, the second case in a woman, and the fourth that had not occurred in California. The confusion of the disease with tuberculosis had again occurred, even though a complete

investigation of the case would no doubt have revealed its true nature. The parasite should have been found in the sputum and urine. Again, we were reminded that even in medicine things were not always what they seemed and no diagnosis on circumstantial evidence could be positive. The failure to use methods and means which were at hand for diagnosis, no matter how apparently clear the case might be, was inexcusable.

It was highly probable that infection by coccidioides immitis was with us where we had not recognized it and it was desirable that those cases of supposed tuberculosis in which the tubercle bacillus was not demonstrable should be carefully investigated for this or kindred infections.

Simplified Technic for Local Anesthesia of Tonsils.—Dr. W. T. PATTON, of New Orleans, La., stated that it was remarkable how easy one might anesthetize the tonsil in this way, with a small quantity of fluid and only one or two punctures. If the tonsil was large or long, it was best to make two punctures—one through the upper and one through the lower pole. It might be said that there was danger of causing infection by going through the tonsils. Of course, this was possible in all injections. In over 500 cases he had never had any deep infections. He had removed and seen removed some 500 tonsils by this method of anesthesia and had had excellent anesthesia in practically all. The advantages were: 1. Excellent anesthesia. 2. Small amount of fluid injected into tissues. 3. Lack of edema and disturbance of tissues. 4. Lack of postoperative reaction.

The Status of Amebic Dysentery with Special Reference to Diagnosis and Treatment.—Dr. RANDOLPH LYONS, of New Orleans, La., said that probably the very latest treatment with the newest remedy on the market was the use of benzyl benzoate in dysentery. Macht and Fisher believed it had amebicidal qualities based on a series of experiments *in vitro*. Its clinical use was reported by Haughwout and Lantin. They had treated eight patients (including Osuzano's two patients) all of whom were benefited. The dose was ten to thirty drops three times daily. The cases had not been followed long enough to make any definite statement as to cure. Many other drugs and methods of treatment might be mentioned but they appeared to be of minor importance and their value was problematical.

In briefly summing up the various methods of treatment advocated at the present time, one could safely state that ipecac and its alkaloids were still the sheet anchor in the treatment of amebic disease. The tendency of the times was to administer a combination form of treatment; that is to say, emetine hydrochloride was given hypodermically in conjunction with the oral administration of either emetine hydrochloride, powdered ipecac, or emetine bismuth iodide. Occasionally some other drug might be administered by mouth as chaparro or bismuth. There was reason to believe that this form of treatment was a distinct advance in the therapy of amebic dysentery and that by its use relapses would be markedly diminished. It had met with notable success in the treatment of carriers.

Subacute Combined Degeneration of the Spinal Cord.—Dr. WILLIAM G. SOMERVILLE, of Memphis, Tenn., drew attention to the similarity between the nervous symptoms of subacute combined degeneration of the spinal cord and pellagra. Both diseases had in common secondary anemia, gastrointestinal disturbances, degeneration of the posterior and lateral columns of the cord, pigmentation of nerve cells, and frequent occurrence of mental symptoms. One of the chief points of difference was the presence in pellagra of the characteristic skin lesions, which, it was agreed, were due to the trophic disturbances from involvement of the spinal ganglia, that is, the extension of the foci of degeneration into the posterior nerve roots and their ganglia.

The secondary anemia was common to both, but more intense in the subacute combined degeneration, and more likely to assume a pernicious type. The *Cercomonas intestinalis hominis* had been found in the intestinal discharges of both; in every case of pellagra according to Jelks, and in the case of subacute combined degeneration reported in the paper. It was evident that one case proved nothing, but this statement was made as a preliminary to further investigation, and to call attention to the very great importance of examination of the intestinal discharges of these patients, as well as of a careful comparison of the clinical signs and pathological findings in these two types of disease. For, after all, we might find they were one and the same, and all their symptoms produced by a common cause, an intestinal parasite.

The Minnesota Rural Clinic.—Dr. E. J. HUENEKENS, of Minneapolis, Minn., stated that the value of these clinics consisted in: 1. The teaching of the proper feeding of infants and children and the special value of maternal nursing. 2. General hygienic instructions, the value of fresh air, sunshine, and proper clothing. 3. The early recognition of defects before they were obvious to the parents. 4. The awakening of general interest in child health and child welfare. 5. Last, but not least, the education of physicians.

Hookworm and Manifest Tuberculosis.—Dr. ROY D. ADAMS, of Washington, D. C., stated that while hookworm disease and tuberculosis were often referred to in the literature as being related, and though the inference was frequent that the connection was one of cause and effect, no serious studies had been made which placed the relationship on anything firmer than a speculative basis.

Available sources of information indicated that manifest tuberculosis was more frequent among individuals harboring hookworm than among the hookworm free, living under similar conditions. A generally lowered resistance, incidental to hookworm disease, especially evident as anemia and malnutrition, was credited with being the essential factor producing lapse of immunity to tuberculosis. There was no evidence establishing any specific relationship between the two diseases. Inasmuch as it had been demonstrated that the mortality from tuberculosis might be reduced by a measure so simple as the elimination of hookworm

where double infection existed, the obligation of the physician with regard to diagnosis and treatment was apparent.

Empyema.—Dr. FRANK K. BOLAND, of Atlanta, Ga., stated that making the earliest possible diagnosis of acute empyema was a burden which fell on the general practitioner, the pediatricist and the internist, who must ever be ready with the exploring needle. How often had pus in the chest been called unresolved pneumonia for so many days or weeks that the condition was already chronic before its presence was known?

No one could deny the advantage of having pus run through a tube into some kind of receptacle instead of keeping the dressings soaked. Suction should be applied to such a tube, if an efficient means was provided. The use of Dakin's solution was not advised immediately following the opening of the chest in acute empyema. A few days later, when the abscess had had time to become well walled off, and there was no danger of a bronchus communicating with the cavity, Dakin's solution might be tried. The last word in the treatment of empyema had not been said. Much had been added to our knowledge concerning it through recent experiences. Every thoughtful effort to decrease the mortality and shorten convalescence should be encouraged and given a fair chance. However, until new methods had been tried in a sufficient number of cases and over a long enough period to insure their worth, it was safer not to depart too far from the beaten paths.

The Medical Profession in the War: Its Sacrifices and Compensations; Humanity's Gains.—Dr. JERE L. CROOK, of Jackson, Tenn., said that as shown by the experience of the best men and reported by them in the medical literature during and since the war, surgery's outstanding gains might be summed up as follows: The Carrel-Dakin method of treating suppurating wounds; a revival of the use of débridement, first used extensively in the Napoleonic wars; the treatment of shock caused by hemorrhage with blood transfusion by the citrate method, demonstrating the great superiority of blood over salt solution, because the former had real sustaining power and the latter was temporary only because osmosis soon carried it out of the vessels; the paraffin treatment of burns; improved methods in the treatment of fractures and the use of the Thomas and Blake splints and the Balkan frame; early mobilization of injured joints; management of lung injuries; improvements in plastic surgery; reeducation of the crippled.

Toxic Nonexophthalmic Goitre.—Dr. WILLIAM D. HAGGARD, of Nashville, Tenn., said there were several reasons aside from accuracy why this type of goitre should be more generally recognized: 1. It was quite as dangerous, if not more so, than exophthalmic goitre, because the toxin seemed to have a selective action upon the heart, causing the so-called thyrotoxic goitre heart, instead of the mechanical goitre heart from pressure. 2. It was more likely to be overlooked on account of the absence of exophthalmos and the gravity of impending

heart symptoms not appreciated. 3. Many adenomata, so simple of surgical cure as such, were prone to degenerate and produce toxic symptoms. 4. The long duration of an atoxic goitre before producing toxic symptoms and the belief of its perpetual innocence by the physician and patient. 5. The danger of administering iodine in goitre of long standing and its proneness to set up toxic and sometimes fatal symptoms. 6. Frequency of toxic, nonexophthalmic goitre was one out of four goitres that were not hyperplastic.

(To be continued.)

Letters to the Editors.

UNIFORMITY IN SIZE OF REPRINTS.

BROOKLYN, January 2, 1920.

To the Editor:

In the course of my thirty-odd years of professional life, I have received, by the courtesy of my colleagues, a very large number of extremely valuable reprints of their articles on topics of general and special professional interest.

After trying out many schemes for filing and indexing, I am still unable to find, without loss of time, the article to which I want to refer. The great diversity in size and shape of these reprints has been the stumbling block.

Recently the thought occurred to me that it might be possible to standardize their size and shape (and do away with the unmeaning covers) so that they might be preserved in a uniform permanent or "loose leaf" binding—and so be easily indexed.

If this suggestion seems practical to you, will you kindly give it space in your journal, that it may come to the notice of the editors of our other prominent medical periodicals? Your own editorial criticism or endorsement is asked.

HUBERT ARROWSMITH, M. D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Die Pubertätsdrüse und ihre Wirkungen. By ALEXANDER LIPSCUTZ. One Colored Plate and One Hundred and Forty Illustrations. Berne: Ernst Bircher, 1919. Pp. 456.

The Swiss profession are not given to publishing books, but when they do so, the work is likely to be worth while. Such is the case of Doctor Lipschütz's contribution to the glands of puberty. The privat docent of the University of Berne has produced an unusually well written scientific production, well worth reading by those interested in both biology and medicine. To do justice to the book a lengthy review, which space forbids, would be required, but an idea of the vast interest of the subject may be had by indicating the contents. The results of castration in man, birds,

frogs, and domestic animals, as well as insects, etc.; the internal secretion of the genital glands, the male and female puberty glands in animals, the histogenesis of the corpus luteum and the functions of its internal secretions; the physiological functions of the seminal vesicles and prostate, the development and hypertrophy of the glands of puberty, etc., not to mention many more interesting subjects. The press-work is excellent, likewise the illustrations, the work concluding with an index of writers' names and a general index of the subjects treated. To both teacher and student this work will be of the highest scientific value.

Diseases of Infants and Children. By HENRY DWIGHT CHAPIN, A. M., M. D., Professor of Diseases of Children, New York Postgraduate Medical School and Hospital; Supervising Physician of the Children's Department, New York Postgraduate Hospital; Consulting Physician to the Willard Parker Hospital, etc., and GODFREY ROGER PISEK, M. D., Sc. D., Professor of Diseases of Children and Attending Physician to the New York Postgraduate Medical School and Hospital; Professor of Diseases of Children, University of Vermont Medical College; Visiting Physician to the Willard Parker and Riverside Hospitals; Pediatricist to the Park Hospital, etc. Fourth Revised Edition. Illustrated. New York: William Wood & Co., 1919. Pp. vii-592.

In the fourth edition of this standard text book many changes have been made. As the book stands at present it forms a reliable reference and textbook. The splendid illustrations are a great aid in emphasizing certain conditions which are best diagnosed by the general appearance of the patient. Extensive modifications have been made in the section on dietaries—especially in regard to older children. Among the new articles and revisions are included, the subjects of acidosis, food allergy, epidemic encephalitis, functional heart disorders, and the latest findings in spasmophilia.

Much emphasis is placed on preventive treatment. Little space is given to subjects which are still in the experimental stage. As the authors evidently did not wish to overburden their pages with the findings of experimental studies, or subjects which would require immediate revision. This makes for a paucity of material in endocrines. This is to be regretted for it is here that we hope to find a therapeutic remedy for many of the functional and constitutional defects of infancy and childhood. Aside from this one subject, which is after all more or less in its infancy, the book is admirable in the field it covers and in the manner in which they are handled.

Births, Marriages, and Deaths.

Married.

WRONKER-BRODY.—In Chattanooga, Tenn., on Sunday, January 4th, Dr. Harry Wronker, of Rochester, N. Y., and Miss Ida Brody.

Died.

EVANS.—In Morris Plains, N. J., on Wednesday, January 14th, Dr. Britton Duroc Evans, aged sixty-one years.

REGISTER.—In Tarnopol, Poland, on Saturday, January 3rd, Lieut. Col. Edward C. Register, Medical Corps, U. S. Army, of Charlotte, N. C.

WEEKS.—In Brooklyn, N. Y., on Monday, January 12th, Dr. Joshua R. Weeks, aged sixty-three years.

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Original Communications

RESULTS OF FRACTURE OF THE FEMUR CAUSED BY GUNSHOT WOUNDS.*

*A Résumé of the Methods Employed in France
in 1918.*

BY SIR ANTHONY BOWLBY, M. D.,
London,

Major General, Royal Army Medical Corps.

In the year 1917 a *rapport* by Lieutenant Colonel Max Page was read at a meeting of the Inter-Allied Conference in Paris. This *rapport* was the sequel to an enquiry in England as to the results of fracture of the femur, and it was evident that many of these were very unsatisfactory. A large proportion of the patients of 1914-1915 were suffering from one or more of the following conditions: a. Shortening of the limb of more than one inch, and sometimes of two or three inches; b. union of the fragments in bad position; c. stiffness of the knee joint; d. sinuses. In a smaller number of cases there was stiffness of the hip joint, necrosis of large fragments, or imperfect union. A large proportion of the patients walked very badly.

These results made it evident that the methods of surgical treatment and the conditions for the hospitalization of patients in 1914-1915 were not satisfactory, although before the enquiry by Lieutenant Colonel Page early in 1917 many improvements in the matter of splints had already been adopted in France. The previous conditions and methods of treatment may be briefly described.

In the year 1914-1915 it had been necessary to send all patients to England as early as possible. This was due to the fact that there was not, at the time, sufficient accommodation in France for the large numbers of wounded. There is no doubt that the journey was bad for the patients. During the same period the splints most commonly employed, both in France and England, were the long wooden splints known in England as Liston's. Toward the end of 1915 skeleton metal splints began to be used in France, and during the year 1916 the Thomas splint came into universal use at the casualty clearing stations. During this year the stretcher suspension bar was also used with the Thomas splint, so long as the patient remained on his stretcher, and it became a part of the regular equipment. It was during the battle of the Somme

that both the Thomas splint and the stretcher suspension bar were supplied for the first time during the heavy fighting to the field ambulances of the fourth and fifth armies, and, at the end of that year and in the beginning of 1917, both of these appliances were sent to the regimental aid-posts of all armies and were commonly applied as soon as the stretcher bearers found the wounded men.

During the year 1917 the patients at the bases in France were generally treated by skeleton metal splints and extension, by the methods demonstrated to the conference by Major Sinclair, but it became evident that better results could be obtained by: 1, retaining patients in France as long as possible before the journey to England, and 2, the creation of special hospitals with specially trained staffs of surgeons and nurses.

The bombing of the hospital bases in France in 1918 resulted further in the creation of special hospitals for fractured femurs in England. The effect of those various measures has been that many lives and limbs have been saved and that the limbs have shown much less permanent disability than formerly. The mortality at the front in the early days of the war cannot be directly compared with the mortality at the front in the year 1918, because the conditions were totally different. In 1914-1915 whenever there was heavy fighting practically all patients, however bad their condition, were at once sent to the base hospitals by ambulance trains, because the casualty clearing stations were far too few and too small to accommodate them; and large numbers of patients merely passed through these units on their way to the train. Yet, even then it was found that not less than sixteen per cent. of one thousand consecutive cases died at the front, and it was estimated that the total mortality in France was at least forty per cent., exclusive of those who subsequently died in England, so that the death rate was altogether not less than from forty to fifty per cent.

These figures however are rather misleading, for all cases of fractured femur are included in them, and among these not less than twenty or thirty per cent. had either such serious local complications as injury to the main vessels, extensive comminution into a joint, or widespread laceration and destruction of large masses of muscle, while many other patients had multiple wounds involving other limbs or the viscera of the thorax or abdomen. It is not possible to differentiate between all

*Presented before the Clinical Congress of the American College of Surgeons, New York, October, 1919.

these conditions, and it must be understood that the figures used in this communication include all patients in whom the femur was fractured, whatever complications there might have been.

The total mortality in the year 1918 may be estimated from the following figures. It has been found impossible to ascertain accurately the exact number of cases and their results in the casualty clearing stations, because of the difficulties encountered in the retreat of March and April, but sufficient records have been obtained to enable satisfactory conclusions to be drawn.

At the front.—Of 3,141 patients admitted into various clearing stations 550 died, i. e., 17.5 per cent. Of these approximately twenty-one per cent. were treated by amputation. The mortality in the amputated cases was about thirty-three per cent. These are included in the total of 550 deaths recorded above. It was estimated that in between twenty and thirty per cent. of the total number of 3,141, there were multiple wounds or such other serious complications as have been alluded to. The mortality was very much higher in this class than in the remaining seventy per cent.

At the base hospitals.—During the year 1918 there were treated in the general hospitals at the bases in France 5,025 patients, of whom 547 died, or 10.8 per cent. Of these 5,025 cases, 513 were treated by amputation, or 10.2 per cent. The mortality in the amputated cases was about thirty-three per cent. All these are included in the total of 547 given above.

Enquiry in England shows that the mortality in the special hospitals there was very low, generally about one or two per cent. This is due to the fact that the majority of all the patients were kept in France till union had occurred and the wounds had healed, and even in times of stress the worst patients were retained in the special hospitals in France. For the same reasons, amputations in England have been few.

From a consideration of these figures it may be concluded that during the year 1918 the total mortality in all cases of fracture of the femur, at the front, at base hospitals in France, and in England, amount to, approximately, thirty per cent.

It must, however, be again pointed out that a large proportion of the deaths occurred in men who had other serious injuries, and there is no doubt that in not a few of these death was not due to the fracture of the femur, but to wounds of the viscera or to the shock caused by multiple injuries. My own impression is that the mortality of uncomplicated fractures of the femur due to gunshot wounds and treated throughout by the most modern methods is not more than twenty per cent. and this conclusion has been arrived at after a long experience with those cases both at the front and in the base hospitals, and after an examination of many statistics.

AMPUTATIONS.

A large number of the deaths followed amputation, and about thirty per cent. of all the patients with fracture of the femur lost the limb. It will also be noted that in one third of all the amputations the operation failed to save life. At the

front the most common cause for amputation was that the extent of severity of the injury rendered it impossible to save the limb. In other cases laceration of the main vessels was the cause. In many cases the operation was performed for gas gangrene. Many lives were saved by the employment of transfusion and by the use of gas and oxygen as an anesthetic.

At the base hospitals the presence of gas gangrene was almost as often the cause of amputation as at the front, but in many cases the development of intractable sepsis called for the removal of the limb. It must, however, be remembered that in March and April some hundred patients had to be sent to the base for operation, which would ordinarily have been performed in the casualty clearing stations.

The following figures of one general hospital may be taken as examples. Out of seventy-two amputations gas gangrene caused twenty-four; acute sepsis, twenty-nine; dry gangrene, three; secondary hemorrhage, nine; osteomyelitis and other complications, six. The final results obtained in the limbs that were saved showed a great improvement on those of the early part of the war.

Shortening.—The present methods of treatment guarantee that unless there has been an extensive loss of bone no shortening need occur. It has been shown that even when one or two inches of the femur has been destroyed, the gap can be filled by new bone, and that, consequently, there is no objection to maintaining the fractured ends in full extension. It had formerly been the practice of some surgeons to allow the separated fragments to come together so as to promote union, but it is certain that this should not, in the future, be a regular practice.

Practical experience has also shown that it is more difficult to obtain a full length limb in cases of simple fracture, such as occur commonly in civil practice, for the uninjured muscles offer far greater resistance than those in a limb wounded by shell or bullets, and consequently, more extension is required. The amount of shortening following gunshot fractures is shown, by the following figures, to have steadily decreased in each year of the war.

For these statistics we are indebted to Major Stout, of the New Zealand Medical Corps, and they include every case of fractured femur in the New Zealand corps:

NEW ZEALAND FIGURES.		
	Cases.	Average shortening
1916.....	54	1.345 inches
1917.....	116	.957 inches
1918.....	90	.25 inches

TWO SPECIAL BRITISH GENERAL HOSPITALS IN FRANCE, 1918.

	Cases.	Average shortening.
a.....	343	.2 inch
b.....	60	.2 inch

Of these sixty, thirty-six had no shortening.

Major Pearson, South African Medical Corps, has supplied the following figures for a special hospital in England, 1918: In sixty-eight cases there was no shortening in thirty-nine. The average shortening of the remaining twenty-nine cases was half an inch.

Other hospitals show similar results, and it will

be seen that the majority of the patients recovered without any shortening, and in only about five per cent. of all cases was there more than an inch of shortening. Thus, of the ninety New Zealand cases in 1918, only two had more than an inch of shortening, and both of these patients had lost a good deal of bone. The records of various special hospitals necessarily vary somewhat, but the figures quoted are sufficient to prove that the previous difficulties in obtaining limbs of good length after gunshot fractures of the femur have been completely overcome, and that equally good results should be generally obtained.

Malposition.—The commonest displacement is a falling back of the lower fragment. The difficulties of correcting malposition have almost disappeared in France now that a full length limb can be secured. A small proportion of the patients with fractures near the knee and the hips recover with some displacement remaining, but at least eighty per cent. of all of the men recover with good position. In fractures of the shaft good position can practically always be secured, but it is most important to support the bone thoroughly at the site of fracture so that the natural anterior curve of the femur is either very fully maintained or even slightly exaggerated.

Stiffness of knee joint.—Major Pearson reports that of sixty-eight cases the number with a range of knee flexion over 90° was fifty-five, the number with a range of knee flexion 60° to 90° was ten, and the number with a range of knee flexion 30° to 60° was three. None had less than 30° of movement at the knee. Of the 264 New Zealand cases Major Stout reports the average range of flexion of the knee over the whole series was 43° .

Many other hospitals show similar results, and it is evident that there has been a great diminution of these cases in which the knee is left permanently stiff. There is no doubt that if suitable precautions are taken during treatment stiff knees in fracture in the shaft of the femur should be very few.

Stiffness of the hip joint.—This has not been a frequent complication, and it should never occur except in cases where the fracture involves either the neck of the bone or the trochanters.

Stiffness of ankle joint.—This can always be avoided if care is taken not to keep the foot cramped by bandages, and to allow and encourage daily movement at the joint.

Sinuses and necrosis.—Sinuses are seldom met with in the absence of necrosis, and as it has been the custom recently to remove sequestra earlier than in former years, the total number of patients with sinuses was greatly diminished.

Nonunion.—This is decidedly rare, and did not occur in more than about one per cent. of the cases retained in France.

Nerve injuries.—These are much more common than was generally appreciated. Out of a total of 297 cases of fractured femurs observed by Major Stout important nerve injuries were found in twelve per cent., i. e., in thirty-six patients. The injured nerves were, the sciatic in thirteen cases, the internal popliteal in three cases, and the external popliteal in twenty cases.

Methods of treatment.—No single method was in universal practice as far as details are concerned, but the general principle of the application of a metal skeleton splint and extension was universally adopted.

1. The employment of the Thomas splint and the stretcher suspension bar at the front, and as far forward as possible, has already been alluded to. It enabled men to be transported with infinitely less shock and pain and was instrumental in saving many lives.

2. At the base hospitals the splints were either the Thomas or the Hodgkin. An additional splint, fitted so as to allow of flexion of the knee at varying angles, was in general use. It was the invention of Major Watkin-Williams and proved of great service.

3. Fixed extension was generally given up in favor of weight extension. In some hospitals the weight was attached to an extension apparatus fixed to the thigh and leg and was suspended at the foot of the bed. In other hospitals the foot was fixed and the weight of the body was used by raising the foot of the bed to a sufficient extent to reduce all shortening. Either glue or strapping was at first employed to fix the extension apparatus to the limb, but in an increasing number of cases steel calipers were fixed to the femur just above the condyles and direct traction was made by these upon the bone itself. This caliper extension was particularly useful in correcting the tendency to backward displacement in fractures just above the condyles, and it proved to be a completely satisfactory method of dealing with this difficulty. The caliper extension was also most useful when employed in conjunction with the Watkin-Williams splint for flexion of the knee, and was used in all cases of fracture of any part of the femur by many surgeons.

4. With a fracture treated by these methods it was easy to move daily all the chief joints, and the knee, hip and ankle could be massaged, flexed and extended without pain, and without disturbing the fracture. Good illustrations of these methods will be found in a report by Major Massie and Captain Swanson. (1)

The treatment of all cases was very greatly facilitated by a specially constructed bedstead and mattress, both of which were arranged in sections so as to permit of easy access to any wound, and was constructed from plans made by Major Pearson, South African Medical Corps, and adopted by the war office for general use in England.

Fixation of fragments by operation.—With the improvements in splinting and extension the need for operation became extremely rare. They were not employed in as many as one half per cent., and then were almost limited to the encirclement of fragments by wire. Plates and screws were practically never employed.

The use of x rays.—Frequent examinations by x rays proved to be one of the most important essentials in the treatment of fracture of the femur, and it is also essential that the x ray apparatus shall be taken to the bedside of the patient. Without such an employment of radiography it is quite impossible to appreciate the exact position of the frag-

ments, and unless this is ascertained replacement is necessarily impossible. A movable x ray apparatus was part of the equipment of every special hospital for fractures of the femur in France, and much of the success in the restoration of useful limbs is due to its employment as a routine method for extending the progress of every case. It is also necessary to take frequent measurements of the length of the limbs.

Treatment of necrosed bone.—All cases of gunshot fracture of the femur require early operation at the front, and at the time of the operation all the shattered fragments of bone which are scattered in the muscles and subcutaneous tissues must be removed. Large splinters and partially separated fragments should not be removed, as they frequently do not die and are of great service in the process of union. Many fragments that necrose can be easily removed from the wound without a formal operation, but if the dead bone is more deeply placed such an operation should not be unduly delayed. Operations of this kind appeared to be needed in between twenty and thirty per cent. of the cases, and were generally performed between the eighth and the fourteenth week after injury.

The early and complete subperiosteal esquillectomy advocated by French surgeons, was practised in an increasing number of cases during the year 1918. It appeared, on the one hand to shorten the period of suppuration and of the healing of the wound, but in the opinion of some surgeons it caused delay in the union of the fracture. It still has its advocates and its opponents.

Treatment of the wounds.—The results have very greatly improved in proportion as the practice of delayed primary suture has increased. In one hospital in France (No. 8 General) suture was successful in 161 cases out of 211 submitted to operation, and it is probable that not less than one third of all these cases can be successfully closed within ten days. The closure of the wound very greatly diminishes the risk of all kinds of complications and results in a much more rapid union of the fracture, a more speedy convalescence and an earlier return of powers of walking. When suture is not possible cases have been treated either by Carrel's method or else by free drainage.

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A Giant Mucocoele of the Appendix.—W. G. Nash (*British Medical Journal*, November 8, 1919) reports a case with a history of apparently acute appendicitis of two days' duration which on operation turned out to be a tremendously distended and hypertrophied appendix. Only an indefinite mass had been palpated through the rigid abdominal wall. The pathological report was of a pyriform tumor five and one half by two and one half inches consisting of a dense wall 0.7 cm. thick with an inner wall of necrotic tissue instead of epithelium and containing an accumulation of mucin.

UNCORRECTED FACTORS PERPETUATING STOMACH SYMPTOMS AFTER SURGICAL WORK.*

BY JAMES C. WOOD, A. M., M. D., F. A. C. S.,
Cleveland, Ohio.

Painful functioning of the stomach in some form, due to some cause, either local or remote, antedates in nearly all instances radical work upon that organ. The causes of digestive disturbance are so many that, notwithstanding the numerous and refined methods of diagnosis now at our command, it is by no means an easy matter always to make a correct diagnosis. Röntgenology, physiology, and chemistry have made it entirely possible to determine the presence of gross lesions and deformities with almost absolute certainty, but there are so many lesions and constitutional conditions remote from, or in close proximity to, the stomach which may give rise to symptoms simulating organic disease that our only safety in contemplating surgical interference lies in diagnosis by exclusion.

Neither the time nor the occasion warrants more than a mere reference to the numerous and many times profound constitutional factors giving rise to perturbed digestion which may be mistaken for actual disease of the stomach itself or perpetuate the stomach symptoms even though the local disease is successfully overcome by surgical measures.

I would not presume in a gathering of this nature to call your attention to the fact that the various forms of toxemia and that cerebral and even hysterical conditions may give rise to symptoms suggesting organic disease in the upper abdomen, were it not that such cases have been referred to me where a somewhat careful process of elimination was necessary to clarify the premises. I have more than once seen, as have you, the milder stomach symptoms vanish after correcting muscular asthenopia and refractive errors, particularly astigmatism.

A more difficult problem presents itself in differentiating stomach lesions from those conditions of the kidney, gallbladder, and pancreas which terminate in gastric crises and undoubtedly unnecessary and harmful exploitation of the stomach has been resorted to when attention should have been directed to one or more of these organs. This is particularly true of Diel's crises which may manifest themselves in vomiting so acute and painful as to suggest perforation. Gallstone disease is so frequently attended by indigestion and heartburn that the abdomen has more than once been opened, the operation being justified by the diagnosis of peptic or duodenal ulcer, when the seat of the trouble was the gallbladder. Indeed, Mackenzie states that although the stomach is a hollow, muscular viscus, small cramplike pain with violent peristalsis, having its origin in the stomach, is of rare occurrence. Mackenzie further says that he has watched patients for years who have had these attacks, and that all have turned out to be cases of gallstone disease; and that in persistent dyspepsia and heartburn the question of this disease should

*Presented at Dr. Charles H. Peck's Clinic, Clinical Congress of American College of Surgeons, New York, October, 1919.

always be considered. I have even seen the stomach explored surgically for the gastric crises of tabes, a mistake which could have been avoided had the case been studied more carefully. Needless to say the crises recurred at regular intervals after the stomach had been drained by a gastroenterostomy.

In certain cases of disturbed metabolism there is a constant deposition of calcium oxalate crystals in the urine and these patients are almost always the victims of a nervous dyspepsia which may simulate organic disease of the stomach. Neurasthenia and hypochondriasis not infrequently attend oxaluria and there may be at intervals renal colic.

I have, however, in the foregoing called your attention to some of the more obscure conditions which may confuse the diagnosis in contemplated stomach surgery. It now remains for me to emphasize the importance of chronic or recurrent appendicitis and of disease and displacement of the female pelvic organs in exciting and perpetuating stomach symptoms.

Indigestion with hyperacidity is one of the most common manifestations of chronic appendicitis. It is usually characterized by much flatulency, hunger pains and, in the larger number of instances, gives rise to mucous enterocolitis. Gastralgia with almost typical symptoms of gastric ulcer may occur. Five of Paterson's patients who suffered only from chronic appendicitis vomited blood on one or more occasions, the amount in one case being fifty ounces.

Paterson's theory is that hemorrhage in these cases is due to the hyperacidity present, though it must not be forgotten that the source of the hemorrhage when it proceeds from a small villous patch, even though the stomach is opened, is not easily determined. Indeed, the fact must not be overlooked that because of the hyperacidity caused by a diseased appendix; true ulcer may be induced. The right sided hyperalgesia and muscle fixation, the possibility in the larger number of instances of palpating the thickened appendix, the mucous stools because of the enterocolitis excited, the flatulent and acid indigestion and the markedly disturbed metabolism should at least call the surgeon's attention to the appendicular area before he finally decides to explore the stomach. The subjective symptoms enumerated may all be produced by ileocecal kink or bands, or even general enteroptosis with stomach dilatation. The surgeon may in rare instances be misled by the appendicular pain being referred to the left side; or, as in the case of my own patient where there was fulminating inflammation in the left inguinal region six months after the resection of the pylorus for malignancy, the viscera were transposed and the cecum and the appendix were on the left side.

In women a still more frequent cause perpetuating stomach symptoms following surgical work upon that organ is, in my opinion, displacements and disease of the pelvic organs. Perhaps this phase of the subject appeals to me more especially because my work is so largely gynecological. But I sometimes wonder in observing the trend of the times whether the general surgeon has not forgotten the fact that there is within the medulla a re-

flex centre presiding over the stomach and abdominal viscera and that this centre is in constant communication with the pelvic organs through the uterine and ovarian plexuses. During the early evolution of gynecology as a specialty undoubtedly the so-called reflexes were worked for more than they were worth, especially after the older Emmet had called attention to the significance of cervical lesions. Now that a reaction has taken place and the gynecologist's perspective has been immensely broadened by the larger work upon all of the abdominal contents, I fear that the pendulum has swung too far in the opposite direction and that pelvic lesions, sometimes insignificant, are too often ignored as provocative factors in stomach disturbance.

Let me give you a composite picture of many patients coming to me for surgical relief: Patient, say, aged thirty; multipara; metabolism profoundly disturbed as manifested by loss of flesh, flabby muscles, dermatoses and cold hands and feet. Hemoglobin low, possibly seventy. Red blood count 4,000,000 or less; leucocyte count low with an increase in the lymphocytes; blood pressure usually below normal; headaches, mental depression or actual melancholia; constipation, or alternate constipation and diarrhea with mucous enterocolitis. In the majority of instances the appendicular symptoms already referred to are present. Often general enteroptosis, and the kidneys, especially the right, are usually palpable because of the emaciation. The thyroid in many instances is more or less enlarged with an increased calcium output in the urine; or should there be hypofunction of the thyroid there is diminished calcium output. There is often indicanuria and not infrequently oxaluria. The general symptoms of an incipient Basedow's disease are not uncommon. Menstruation is painful and scant, or excessive, as the case may be. Dyspareunia and impotency are common symptoms. Finally, there is marked indigestion characterized by hunger pains, flatulency, heartburn, satiety with a heavily coated tongue, and fecal breath. A physical examination of the abdominal and pelvic organs reveals an enlarged, subinvolved and sharply retroflexed uterus with the ovaries under the fundus; or the ovaries and tubes may be more seriously involved when the general stigmata of gonorrhea will be in evidence. The cervix is torn and the pelvic floor relaxed. There is an eversion of the cervical lips with inflammation of both the cervical and fundal mucosa giving rise to leucorrhea and menorrhagia; and the sphincter ani is tight, an important factor in perpetuating the constipation, as long ago emphasized by Hilton.

A patient thus afflicted has indigestion, first because the reflex centre in the medulla is constantly receiving morbid stimuli from the diseased and displaced pelvic viscera which in turn are transmitted from that centre to the stomach; and secondly, because sooner or later her metabolism is so disturbed that she becomes a victim of autointoxication, the products of which further react upon the cerebral centre by being carried to it through the blood stream. The hyperthyrea, if such there be, but adds to the nervous and digestive symptoms already induced. A vicious circle is thus estab-

lished, which may in time end in organic disease of the stomach; or perpetuate a long standing indigestion even though such lesions are surgically removed.

On the other hand, remedial measures that comprehend the correction of all the pelvic lesions, as well as the appendicular, will often clear up the trouble in the upper abdomen and make later work in that region unnecessary. If desired an exploration of the upper abdomen can be made through the lower incision. I am, of course, in advocating this procedure, not discussing those lesions of the stomach where danger portends or where there is marked deformity or displacement. Stomach surgery when well defined and clearly indicated is too firmly established to be affected by adverse criticism. This article is justified only on the ground that in all instances, where the case is chronic, a most thorough examination of the entire organism should be instituted before stomach surgery for indigestion is resorted to.

The subject in hand has nothing to do with surgery and disease of the thyroid, except in so far as thyroid pathology enters into the symptom complex which I have given as typical of a large class of cases where indigestion is due to causes remote from the stomach. I have many times seen enlarged thyroids, with the accompanying manifestations of Graves' disease, disappear after the patient's disturbed metabolism had been corrected by the work outlined and I cannot, therefore, but feel that the thyroid is being needlessly sacrificed by indiscriminating surgeons in altogether too many instances.

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ESSENTIALS OF SUCCESS IN PROSTATIC SURGERY.*

By JOHN H. CUNNINGHAM, M. D.,
Boston, Mass.

As I see it the prostatic problem possesses three important features: 1, Preoperative study and preparation; 2, the operation; and 3, postoperative care. Of these, the first, preoperative study and preparation, is the most important, and in this lies the secret of successful prostatic surgery.

It must be borne in mind that prostatic patients represent a group of individuals past the prime of life, in whom degenerative changes have taken place to some degree in all tissues, with the possibility of serious impairment of the functions of important organs as a frequent accompaniment to the more prominent features of derangement in the urinary system. The most commonly associated dangers are respiratory and cardiorenal. The renal changes, often with infection resulting in serious impairment of kidney function, are by far the most important; yet accompanying impairment to some degree of all bodily functions incident to advancing age, is not without its influence. Either before or after relieving the urinary retention by a catheter, or, if necessary, suprapubic cystotomy, there should be a

most careful survey of the patient's general condition, as information thus gained must play a most important part in the decision regarding the performance of any operation, whether it should be partial or radical, and should have much influence in determining the choice of the operation in the individual case.

Preoperative study and preparation.—Locally, the preoperative study should be directed toward determining whether the obstructing gland is malignant or benign or whether the retention may be due to a chronic prostatitis, with or without congestion, dependent upon retained secretions and products of inflammation, in which latter condition nonoperative treatment suffices to relieve the residual urine. Cystoscopy should be routine and is of much value in detecting foreign bodies and diverticuli. It gives evidence of the condition of the bladder musculature and mucosa and determines the intravesical condition of the gland and the vesical sphincter, all of which are important things to know prior to operation, for as we realize, the symptoms of prostatism may depend upon a contracted vesical neck or prostatic bar quite as much as upon an enlarged gland, and the operation of choice is not the same for these different conditions.

The one most important feature of preoperative preparation is bladder drainage. The more general recognition of this by the profession has been the greatest advance made in prostatic surgery during recent years.

Regardless of whether an operative procedure is to be employed finally, bladder drainage is imperative and is the most important feature of preoperative treatment, being the means to the end of establishing the maximum recuperative state of the individual. If a catheter can be passed to the bladder through the urethra and secured there, nothing more in the way of drainage can be desired in most instances, and this form of bladder drainage has all the advantages and none of the disadvantages of a suprapubic cystotomy for drainage. Constant drainage having been established, either by urethra, if possible, or suprapubically, if necessary, the patient is to all intents and purposes relieved of his suffering from frequent and difficult urination, and can recover lost sleep, in which most patients are in need, fluids may be forced and the bladder irrigated. Phthalein blood urea or other renal function tests and urinalysis can be done as desired; the twenty-four hour amount of urine recorded, and a knowledge of the renal improvement thus obtained. Upon the patient's recuperative power, as evidenced by his general condition and by local examinations, will depend the ability of the individual to stand the strain of operation, and from such evidence the most suitable operation may be chosen.

A knowledge of the patient's habits are of value and has an important bearing on his adjustment during this period. Everything should be done, within reason, to allow the patient to live as near his usual habits as possible, and all reasonable latitude should be given in the use of alcohol or tobacco, for the metabolic balance which the individual possesses has been of long standing, and had better not be changed.

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Operation.—The preoperative study eliminates those whose condition is such that they cannot be included in the operative class; those whose general condition is such that they would not be able to stand the tax of operation, and who, therefore, must lead a catheter life; those individuals with advanced carcinoma of the gland, and those with the symptoms of prostatism dependent upon the retention of prostatic secretions and secondary congestion, are best treated by nonoperative methods.

Individuals falling into the operative class must be considered from two main points of view: the general condition and the nature of the obstruction. We must then divide our operative class into two groups, those for nonradical and those for radical operation. The nonradical class will include those whose general condition is below the standard required for a radical operation, and who cannot for any reason pursue a catheter life. For some of these the Bottini and Chetwood operations, done under local anesthesia, offer just as much at present as they did years ago when many of the best genitourinary surgeons considered them the operations of choice, and I consider them still operations of much value in certain patients of this group. There remain those patients with a benign or malignant gland obstruction, whose general condition has been proved bad, who possess a gland not suitable for a Bottini or the punch operation, and who cannot carry out regular catheterization; these, although fortunately a small class, must be subjected to the establishment of a permanent suprapubic sinus.

Patients in whom the obstruction is due to a bar at the vesical neck or sclerosis of the vesical sphincter, whether or not the general condition would permit of a prostatectomy, had best be subjected to the so-called punch operation, a procedure which may be carried out under local anesthesia with a special instrument which cuts away the obstructing portion of the gland, or a division of the sclerotic vesical sphincter by a cautery or incising operation.

Radical operations are best performed under gas-oxygen anesthesia. It is my feeling that no one operation is suitable in all cases. Circumstances associated with the individual, both in regard to the patient's general condition and the type of the obstructing gland, with or without associated complications, such as stone or diverticuli, should have much influence on the choice of operation, and the time has come, I believe, when those professing to be expert in prostatic surgery should possess a skill in performing the different proven operations and should have the ability to select the most appropriate operation for the individual, not employing a single operative technic for all patients.

From my way of thinking, the patient proved to be an excellent risk is subjected to the suprapubic operation because of the more satisfactory functional results. My preference of preliminary drainage is by a catheter *à demeure*, for the performance of the operation described above is easier of accomplishment through the primary suprapubic incision than through an established suprapubic sinus or wound; and following the prostatectomy the

wound heals much more satisfactorily in most instances. If, on the other hand, the patient's condition is proved to be below the standard required for the high operation, but is still fair, the perineal route is chosen. The best of this group may be subjected to the perineal dissecting operation, such as that of Albarran, Proust or Young, and the poorest risks to the median perineal enucleation method. If the gland is proved to be of the small fibrous type, the perineal dissecting operation is the procedure of choice, even if the patient's condition is satisfactory, for the amount of prostatic tissue is small, intimately bound to the prostatic capsule, and most difficult to remove. For this group I employ the technic of Proust or Rydygrer, or a perineal dissecting operation without opening the urethra and subsequently draining the bladder by a catheter *à demeure*.

The whole subject of suprapubic and perineal operations, which has so often been discussed, may be summarized, I believe, in the fact that suprapubic prostatectomy carries a relatively higher mortality with a better average functional result. This well established fact, it seems to me, should lead to subjecting to suprapubic operation only those patients who are the best risks. Those not coming up to the standard required for suprapubic prostatectomy may often be subjected, with less danger, to the perineal operations, and a satisfactory operative result may be expected in most cases.

In the perineal operation there is also a choice, for the dissecting operations are attended with a slightly higher mortality than the simple intraurethral enucleation of the gland, yet here, also, a better functional result may be expected, because, as performed by those who are expert, the compressor urethra muscle is left intact. The median perineal intraurethral enucleation of the gland is the simplest method of prostatectomy and is attended with the lowest mortality. It has always carried the chances of a relatively poorer functional result; yet there is no operation for removal of the gland that has been performed so badly by most surgeons who have employed it. This simple and rapid enucleation method, performed solely by the sense of touch, requires an accurate appreciation of the structures encountered, for while the external sphincter is divided, the vesical sphincter may be left intact, and, moreover, with a certain knowledge, the divided external sphincter may be united following the removal of the gland; a feature generally disregarded by most operators who have occasionally employed this method.

Glands proved to be carcinomatous should not, except in rare instances, be dealt with in a radical manner, as the procedure is a severe one attended by a high mortality and is followed by a poor functional result. If, however, benign hypertrophy exists, together with carcinoma, and the patient's condition is such as to permit of the removal of the benign portion, this should be done to relieve obstruction, which in many instances may depend upon the benign hypertrophy. Without associated benign obstruction, patients with carcinomatous glands should properly fall into the nonoperative group, until such time that the establishment of a suprapubic sinus may become necessary.

Postoperative care.—The preoperative preparation and the observance of details to minimize in every way the tax imposed on the individual, prior, during, and after the operation, has an important bearing on postoperative complications and the final result. The value of personal attention on the part of the experienced surgeon and specially trained nurse cannot be overestimated; for no group of surgical patients requires more attention to details, and the early recognition and treatment of complications are essential to success in prostatic surgery. It is for this reason, chiefly, that prostatic operations differ from most surgical procedures, and, if the best results are to be attained, the patient had better be sent to the surgeon who has every facility than to have the surgeon go to the patient, who has been mentally but not physically prepared by his physician for operation, who may expect the operation to be performed immediately and to attend to the aftercare himself. This should be discouraged.

While complications, both local and general, are common, those which have the greatest influence on mortality and convalescence are hemorrhage, sepsis, and uremia. Time does not permit of more than brief mention of precautions to be taken to prevent these most important complications.

Hemorrhage.—In performing the suprapubic operation, the Hagner bag or better, perhaps, because of the urethral drainage, the Pilcher bag, is of great value; I usually employ the latter. Either bag is of great value when the gland has extended upward beneath the mucous membrane, above the vesical sphincter, in which condition the mucous membrane must be lifted and more bleeding may be expected in consequence. In fact, it is usually in these cases that serious bleeding occurs. The properly placed bag will hold this loose flap of mucous membrane down over the denuded area, controlling the bleeding and causing the denuded mucous membrane to heal over the disturbed area. Bleeding from the capsule is of relatively little importance if it has not been ruptured, yet occasionally a secondary hemorrhage may take place even late in the convalescence which may not be controlled by adrenalin injections, horse serum or other drugs, and is best taken care of by opening the wound and replacing the inflated bag. If the gland is removed by the perineal route hemorrhage is less common, and when it occurs is satisfactorily controlled by a packing of gauze soaked in adrenalin. If the punch or Bottini operation is employed a de Pezzer catheter drawn down firmly over the vesical sphincter usually suffices, yet, following the punch operation I have occasionally had to do a perineal section, remove clots from the bladder, and pack from below.

While postoperative bleeding has been disturbing in a few patients, I have never seen death from postoperative hemorrhage following prostatectomy by any method and I consider the chief importance of hemostasis to be in conserving the patient's strength.

Wound infection.—This applies entirely to the suprapubic operation; thorough cleansing of the bladder prior to operation; a clean bladder medium,

preferably weak permanganate of potassium, to minimize the chance of infecting the wound; care not to traumatize the abdominal incision; not to open the pelvis to any unnecessary extent by freeing the lateral walls of the bladder, and opening the bladder at its highest point, are features which play an important part in preventing this complication. Complete hemostasis of the bladder and abdominal incision, whereby infection is not invited from this source, is also to be considered. The fascia and skin should be carefully approximated by loose, interrupted, nonsoluble sutures, preferably silkworm gut, and the drainage tube should be left at least five days to wall off the adjacent tissues from the urine, which will escape following its removal. Infection once taking place may result in sloughing of the rectus fascia and muscles, and, if reaching the pelvis, may result in a pelvic cellulitis from which phlebitis and pyelonephritis are prone to occur. There is no more distressing complication and unless the patient has much reserve strength an unfavorable outcome will result. The slightest evidence of infection calls for immediate and free opening and drainage of the field, and as the urine is always alkaline in the cases which slough, *Bacillus bulgaricus* tablets should be dissolved in the wound and the bladder several times a day after cleansing and acid sodium phosphate administered with hexamethylenetetramine in large doses to aid in rendering the urine acid.

Acute renal suppression or uremia often associated with pyelonephritis is a constant danger and is the concealed enemy to prostatic patients. It is observed in two types, either a diminished output of urine, probably due to the acute congestion of the kidneys, or a large output of urine of low specific gravity, probably due to interstitial kidney changes which result in an impaired power of eliminating effete products from the blood. The symptoms and treatment are too well known to require mention here, but it cannot be too strongly emphasized that success in dealing with this complication will depend only upon early recognition and intelligent treatment and nursing. When the patient is allowed to pass on to the stage of hiccup, delirium, and coma, recovery rarely takes place.

In conclusion, I feel that preoperative study and preparation, which implies the very best of nursing care, is the most important feature of the prostatic problem. It makes possible a safe radical operation for most patients, determines those unsuited for operation, and permits of the choice of operation most suited for the individual patient. Attention to details during the operation, unusual postoperative vigilance, and early recognition and treatment of complications are the essentials of successful prostatic surgery.

46 GLOUCESTER STREET.

Medical Treatment of Intractable Gastrointestinal Stasis.—Martin E. Rehfuess (*Therapeutic Gazette*, December, 1919) aims to insure complete gastrointestinal drainage, the so-called through and through drainage. This is done mechanically by two methods: 1, transduodenal lavage; 2, recurrent irrigation of the colon.

THE EYE IN PREGNANCY.

By LUTHER C. PETER, A. M., M. D.,
Philadelphia, Pa.

Associate Professor of Ophthalmology, University of Pennsylvania.

I wish to call your attention to what we all know, but what we occasionally overlook with disastrous results. In a process which is physiological, or perhaps more correctly speaking, biological, one would hardly expect to find pathological eye symptoms. Perhaps this is the reason that we are prone to think of the eye complications of pregnancy as rare or of no great consequence except in extraordinary cases. Unfortunately pregnancy occurs in both the healthy and the unfit, and for this reason alone the assumption that a given case is likely to run a normal course is both unsound and unwise. As a matter of fact, pregnancy occurs perhaps more frequently in women who are not entirely well than it does in the healthy. Under these conditions a process which may be regarded as physiological may readily contribute to an already existing pathological condition. This is a fact which is well borne out in practical experience.

The question which interests us is, Shall the eye symptoms be regarded simply as a part of the syndrome, which a given patient may manifest, or may we utilize these symptoms to measure the extent of damage done to the system? In other words, may we not use the eye phenomena as a guide to the future handling of a case? My answer is yes, by all means.

Nephritis of pregnancy may be a toxemia *de novo*, superinduced by pregnancy, or it may be an acute exacerbation of a chronic interstitial nephritis precipitated by pregnancy in a nephritic patient. As the eye is one of the most definite indicators of the general progress and gravity of chronic interstitial nephritis and often one of the earliest signs, its careful study in pregnancy is equally illuminating and will help to clarify many doubtful cases. One can decide, with a fair degree of accuracy, the prognosis in a case of chronic nephritis by studying the eye grounds of the patient. This applies with equal force to the nephritis of pregnancy. The two clinical types, however, must be clearly differentiated.

In the chronic variety, with an acute exacerbation brought on by or during pregnancy, the eye evidence of an old trouble is unmistakable. Some of the symptoms found in chronic nephritis are hemorrhages, retinal edema or detachment, and white stellate areas so often found in the macula in advanced cases. When the eye grounds show these marked changes, the gravid uterus almost without exception should be emptied of its product of conception and promptly, without regard to the stage of the pregnancy. Temporizing, even though there are no other urgent symptoms, can only lead to unnecessary loss of life of the mother, or at least a premature death. Prompt action on the part of the accoucheur may prolong the mother's life by many years. In advocating so radical a procedure I realize that our medical views conflict with certain religious teachings. We are, however, scientists looking for the material welfare of our

patients, and from the viewpoint of the physician there can be no middle ground.

Added to this evidence of chronic nephritis are the acute toxic symptoms or signs, diffuse retinal edema, massive hemorrhages, neuroretinitis and swelling of the disc. When present in a pregnant woman, who is a victim of chronic Bright's disease, these symptoms usually indicate a rapid termination of life unless the uterus is promptly emptied. Even this procedure often fails in this stage to save life. If the blood pressure has been carefully studied, as it should be throughout pregnancy, there will be found the unmistakable rise, which always is of great significance, and it rapidly increases coincidentally with the appearance of the advanced eye symptoms referred to. In fact, the eye phenomena are largely caused by the arterial hypertension.

The second type of nephritis of pregnancy is perhaps less serious in its consequences but in some instances just as fatal as the type which we have been discussing. It is essentially a toxemia and admits of broader and more conservative methods of treatment. The eye symptoms are not always so pronounced, but when present are just as easy of interpretation as in the chronic variety. Blood pressure is not so high but it always shows some increase over what may be assumed as normal at any given age. In the average case hemorrhages are absent, at least in its early stages. If carefully studied, however, the retina will show some edema, especially when the patient complains of blurred vision. A careful study of the macular region will reveal macular edema and perimetric studies will confirm this symptom by qualitative central color changes. In addition, the disc's edge may be blurred and there may be other evidence in the retina of the toxic process. As in chronic nephritis the conditions found in the interior of the eye furnish a fair index to the severity or gravity of the general toxemia. In the early stages of the toxemia there may be no ocular symptoms or signs but the condition does not progress very far when the eye is strongly in evidence and furnishes a good guide to follow in outlining the probable outcome of the case.

Whether it is necessary to induce labor when the milder symptoms are present in the fundus depends largely upon the stage of the pregnancy, the blood pressure, and the uranalysis. The accoucheur will tell you that many of these patients go to term, recover completely, and pass through successive pregnancies without the slightest evidence of kidney involvement. Those of you who are in general practice may recall instances when you looked forward with apprehension to succeeding pregnancies only to find that the patient would pass through subsequent pregnancies without a symptom.

What then shall be our guide? One can arrive at a fairly definite course of action by a study, first of the urinary secretions, second, the blood pressure, and, third, the eye ground phenomena. It is not within our domain to discuss the first and second propositions. Suffice it to say that a gradually increasing blood pressure over 150 mm. mercury is worthy of your most careful attention.

What are the indications in the presence of eye ground symptoms? When the milder types of retinal changes are present and the blood pressure shows a moderate increase, eliminative and dietetic treatment is indicated. Kidney activity, blood pressure phenomena, and eye grounds should be routinely watched, and a tendency to increased toxemia, as indicated especially by increased blood pressure and eye ground phenomena, should decide the question of whether to allow the patient to go to term or to interrupt pregnancy. The point which I wish to emphasize is this: Marked eye ground changes may be present without the patients' knowledge or consciousness. Changes may come about so gradually that the patient may not note any alteration in vision which would be noticeable were these changes precipitated suddenly as they are in case of hemorrhage. We cannot, therefore, always be guided by the patient's statements or symptoms, but the eye studies should be a part of routine studies made during pregnancy, at least when careful uranalysis and blood pressure studies show abnormalities. There may be some excuse in private practice for not having these studies routinely made; in charity work in hospitals there can be no such excuse. There is a question in my mind, however, as to whether even in private practice we can afford to omit so valuable an aid in the care of private patients when other clinical phenomena indicate some abnormality in renal function.

Not infrequently uremic blindness may suddenly be precipitated without any demonstrable eye ground changes, and eclampsia may or may not be developed. If convulsions supervene, the course of action is perfectly clear, but if they do not follow promptly there may be a desire on the part of the physician to postpone radical treatment, and eliminative measures may be tried. This is unwise. If hysterical blindness can be excluded and a diagnosis of uremic amaurosis is evident with or without demonstrable eye ground changes, whether convulsions have already set in or are in abeyance, there can be but one line of treatment indicated, namely, prompt termination of labor. It is true that some of these patients by "watchful waiting" recover with comparatively little loss of vision, but the usual result is permanent injury to the visual path. Furthermore, a toxemia of such gravity is more likely to follow a favorable course if the uterus is emptied.

The decision as to how long one shall wait for the termination of labor, therefore, is one which can only be made by a careful weighing of evidence and the evidence of greatest value in a fair proportion of the cases is that which is derived from a study of the eyes.

There are other symptoms which the accoucheur himself may investigate and use to his advantage. Puffing of the eyelids is so well known that we need but refer to the symptom as a danger signal which may not be overlooked with impunity. Dimness of vision should always call for a careful eye ground study. At times it is due to a temporary toxemia; more often it is caused by macular edema, which can be clearly seen by the ophthalmoscope and demonstrated by perimetry. Chemosis or edema

of the conjunctiva is a symptom of grave import as a rule. It is not usually present in the milder types, but is of late development and indicates a serious condition.

CONCLUSIONS.

1. Eye ground changes in nephritis of pregnancy of any type, as a rule, are definite and concise.
2. They offer to the accoucheur signs of value in themselves and when associated with other manifest symptoms are of even greater value in determining the probable course of the case and the indications as to the proper procedure.
3. Eye ground studies should, therefore, be part of a routine study in pregnancy, when uranalysis and blood pressure phenomena show an abnormality of nephritic function.

1529 SPRUCE STREET.

THE VALUE OF INHALATION OF CERTAIN GASES IN THE PREVENTION OF INFLUENZA.

BY BEVERLEY ROBINSON, M. D.,
New York.

A valuable article on this subject, by Dr. Alexander Gregos, appeared recently in which he showed by reported cases and by experiments, how useful the inhalation of nitrogen peroxide and the fumes from burning sulphur, properly diluted, were in many cases. The experience of Doctor Gregos is a new departure in the prevention of influenza. He asserts that owing to the acidity produced by these gases, in the secretion of the mucous membrane of the upper air passages, a restraining influence is caused to microbic development.

As is well known, certain lower organisms are affected adversely by an acid medium. Thus, there is a plausible basis for the use of the gases mentioned. Personally, I do not attach much importance to it, as I, as well as many others, have had very successful results from the use of remedies internally which probably produce an alkaline reaction on mucous membrane.

Clinically, for many years, I have used in cases of cough with fever, or threatened pneumonia, almost constant inhalations of beechwood creosote, properly combined, from a croup kettle more than half filled with water, kept at or near the boiling point.

What reaction occurs from the use of these inhalations, I do not know. What I do know is that they are most helpful in a preventive and curative way. When employed properly and continuously, from the beginning of the disease, if other conditions are favorable, patients are greatly aided and in many cases a fatal outcome is prevented.

In hospital wards, these inhalations cannot be utilized in a satisfactory way. In private hospital rooms, or at home, they have their greatest importance.

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42 WEST THIRTY-SEVENTH STREET.

ROENTGEN THERAPY IN GYNECOLOGY.*

By WILLIAM H. MEYER, M. D.,

NEW YORK,

Director of the X Ray Department and Assistant Professor of
Röntgenology, Post-Graduate Medical School and Hospital.

In a paper as concise as this will have to be, with the limited space at my disposal, only a brief review of the possibilities of röntgen therapy as I have found them can be given. If one would delve into the literature since the discovery of the röntgen ray, it would not be far from the mark to say that at one time or another practically every disease to which human flesh is heir had been subjected to treatment by radiant energy—x rays or radium. When one considers the more easily demonstrable superficial effect of radiation, its application is more easily comprehensible. Stimulation, inhibition or destruction are applicable at will to certain living tissues. However, because of marked differences in radiosensitivity of various cellular structures, all three effects may occur in the same exposed area.

Since the vulva, vagina and cervix may be classed as superficial structures in so far as the direct application of the rays is a possibility, a classification here need be no different from that of diseases of the skin and tangible mucous membranes in any other portion of the body.

Superficial lesions will naturally fall into three groups: 1, those to be benefited by stimulation; 2, those in which an inhibitory action is desired, and 3, those conditions in which total destruction is the aim. Superficial conditions involving the skin and adjoining mucous membranes might properly be left for consideration in the field of dermatology; however, I feel that a few words concerning epithelioma, rodent ulcer, and superficial malignancy should be considered.

The possibility of cure of superficial malignancy by radiant energy is practically conceded in every quarter. We have a long list of successes to our credit, interposed with an occasional failure; but a significant point is that since employing the absorption rate as a basis for our dose measurement we have passed our fiftieth consecutive case of superficial malignancy with satisfactory results. In some of these cases the patients are now in their third year following the first treatment, and to all appearances remain permanently well.

Differences in penetration and filtration are employed to suit the individual case. The estimated absorption, however, is the dose factor in each instance, and the results have been uniform whether the lesion was purely cutaneous or at the mucocutaneous junction; whether prickle cell or squamous cell in type. We are now producing this result in a single sitting, the full treatment to a single area requiring not more than fifteen minutes. With careful blocking for the protection of normal structures a somewhat less severe application will suffice for most superficial benign growths, verrucae, moles, and superficial naevi falling into this series.

With those malignant conditions involving up to the first cm. depth where a total absorption, similar to that described above, can be brought to bear, similar good results are to be expected. However, in more deeply seated lesions, and I mean thereby those situated below the second or third cm. depth and in inaccessible regions, the difficulty of satisfactory treatment becomes greater; the probability of cure speedily diminishes with increasing depth. A comparative study of the absorption rate at increasing depths, even in the face of multiple area cross fire, affords a simple explanation of this fact.

A summary of these statements means just this, that complete resolution is to be expected only if a lesion is so situated that the dose known to be destructive to the particular type of cell can by multiple area cross fire be brought to bear. A somewhat smaller dose may bring about an inhibitory action on the growth, but with smaller doses the danger of stimulation rapidly increases.

In malignancy, superficial or deep, the desired result will have been obtained under the following conditions:

a, Destruction of the malignant cells; b, inhibition to neighboring unhealthy tissue; c, stimulation to the surrounding normal and healthy tissue. With more or less superficial lesions, this combination is easily obtainable. Though the same effect is desirable with deep seated lesions, a dose sufficient to produce this effect is frequently impossible.

In deep seated and more widespread malignancy, usually the very best that one can hope for is: a, an inhibitory action on the malignant cells; b, stimulation of surrounding normal tissue. This is the minimum dose that one should attempt to administer.

The least desirable reaction, however, one which still has its advocates, is dependent according to one's theory upon, a, stimulative doses to the normal metabolic processes (by direct high transmission rate); b, electronic disturbance and rearrangement (by secondary ray effects), and c, the formation of enzymes or antibodies (indirect radiation).

In as few words as I can muster, this is the status of the treatment of malignancy by radiant energy as it appears today; my only comment here is: Know that your radiologist knows his röntgen ray and prohibit the promiscuous use of this agent by unskilled and untrained incompetents. On the other hand, strict cooperation should exist between the surgeon and the radiologist for both preoperative and postoperative radiation, that more may be made of the x ray department than a dumping ground for operative failure and moribund cases.

This leaves us still with some gynecological conditions amenable to röntgen therapy; perhaps a little less serious, but still of extreme importance and with greater certainty as to the result. I have reference to uterine hemorrhage, menorrhagia, metrorrhagia, symptoms of the menopause, and uterine fibroids. As far as these conditions are concerned, I can say that in a single treatment of from forty to ninety minutes' duration depending upon the size of the patient, a permanent cessation

*Read before the Section in Gynecology and Obstetrics of the New York Academy of Medicine, November 25, 1919.

of the menstrual function and of hemorrhage can be produced.

In our last series of twenty consecutive cases where doses based on absorption percentage administered at a single sitting was employed, the ages ranged from seventeen to forty-five years with no failure in the series. The symptoms of the menopause are materially diminished and the period of suffering shortened by one or two applications. The contraction of larger fibroids may require three or more repetitions of the treatment. When more than one treatment is to be given, from four to six weeks should elapse between applications not alone to await full reaction, but to allow the skin to recover from the cumulative effect of the rays.

The fibroid growths best suited to irradiation are the intramural type. The subperitoneal and particularly the pedunculated variety, had best be removed surgically. The submucous or polypoid type of fibroids are practically contraindications to the use of radiotherapy. When complications and above all malignancy do not exist, the results are uniformly good. A careful examination and correct diagnosis are essential or the result may be anything but pleasant.

METHOD OF DOSIMETRY, DOSE ESTIMATION.

Of the several theories advanced in explanation of the effect of radiation upon normal and diseased structures, the most popular at the moment appears to be that based upon electronic disturbance with consequent electrochemical change. This along with the formation of antibodies or tissue enzymes seems to suit particularly those using the highly penetrating (gamma) rays, with extremely strong filtration; but who will say that because at one time the molecule and later the atom were the last word, that the electron will be final.

The direct stimulation, inhibition and destructive effects are proved facts, the rest is as yet conjecture. Irrespective of theory and perhaps somewhat contrary to the present trend of deep radium therapy, I have based my dose measurement on the rather materialistic assumption that work done requires the expenditure of energy, which must be transformed or consumed at the proper sight to produce results.

A few words concerning the logic of dosimetry by the estimation of absorption may be acceptable.

1. The amount and pressure of current energizing the röntgen tube can be metered.

2. The quality and quantity of x rays generated are measurable.

3. Various methods of surface dosimetry have been devised.

Yet with all these measures combined, though the incident surface dose appear the same the biological reaction may differ, i. e., the more penetrating the rays and the greater the filtration, the less the possibility of reaction with the same full measured incident dose.

This may be explained on the basis that high penetration with strong filtration means a high transmission rate: and since the difference between the incident dose and the transmitted dose in any given area may be assumed to indicate the absorption rate, this absorption must of necessity be low

under the conditions of high penetration and strong filtration.

Apropos of the theory that secondary rays generated upon impact may be responsible for therapeutic effect under the aforementioned conditions, I quote authorities when I say that "secondary rays are generated at the time of maximum absorption of the transmitted beam."

It is selfevident that no matter what the transmission rate, the first centimetre depth of tissue must of necessity have the highest percentage of absorption. However, it has been proved when superficial reaction, other than stimulation, is desired, a slower transmission rate is preferred, which means a greater absorption rate and since for inhibition and destruction of superficial malignancy a high absorption rate is necessary; then certainly the same thing must be true as regards more deeply seated lesions. Therefore, leaving a more detailed description for another time, suffice it for the moment to say that the absorption rate at the seat of the lesion suggests this the logical foundation stone for correct dosimetry.

558 WEST 180TH STREET.

SOME EXTRAGASTRIC CAUSES OF GASTRIC SYMPTOMS.*

By M. B. KUNSTLER, M. D.,

New York,

Gastroenterologist, New York Diagnostic Clinics.

With the division of medicine into the various specialties it is only natural that a man doing special work should focus his attention on his particular field, often to the exclusion of etiological factors causing symptoms referable to that field. We are all guilty of this error, and in my work in gastroenterology, I have encountered many pitfalls, which I wish to mention briefly. When we realize how susceptible the stomach is to emotional or physical disturbances, it is easy to see how prevalent extragastric causes of gastric symptoms must be. In general a few broad statements can be made. It may be safely surmised that in a patient complaining of stomach trouble, whose gastric contents show a total acidity of eighty or more, the trouble lies in the stomach or duodenum, usually an ulcer. But many patients present all the symptoms of hyperacidity and show in their gastric contents either a normal or a slightly increased acidity. It is this type of case that is extremely difficult of diagnosis. Another good rule is that when a patient has been under strict treatment for hyperacidity for some time and shows no marked improvement we must not assume that he is suffering from a chronic stomach trouble, but must look elsewhere for the cause.

The extragastric causes of gastric symptoms may be divided into two general classes: a, Those within the abdomen; b, those outside the abdomen. Of the conditions within the abdomen there are very many, but I shall mention only the most frequent.

* Read before the Harlem and Washington Heights Clinical Society.

Perhaps the commonest is a chronic or subacute appendicitis. This almost invariably causes marked gastric symptoms, so marked at times that our attention is directed wholly to the stomach. A most valuable point in diagnosis is the history. The patient will tell you that he was perfectly well till a short time previously, when he suddenly began to suffer from nausea and sour stomach, which lasted a few days or at most two weeks, when he began to improve gradually whether there was any treatment or not. A history of previous attacks at long intervals will help, also the presence of pain in the right lower quadrant.

I refer particularly, however, to first attacks that are not painful. In these cases there is always marked appendix tenderness, although epigastric tenderness may also be present but in a slighter degree. The gastric analysis shows only a moderate hyperacidity if any at all. By further analysis of the case we may discover with the x ray gastric hypermotility and a defective appendix, and the blood count may or may not show a leucocytosis. The main points of differentiation from a gastric condition, however, are the history of sudden onset, short duration, with spontaneous cure, and appendix tenderness.

Another potent intraabdominal cause of gastric symptoms lies in pathological conditions of the gallbladder or liver. These are much more difficult of diagnosis than the former class, but in any event exploratory operations for diagnostic purposes should never be undertaken until all methods have been exhausted for determining what the condition is. A definite attack of gallstones with pain, slight jaundice, and any degree of gastric disturbance from slight indigestion to vomiting is easy of diagnosis, but there are clinically inflamed gallbladders with or without stones, that cause such severe gastric distress that we immediately suspect the stomach. In contradistinction to the appendix cases, these gallbladder diseases give a long and rather constant history with usually vague pains often localized to the right upper quadrant, sometimes going into the right shoulder, and also marked gastric distress. Here too there may be a hyperacidity usually only slight in degree, although I have found that more often there is a reduction of the total acidity with a moderate amount of mucus indicating a gastric catarrh. In diagnosing the condition chief reliance must be placed on gallbladder tenderness, although this is difficult to elicit at times. The best way to determine this is to have the patient sit up. Then get behind him and place the four fingers of the right hand under his rib on the right side and the thumb behind and make deep pressure. When the patient breathes deeply the liver will descend and should the gallbladder be diseased marked tenderness will be elicited. I have not found any benefit from aspiration and examination of the duodenal contents, and examination for cholesterol in the blood is too variable to be of any positive value. X ray examinations may show a stone or an enlarged gallbladder, but in the latter case without marked clinical symptoms too much reliance should not be placed on the röntgenological findings. The blood count is usually of slight value, a definite leucocy-

tosis being rarely present. Summing up we can say that our diagnosis depends on a history of long duration, more or less constant, with signs of a gastric catarrh and gallbladder tenderness.

Of the other common liver conditions we have cirrhosis and lues, both of which may cause marked gastric symptoms. In these cases there is such marked enlargement of the liver and other evident signs of the condition that diagnosis is usually easy.

A very common cause of gastric symptoms and one not often mentioned is duodenal catarrh of an infectious origin. Here we may get all the signs of a severe gastric complaint, including epigastric pains, nausea, vomiting, bloating, etc. A hyperacidity is usually present and the condition is often mistaken for ulcer. The pancreas and gallbladder are frequently involved with an ascending infection which complicates the picture. The only positive way of diagnosing the condition is by aspiration and culture of the duodenal contents, in which a colon bacillus can usually be found. Owing to the involvement of the bile ducts a fat indigestion is found by stool examination, and the duodenal fluid because of pancreatic insufficiency shows a diminished ferment activity. Since these cases are of such long duration and so difficult of diagnosis they are often classed as neurasthenia, for there are surely marked nervous symptoms.

There are many other intraabdominal conditions causing gastric distress, such as patent ileocecal valve, Lane's kinks, mobile cecum, and renal calculi; all of which are positively shown by x ray examination.

When we come to extraabdominal conditions, which are by far more numerous than the former class, we encounter many difficulties. I shall mention them only briefly for their presence is usually discovered in a general examination. First and foremost are diseased tonsils and teeth. I have seen many severe cases of stomach trouble which had been under all sorts of treatment absolutely cured by the removal of the tonsils or by cleaning up an infected mouth. It is a delicate diagnostic point to determine whether the teeth or the tonsils are the cause of the trouble, but we may safely say that if the gastric symptoms are not rapidly relieved when treatment is directed toward them then should the condition described above be present the mouth must be looked after.

Among other common causes may be mentioned pelvic conditions in females and I would state that in every female suffering from stomach trouble a vaginal examination should be made. Such things as pus tubes or fibroids may cause severe reflex gastric symptoms and I have seen one case of bad stomach trouble cured by the removal of a small cervical polyp which the patient did not know she had and which gave no local symptoms. And we all know what severe symptoms early pregnancy may cause and for which we must always be on the lookout in cases of vomiting. A good rule to follow is to suspect pregnancy in every young married woman complaining of severe nausea or vomiting of sudden onset.

Acute foot strain and eye troubles are very common and potent causes of reflex gastric symptoms.

as are also tuberculosis, cardiac disease, and lues. The latter may cause such severe gastric disturbance in the form of a gastric crisis that the case presents a surgical aspect and many times may even come to operation for a perforated ulcer; however, there is no gastric condition that causes such severe symptoms without any temperature or pulse reaction, for in a crisis these are usually normal.

It is impossible in so short a paper to mention many other conditions that may be the cause of the gastric disturbance but I hope that those I have brought to your attention will make their diagnosis easier. In any event, each case deserves a complete examination, including x ray, and even should the latter give a negative result this in itself may prove of importance.

Since writing this paper the frequency with which gastric symptoms appear in Pott's disease has been called to my attention. Also that several bad cases of stomach disorders were cured by treatment for an enlarged prostate. Basedow's disease and nephritis are also guilty members. If I were to go on I suppose I could make a list of all known diseases, but, as I said before, I have mentioned only those conditions that are most frequent and most often obscured by the presence of gastric symptoms.

46 WEST EIGHTY-THIRD STREET.

A CLINICAL ANALYSIS OF INFLUENZA CASES.*

By A. S. BLUMGARTEN, M. D.,
New York,

Associate Attending Physician, Lenox Hill Hospital,

AND

FRED H. VOSS, M. D.,
Gardner, N. J.,

Formerly House Physician, Lenox Hill Hospital.

The pandemic of influenza which spread over the country like a whirlwind has vigorously shaken the foundation of therapeutics. It is fitting, therefore, now that the epidemic is over, that we should contemplate the clinical, bacteriological and etiological data that have gradually accumulated. The great number of the cases and the rapidity with which the disease progressed have given us but little opportunity to utilize the gradually accumulating data in a practical way. Our experience with the influenza cases can be placed in two groups: 1, Cases in private practice; and 2, cases in hospital practice. The cases seen in private practice were, on the whole, milder in character, as many of the more severe cases sooner or later found their way into the hospitals. Due to the extent of the epidemic the cases seen in private practice offered but little opportunity for careful scientific investigation. These, however, were the only cases that showed the early prodromal symptoms. The clinical picture is no doubt familiar to anyone who has seen even a small number of cases. The initial chilly feeling with pain in the joints, followed by a sore throat, often gave no inkling of the ravaging illness that was ushered in. The slight rise in temperature did not alarm us. It was usually not

until the characteristic substernal pain, the profuse perspiration and the continual unproductive hacking cough occurred that we realized we were dealing with a case of the pandemic influenza. The temperature soon rose to 103° or 104° F., and the heart sounds were soft and flabby. In most instances the temperature subsided in four or five days and the patient was well with the exception of the persistent weakness. Unfortunately, however, in a great many of the cases the temperature persisted, or even increased to 105° or 106° F. Occasionally after a temporary recrudescence the cough became worse. The expectoration remained tenacious but rusty or even blood tinged and this marked the onset of the pneumonia. The signs usually consisted of localized areas of râles at the bases with possibly small areas of bronchial breathing and rarely assumed the lobar type. The pulse was slow but soft, like that in typhoid fever, and as the case progressed became more rapid. In some cases the temperature soon began to subside, reaching normal in a few days. The signs in the lungs would often persist for days or even weeks. In the fatal cases, however, cyanosis of the lips began to appear early in the disease, the pulse became more rapid, the respiration increased and a gradually increasing cardiac failure or a sudden pulmonary edema ended the picture. These patients that we saw often gave little opportunity for study.

Hospital cases.—The patients in the hospitals gave us an opportunity for careful study. Our experience at the height of the pandemic consisted in the handling of one hundred and three patients in the medical service at the Lenox Hill Hospital. These were on the service at the height of the epidemic in the months of September and October, 1918. Many of these cases were of the most severe character; some of them were fatal cases. Thanks to the excellence of the house staff we were able to gather a fair amount of accurate clinical and laboratory statistics from these cases. The clinical history was fairly typical in all of these cases and corresponded fairly accurately with the classical picture described.

In the first place the cases were divided into the following two groups: 1, Patients without signs of pneumonia, and 2, patients with signs of pneumonia.

Of the entire number nine showed no signs in the chest whatever. Thirty-two had a few signs and the rest had marked signs of pneumonia. The former consisted of small patches of râles, usually at the bases. It was only in those cases in which the signs were marked that the type of pneumonia could be determined. Of these about fifty-eight were lobar in type, and twelve were classed as bronchopneumonia. Of the lobar types seventeen occurred in the right lower lobe and twenty-three in the left lobe, while five were double lobar pneumonia and one occurred in the right middle lobe.

Temperature.—The temperature was usually high. Even in the cases uncomplicated by pneumonia it was usual to find a continuous temperature of 103° or 104° F. Many of the patients had high temperatures persisted for a few days the a temperature of 105° or even 106°. But if such

*From the service of Dr. J. Kaufmann.

signs of pneumonia soon developed. In our group of cases the persistence of a temperature of 105° or over was usually a fatal sign. Fifty-seven of our patients showed a persistent temperature of 105° or over; only fifteen of these patients recovered.

Cough and expectoration.—The cough and expectoration were present in many of the patients in whom pneumonia did not develop. The cough was characteristic. It was dry and hacking and was peculiarly persistent being accompanied in most instances by a stringy mucoid expectoration which later, as the pneumonia developed, became blood tinged or rusty. In many of the more severe cases real clots of blood were expectorated. We examined the sputum in all cases; five specimens showed pneumococci and all of these patients recovered. In twenty-six patients the presence of diplostreptococci was demonstrated. Fourteen of these patients died. In these cases we found the influenza bacillus in the sputum. In one of these patients pneumonia developed and the patient died, while the other two recovered without the occurrence of pneumonia. In all the severe and fatal cases we found characteristic diplostreptococci. On culture some of these types of organism showed the characteristics of the *Streptococcus hemolyticus*.

Throat symptoms.—Although many of the patients with influenza suffered from throat irritation, particularly in the early stages, there was no marked evidence, even in the most severe cases, of the characteristic inflammatory phenomena we have seen in the annual grippé epidemics. A peculiar reddening of the anterior pillars of the fauces was a typical and marked characteristic in all our influenza patients. Often this was the earliest sign, occurring before any of the other symptoms appeared. We made routine cultures of the throats of our patients and in all these severe and fatal cases we isolated a characteristic diplostreptococcus. One of the fatal cases showed staphylococcus. No diphtheria bacilli were found.

Blood cultures.—It was impossible to take blood cultures from all the patients. This, however, was done in eight cases. With two exceptions the results were negative. These two cases showed pneumococci; both of the patients recovered. In fifty-two of our patients Wassermann reactions were taken; two showed four plus, two plus minus, and the rest were negative.

Blood count.—White blood counts and differential counts were made in nearly all our cases; eighty per cent. showed a leucopenia, the lowest being 2,300; thirty per cent. of the cases showed a polynucleosis. The study of the blood counts has shown that they are the most valuable prognostic signs. A leucopenia with a high polymorphonuclear count was usually a fatal sign, especially if this was associated with a persistent temperature of 105° F. or over. We believe the old classical axioms in regard to white cell counts have held with particular force in the last influenza epidemic. The number of leucocytes are the indications of the resistance, and the polymorphonuclear leucocytes indicate the intensity of the infection. Consequently, a leucopenia with a low

polymorphonuclear count is not a fatal sign; neither is a leucocytosis with a high polymorphonuclear count.

Cyanosis.—Cyanosis has been the dreaded sign in the recent influenza epidemic. The dusky line around the lips and the spreading cyanosis of the face have indicated that the end was soon to come. Many explanations have been offered for this condition. I shall merely mention two cases admitted on our service at the Lenox Hill Hospital. One patient was a man aged thirty-two who was admitted with a history of influenza of four days duration. He had a typical double bronchopneumonia and the most intense cyanosis all over the body that we had ever observed. Free hemoglobin could be seen on the conjunctivæ and he passed urine which contained hemoglobin. Three days after admission he died.

The second patient was a man seen in consultation at the onset of the disease. The attack began with a generalized bronchitis and a temperature of 105° F. which persisted for a few days. Double broncho-pneumonia developed with intense cyanosis over the entire body. This condition persisted for about four days when the temperature subsided, but the cyanosis persisted until death ensued a few days later.

From an observation of these cases and similar ones we believe the cyanosis to be due to a toxemia, one of the most important manifestations of which is the destruction of red blood cells and the consequent liberation of free hemoglobin in the blood stream. This may possibly be due to the destruction of the red blood cells by the *Streptococcus hemolyticus*.

Pulse and respiration.—In the uncomplicated case the pulse was usually slow. When the pneumonia occurred the pulse usually became more rapid and softer. A persistently rapid pulse was usually a bad sign. The respirations even in the pneumonia cases were never very high until a few days before the end in the more severe cases.

Blood pressure.—In forty-six of our hospital cases the blood pressure readings were made regularly. The blood pressure was not raised in any of our cases. Sixteen showed a systolic pressure of 110 or less; in some cases it was as low as seventy-five. These were all severe cases and they showed both a low systolic and a relatively lower diastolic pressure. The blood pressure in the severe cases was good, averaging 100 to 105 systolic and fifty to sixty diastolic.

Complications.—I do not believe we should consider pneumonia as a complication but rather as a concomitant feature of the more severe cases of influenza. Perhaps the most common complication in the recent epidemic was acute pulmonary edema which was often the immediate cause of death. I believe that many of the cases of so-called fulminating pneumonia were really an acute pulmonary edema secondary to a myocardial weakness occurring in the course of the influenza. In our series of cases we had the following complications: Thrombosis of the femoral vein, one; otitis media, two; empyema, one; unresolved pneumonia, three; prolonged signs of consolidation without temperature,

ANALYTICAL TABLE OF INFLUENZA CASES.

Name and number....	K., female, 6034.	P., male, 6095.	K., male, 6588.	K., male, 6822.	R., male, 6918.	C., female, 6942.
Age	Twenty-five.	Fifty.	Forty-nine.	Twenty-four.	Twenty-five.	Nineteen.
Chief symptoms	Pains all over the body, felt feverish, cough	Dyspnea, cough, pain in epigastrium.	Pain in back	Aching all over the body, tired feeling, chilliness, pain in chest, cough.	Pains all over the body, headache, pain in stomach, chills, fever, rusty sputum.	No history obtained.
Chest signs	Lobar pneumonia (left lower lobe).	Double lobar pneumonia (both lower lobes).	Lobar pneumonia (right lower lobe).	Lobar pneumonia (right lower lobe).	Lobar pneumonia (left lower lobe).	Lobar pneumonia (left lower lobe).
Cyanosis	Present.	Slight.	Absent.	Absent.	Absent.	Marked.
Abdominal signs	None.	Fluid enlarged, fluid in abdomen.	None.	Tenderness in right upper quadrant.	Tenderness in lower right quadrant.	Abdominal distension.
Blood culture	Negative.	Negative.	Negative.	Pneumococcus.	Negative.	Negative.
Wassermann reaction.....	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Urine	Negative.	Negative.	Albumin trace.	Albumin trace.	Negative.	Albumin trace.
Blood pressure	Not taken.	Syst. 130, diast. 80.	Syst. 124, diast. 72.	Syst. 118, diast. 80.	Not taken.	Not taken.
Meningeal signs	Absent.	Absent.	Absent.	Absent.	Absent.	Absent.
Complications	Acute otitis media.	None.	None.	None.	None.	None.
Previous history	Negative.	Negative.	Sciatica.	Tonsillitis.	Negative.	Negative.
Incubation period	Seven days.	Undetermined.	Three days.	Three days.	Seven days.	Undetermined.
Maximum temperature.....	104.2° F.	104.2° F.	103.8° F.	105° F.	105.6° F.	105.4° F.
Throat culture	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Sputum	Negative.	Negative.	Negative.	Pneumococcus.	Negative.	Negative.
Blood count	Not taken.	Not taken.	W. B. C. 25,800, polynuclears 85 per cent.	W. B. C. 3,900, polynuclears 69 per cent.	W. B. C. 5,480, polynuclears 71 per cent.	Not taken.
Mode of onset.....			Slow onset.	Recovery.	Recovery.	Death.
Result	Recovery.	Death.	Recovery.	Recovery.	Recovery.	Death.

Name and number....	C., female, 6855.	B., female, 6901.	L., female, 6954.	W., female, 6972.	L., male, 6880.	S., male, 6962.
Age	Twenty.	Twenty-five.	Forty-seven.	Twenty-seven.	Twenty-five.	Thirty-one.
Chief symptoms	Pains all over the body, sore throat, fever, cough.	Pains all over the body, loss of appetite, headache, deafness.	Aching all over the body, pain over the sternum.	No history obtained.	Pains all over the body, pain in chest, cough.	Fever, chill, pain in chest, cough.
Chest signs	General bronchitis, lobar pneumonia (right lower lobe).	No physical signs.	General bronchitis.	Lobar pneumonia (left lower lobe).	Lobar pneumonia (left lower lobe).	Lobar pneumonia (right lower lobe).
Cyanosis	Absent.	Absent.	Absent.	Marked.	Marked.	Absent.
Abdominal signs	None.	None.	None.	None.	None.	None.
Blood culture	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Wassermann reaction.....	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Urine	Albumin trace.	Albumin heavy trace.	Albumin trace.	Normal.	Normal.	Normal.
Blood pressure	Not taken.	Syst. 102, diast. 68.	Not taken.	Not taken.	Not taken.	Not taken.
Meningeal signs	Absent.	Absent.	Absent.	Absent.	Absent.	Absent.
Complications	None.	None.	Herpes.	None.	Urinary retention.	None.
Previous history	Measles and appendicitis.	Negative.	Ordinary diseases of childhood.	Negative.	Negative.	Negative.
Incubation period	Two days.	Four days.	Undetermined.	Undetermined.	Undetermined.	Undetermined.
Maximum temperature.....	104.4° F.	105° F.	101° F.	105.2° F.	104.8° F.	105° F.
Throat culture	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Sputum	Negative.	Negative.	Streptococci.	Negative.	Negative.	Negative.
Blood count	W. B. C. 7,600, polynuclears 60 per cent.	W. B. C. 8,260, polynuclears 76 per cent.	Not taken.	Not taken.	W. B. C. 18,200, polynuclears 90 per cent.	Not taken.
Mode of onset.....		Gradual onset.	After exposure.	Death.	Sudden onset.	Death.
Result	Recovery.	Recovery.	Recovery.	Death.	Death.	Death.

Name and number....	G., male, 6907.	K., male, 6935.	S., male, 6935.	S., male, 6861.	H., male, 6845.	Y., male, 6903.
Age	Twenty-eight.	Thirty-one.	Twenty-six.	Thirty-two.	Forty-one.	Forty-eight.
Chief symptoms	Headache, fever, chill, pain in right chest, cough.	Pain in chest, cough.	Cough and vomiting.	Cough, followed by sudden and persistent pulmonary hemorrhage.	Pains all over the body, chilliness, fever.	Pains all over the body, fever, cough.
Chest signs	Lobar pneumonia (left lower lobe).	Lobar pneumonia (both lower lobes).	Lobar pneumonia (left lower lobe).	Lobar pneumonia (left lower lobe).	No physical signs.	Bronchopneumonia (left lower lobe) toward the end.
Cyanosis	Absent.	Marked.	Absent.	Marked.	Absent.	Absent.
Abdominal signs	None.	None.	Tenderness in epigastrium.	None.	None.	None.
Blood culture	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Wassermann reaction.....	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Urine	Albumin trace.	Albumin trace.	Normal.	Albumin trace.	Albumin trace.	Albumin heavy trace.
Blood pressure	Not taken.	Syst. 125, diast. 85.	Not taken.	Syst. 118, diast. 74.	Syst. 138, diast. 84.	Syst. 100, diast. 60.
Meningeal signs	Absent.	Absent.	Absent.	Absent.	Absent.	Absent.
Complications	None.	None.	None.	Pulmonary hemorrhage.	None.	None.
Previous history	Measles and pneumonia.	Nephritis and endocarditis.	Negative.	Suspicious TBC.	Negative.	Negative.
Incubation period	Four days.	Three days.	Undetermined.	Two days.	Four days.	Undetermined.
Maximum temperature.....	106.2° F.	104.4° F.	106° F.	105.4° F.	101.2° F.	105.2° F.
Throat culture	Negative.	Negative.	Negative.	Negative.	Negative.	Streptococcus.
Sputum	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Blood count	W. B. C. 14,800, polynuclears 80 per cent.	W. B. C. 9,800, polynuclears 72 per cent.	Not taken.	W. B. C. 17,560, polynuclears 80 per cent.	W. B. C. 8,400, polynuclears 75 per cent.	W. B. C. 8,200, polynuclears 82 per cent.
Mode of onset.....		Gradual onset after "cold" lasting four days.	Sudden onset, with cough and epigastric pain.	Sudden onset, with cough, hemoptysis, and fever.	Gradual onset after exposure to wet and rain.	Sudden onset.
Result	Death.	Death.	Death.	Death.	Recovery.	Death.

ANALYTICAL TABLE OF INFLUENZA CASES.

Name and number...	B., male, 7046.	W., male, 7005.	R., male, 6918.	J., male, 6823.	E., male, 6938.	F., male, 6932.
Age	Twenty-seven.	Twenty-six.	Twenty-five.	Twenty-one.	Twenty-four.	Twenty-eight.
Chief symptoms	No history obtained.	Headache, pain in left chest, cough.	Pains all over the body, headache, fever, cough.	Fever and cough.	Pains all over the body, fever, cough.	Pains all over the body, dizziness and fever.
Chest signs	Bronchopneumonia (both lower lobes).	Bronchopneumonia (left lower lobe).	General bronchitis.	Slight bronchitis.	Slight bronchitis.	No physical signs.
Cyanosis	Marked.	Marked.	Absent.	Absent.	Absent.	Absent.
Abdominal signs	None.	None.	None.	None.	None.	None.
Blood culture	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Wassermann reaction	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Urine	Normal.	Normal.	Normal.	Albumin trace.	Normal.	Normal.
Blood pressure	Not taken.	Syst. 116, diast. 70.	Syst. 105, diast. 70.	Syst. 140, diast. 90.	Not taken.	Syst. 128, diast. 84.
Meningeal signs	Absent.	Absent.	Absent.	Absent.	Absent.	Absent.
Complications	None.	None.	None.	None.	None.	None.
Previous history	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Incubation period	Undetermined.	Seven days.	Seven days.	Seven days.	Three days.	Three days.
Maximum temperature	106° F.	106° F.	105° F.	105° F.	102° F.	102.8° F.
Throat culture	Streptococcus, pneumococcus.	Diplostreptococcus.	Negative.	Negative.	Negative.	Negative.
Sputum	Negative.	Negative.	Negative.	Negative.	Negative.	Diplostreptococcus.
Blood count	Not taken.	W. B. C. 7,480, polynucleurs 90 per cent.	W. B. C. 5,480, polynucleurs 71 per cent.	W. B. C. 20,000, polynucleurs 87 per cent.	Not taken.	W. B. C. 10,000, polynucleurs 82 per cent.
Mode of onset			Sudden onset.	Sudden onset.	Sudden onset.	Sudden onset.
Result	Death.	Death.	Recovery.	Recovery.	Recovery.	Recovery.

Name and number...	D., male, 7110.	L., female, 6754.	K., male, 6822.	S., male, 7032.	M., male, 7032.	K., female, 7089.
Age	Thirty-six.	Forty-seven.	Twenty-four.	Twenty-seven.	Twenty-three.	Thirty.
Chief symptoms	Pains all over the body, cough, fever.	Pain over the sternum for two weeks, pains all over the body.	Pains all over the body, cough.	Coryza, pressure in chest, tired feeling, dyspnea.	Pains all over the body, chills, cough.	Cold in the head, chills and weakness.
Chest signs	Lobar pneumonia (left lower lobe).	Bronchopneumonia (right lower lobe).	Lobar pneumonia (right lower lobe).	Slight bronchitis.	No physical signs.	Lobar pneumonia (left lower lobe).
Cyanosis	Slight.	Absent.	Absent.	Absent.	Absent.	Absent.
Abdominal signs	None.	None.	None.	None.	None.	None.
Blood culture	Negative.	Negative.	Pneumococcus.	Negative.	Negative.	Negative.
Wassermann reaction	Negative.	Negative.	Negative.	Negative.	Four +.	Negative.
Urine	Albumin heavy trace.	Albumin trace.	Albumin trace.	Albumin trace.	Albumin trace.	Albumin trace.
Blood pressure	Not taken.	Not taken.	Syst. 105, diast. 65.	Syst. 110, diast. 65.	Syst. 115, diast. 65.	Not taken.
Meningeal signs	Absent.	Absent.	Absent.	Absent.	Absent.	Absent.
Complications	None.	Otitis media.	None.	None.	None.	None.
Previous history	Negative.	Negative.	Negative.	Negative.	Negative.	Pleurisy one year ago.
Incubation period	Six days.	Undetermined.	Four days.	Three days.	Two days.	Seven days.
Maximum temperature	106° F.	101° F.	105° F.	105° F.	103.2° F.	106.4° F.
Throat culture	Negative.	Negative.	Negative.	Streptococcus.	Negative.	Negative.
Sputum	Negative.	Streptococcus.	Pneumococcus.	Streptococcus.	Negative.	Negative.
Blood count	Not taken.	Not taken.	W. B. C. 3,020, polynucleurs 69 per cent.	W. B. C. 8,440, polynucleurs 85 per cent.	W. B. C. 8,240, polynucleurs 77 per cent.	Not taken.
Mode of onset	Gradual onset.	Gradual onset after exposure to wet.	Gradual onset after exposure to rain and cold.	Gradual onset with headache and tired feeling.	Gradual onset with tired feeling and pains all over body.	Gradual onset.
Result	Death.	Recovery.	Recovery.	Recovery.	Recovery.	Death.

Name and number...	W., male, 7109.	U., male, 6994.	B., male, 7104.	H., male, 7054.	L., female, 6966.	C., female, 7050.
Age	Twenty-seven.	Thirty-five.	Thirty.	Fifty.	Forty-six.	Forty-six.
Chief symptoms	No history obtained.	Pain in back, headache, cough.	Headache, chills, pain in chest and back, cough.	Pains all over the body.	Headache and sore throat.	Headache, chills, fever, pains all over the body.
Chest signs	Lobar pneumonia (right lower lobe).	Lobar pneumonia (right lower lobe).	No physical signs.	No physical signs.	No physical signs.	No physical signs.
Cyanosis	Marked.	Absent.	Absent.	Absent.	Absent.	Absent.
Abdominal signs	None.	None.	Negative.	Negative.	None.	None.
Blood culture	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Wassermann reaction	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Urine	Albumin trace.	Albumin trace.	Albumin trace.	Albumin trace.	Albumin trace.	Albumin trace.
Blood pressure	Not taken.	Syst. 114, diast. 78.	Syst. 104, diast. 65.	Not taken.	Not taken.	Syst. 124, diast. 72.
Meningeal signs	Absent.	Absent.	Absent.	Absent.	Absent.	Absent.
Complications	None.	None.	None.	None.	None.	None.
Previous history	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Incubation period	Undetermined.	Ten days.	Seven days.	Six days.	Three days.	Two days.
Maximum temperature	104.6° F.	105° F.	101.8° F.	101° F.	104° F.	102.6° F.
Throat culture	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Sputum	Streptococcus.	Streptococcus.	Negative.	Negative.	Streptococcus.	Negative.
Blood count	Not taken.	Not taken.	W. B. C. 6,000, polynucleurs 59 per cent.	W. B. C. 8,000, polynucleurs 80 per cent.	W. B. C. 6,200, polynucleurs 75 per cent.	W. B. C. 27,000, polynucleurs 93 per cent.
Mode of onset		Gradual onset with headache and tired feeling.	Gradual onset.	Gradual onset.	Gradual onset.	Sudden onset.
Result	Death.	Recovery.	Recovery.	Recovery.	Recovery.	Recovery.

ANALYTICAL TABLE OF INFLUENZA CASES.

Name and number....M., female, 7032	G., female, 7109.	J., male, 7093.	P., male, 7156.	H., female, 7142.	S., male, 7158.
Age.....Twenty-three.	Twenty-two.	Forty-one.	Forty-three.	Twenty-six.	Twenty-five.
Chief symptoms.....Pains all over the body, chilliness, headache.	Vomiting, dizzi- ness, cough.	Headache, pains in chest, cough.	Headache, pain all over the body.	Headache, fever, cough, mania.	Pain in chest, cough.
Chest signs.....No physical signs.	Double lobar pneumonia (both lower lobes).	No physical signs.	No physical signs.	Lobar pneumonia (right lower lobe).	Bronchopneu- monia (right lower lobe).
Cyanosis.....Absent.	Marked.	Absent.	Absent.	Moderate.	Marked.
Abdominal signs.....None.	None.	None.	None.	None.	None.
Blood culture.....Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Wassermann reaction.....Four +.	Negative.	Negative.	Negative.	Negative.	Negative.
Urine.....Albumin trace.	Albumin trace.	Normal.	Albumin trace.	Albumin trace.	Albumin trace.
Blood pressure.....Syst. 115, diast. 65.	Syst. 105, diast. 65.	Syst. 118, diast. 75.	Syst. 120, diast. 85.	Syst. 95, diast. 45.	Syst. 100, diast. 65.
Meningeal signs.....Absent.	Absent.	Absent.	Absent.	Absent.	Absent.
Complications.....Syphilis.	None.	None.	None.	None.	None.
Previous history.....Premature birth, syphilis.	Negative.	Negative.	Negative.	Negative.	Negative.
Incubation period.....Two days.	Two days.	Three days.	Six days.	Seven days.	Four days.
Maximum temperature.....103.2° F.	105.4° F.	103.2° F.	102° F.	105° F.	104.8° F.
Throat culture.....Negative.	B. Influenza.	Negative.	Negative.	Negative.	Negative.
Sputum.....Negative.	Negative.	Negative.	Negative.	Negative.	Diplostreptococci.
Blood count.....W. B. C. 8,240, polynuclears 77 per cent.	W. B. C. 8,000, polynuclears 87 per cent.	W. B. C. 10,400, polynuclears 91 per cent.	W. B. C. not taken.	W. B. C. 7,200, polynuclears 78 per cent.	W. B. C. 6,200, polynuclears 70 per cent.
Mode of onset.....Sudden onset.	Sudden onset.	Sudden onset.	Sudden onset.	Sudden onset.	Gradual onset, felt bad for four days.
Result.....Recovery.	Death.	Recovery.	Recovery.	Death.	Death.

Name and number....C., male, 6998.	A., male, 7218.	Z., female, 7175.	R., male, 7165.	O., female, 7196.	R., male, 7101.
Age.....Eighteen.	Thirty-four.	Twenty-eight.	Fifty-three.	Thirty-two.	Thirty.
Chief symptoms.....Headache, pains, chills, weakness.	No history ob- tained.	Headache, pains, fever, cough.	General malaise.	Pains all over the body, fever, cough.	Headache, fever, pains.
Chest signs.....Bronchopneu- monia (right lower lobe).	Lobar pneumonia (left lower lobe).	Lobar pneumonia (right lower lobe).	No physical signs.	Lobar pneumonia (both lower lobes).	General bronchi- tis.
Cyanosis.....Absent.	Marked.	Marked.	Absent.	Marked.	Absent.
Abdominal signs.....None.	None.	None.	None.	None.	None.
Blood culture.....Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Wassermann reaction.....Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Urine.....Normal.	Normal.	Albumin trace.	Albumin trace.	Normal.	Albumin trace.
Blood pressure.....Syst. 130, diast. 65.	Not taken.	Not taken.	Not taken.	Not taken.	Not taken.
Meningeal signs.....Absent.	Absent.	Absent.	Absent.	Absent.	Absent.
Complications.....None.	None.	None.	None.	Delirium.	None.
Previous history.....Measles, scarlet fever, pneu- monia, mastoid- itis.	Negative.	Measles, rheuma- tism, tonsilitis.	Negative.	Negative.	Pneumonia.
Incubation period.....Four days.	Undetermined.	Undetermined.	Ten days.	Six days.	Four days.
Maximum temperature.....105° F.	104° F.	105.4° F.	101° F.	105.2° F.	104° F.
Throat culture.....Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Sputum.....Negative.	Negative.	Negative.	Negative.	Negative.	Diplostreptococ- cus.
Blood count.....W. B. C. 9,700, polynuclears 73 per cent.	Not taken.	W. B. C. 8,600, polynuclears 84 per cent.	Not taken.	W. B. C. 2,400, polynuclears 92 per cent.	W. B. C. 4,720, polynuclears 57 per cent.
Mode of onset.....Sudden onset fol- lowing explosion in ammunition factory.	Sudden onset.	Gradual onset af- ter sore throat for three weeks.	Sudden onset af- ter nursing sick daughter.	Gradual onset.	Sudden onset, with chills.
Result.....Death.	Death.	Death.	Recovery.	Death.	Recovery.

Name and number....F., male, 7000.	B., male, 7223.	L., male, 7239.	G., male, 6959.	K., male, 7137.	W., female, 7203.
Age.....Twenty-nine.	Thirty-one.	Twenty-six.	Thirty-three.	Twenty-nine.	Twenty-six.
Chief symptoms.....Pain in chest, cough, slight chills.	Pains all over the body, cough.	Severe headache, chills, pains all over the body, cough.	Headache, chilly feeling.	Headache for five days, cough.	Pains all over the body, fever, dyspnea.
Chest signs.....Lobar pneumonia (left lower lobe).	Bronchopneu- monia (both lower lobes).	Lobar pneumonia (right lower lobe).	Bronchopneu- monia (right lower lobe).	No physical signs.	Bronchopneu- monia (both lower lobes), mitral stenosis.
Cyanosis.....Slight.	Marked.	Marked.	Absent.	Absent.	Slight.
Abdominal signs.....None.	None.	None.	None.	None.	Pregnant uterus.
Blood culture.....Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Wassermann reaction.....Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Urine.....Albumin trace.	Albumin heavy trace.	Albumin trace.	Albumin heavy trace.	Albumin trace.	Albumin trace.
Blood pressure.....Syst. 88, diast. 65.	Not taken.	Syst. 122, diast. 65.	Syst. 100, diast. 60.	Not taken.	Not taken.
Meningeal signs.....Absent.	Absent.	Carphology, irra- tional.	Absent.	Absent.	Absent.
Complications.....None.	None.	None.	None.	Hemoptysis.	Pregnancy.
Previous history.....Negative.	Rheumatism.	Pneumonia.	Negative.	Pertussis, measles.	Negative.
Incubation period.....Two days.	Seven days.	Five days.	Four days.	Four days.	Three days.
Maximum temperature.....106.2° F.	105° F.	105.2° F.	105° F.	104.2° F.	103.4° F.
Throat culture.....Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Sputum.....Diplostreptococ- cus.	Negative.	Diplostreptococ- cus.	Diplostreptococ- cus.	Streptococcus.	Negative.
Blood count.....Not taken.	W. B. C. 12,000, polynuclears 87 per cent.	W. B. C. 4,700, polynuclears 87 per cent.	W. B. C. 7,400, polynuclears 78 per cent.	W. B. C. 7,100, polynuclears 86 per cent.	W. B. C. 9,400, polynuclears 76 per cent.
Mode of onset.....Sudden onset, with chills.	Sudden onset.	Gradual onset, with chilly sen- sations.	Gradual onset, with tired feel- ing.	Gradual onset, with cough and rusty sputum.	Sudden onset.
Result.....Death.	Death.	Death.	Recovery.	Recovery.	Death.

ANALYTICAL TABLE OF INFLUENZA CASES.

Name and number....	A., male, 7195.	B., male, 7293.	B., male, 7214.	P., female, 7018.	A., male,	L., male, 7057.
Age	Twenty-nine.	Thirty-six.	Thirty-six.	Twenty-seven.	Twenty-eight.	Twenty-nine.
Chief symptoms	Pains all over the body, chills, fever, cough.	No history obtained.	Pains all over the body, profuse perspiration, chilly feelings.	Cough for one week.	Pain in chest and dyspnea.	Pains all over the body, fever, cough, pain in chest.
Chest signs	Bronchopneumonia (both lower lobes).	Lobar pneumonia (lower right lobe).	No physical signs.	No physical signs.	Fluid in right chest.	No physical signs.
Cyanosis	Marked.	Marked.	Absent.	Absent.	Absent.	Absent.
Abdominal signs	None.	None.	None.	None.	None.	None.
Blood culture	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Wassermann reaction	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Urine	Albumin heavy trace.	Albumin heavy trace.	Albumin heavy trace.	Albumin trace.	Normal.	Albumin trace.
Blood pressure	Syst. 75, diast. 60.	Not taken.	Not taken.	Not taken.	Not taken.	Syst. 88, diast. 35.
Meningeal signs	Absent.	Absent.	Absent.	Absent.	Absent.	Absent.
Complications	None.	None.	None.	None.	Thrombosis of femoral vein.	None.
Previous history	Measles.	Negative.	Negative.	Measles.	Negative.	Negative.
Incubation period	Seven days.	Undetermined.	Six days.	Seven days.	Undetermined.	Six days.
Maximum temperature	104.4° F.	105.4° F.	105° F.	102.4° F.	105° F.	103.8° F.
Throat culture	Negative.	Negative.	Negative.	Negative.	Diplostreptococcus.	Negative.
Sputum	Diplostreptococcus.	Diplostreptococcus.	Negative.	Negative.	Diplostreptococcus and pneumococcus.	Diplostreptococcus and pneumococcus.
Blood count	W. B. C. 6,400, polynuclears 84 per cent.	Not taken.	Not taken.	Not taken.	Not taken.	W. B. C. 19,000, polynuclears 86 per cent.
Mode of onset			Gradual onset.	Gradual onset.	Sudden onset, with thrombosis of femoral vein and death three hours later.	Gradual onset, with tired feeling.
Result	Death.	Death.	Recovery.	Recovery.	Death.	Recovery.

Name and number....	S., male, 7319.	N., male, 6837.	B., male, 7311.	B., female, 7277.	K., female, 7327.	S., female, 7351.
Age	Thirty-two.	Twenty-three.	Twenty-three.	Twenty-four.	Thirty-eight.	Twenty-three.
Chief symptoms	Pains in chest, cough, "bloody" urine.	Fever and cough following confinement.	Fever and cough.	Pain in chest, cough.	Pain in back.	No history obtained.
Chest signs	Bronchopneumonia (both lower lobes).	No physical signs.	Lobar pneumonia (left lower lobe).	Bronchopneumonia (left lower lobe).	No physical signs.	Lobar pneumonia (right lower lobe).
Cyanosis	Intense.	Absent.	Slight.	Slight.	Absent.	Absent.
Abdominal signs	Large spleen.	Negative.	None.	None.	None.	None.
Blood culture	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Wassermann reaction	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Urine	Albumin heavy trace.	Albumin trace.	Albumin trace.	Albumin trace.	Albumin trace.	Normal.
Blood pressure	Syst. 108, diast. 76.	Not taken.	Not taken.	Not taken.	Not taken.	Not taken.
Meningeal signs	Absent.	Absent.	Absent.	Absent.	Absent.	Absent.
Complications	Hemoglobinuria.	None.	None.	None.	None.	None.
Previous history	Tropical Fever (nature?).	Negative.	Pleurisy.	Negative.	Measles, scarlet fever, diphtheria, typhoid fever.	Negative.
Incubation period	Four days.	Two days.	Seven days.	Five days.	One day.	Undetermined.
Maximum temperature	104.4° F.	104.4° F.	105.2° F.	106.4° F.	100° F.	102.4° F.
Throat culture	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Sputum	Negative.	Negative.	Negative.	Streptococcus.	Negative.	Negative.
Blood count	W. B. C. 9,700, polynuclears 40 per cent.	Not taken.	W. B. C. 6,200, polynuclears 69 per cent.	W. B. C. 7,000, polynuclears 77 per cent.	Not taken.	Not taken.
Mode of onset	Gradual onset, with tired feeling.	Was a patient in the ward and contracted influenza?	Gradual onset, with sore throat.	Gradual onset.	Sudden onset, with pain in back.	
Result	Death.	Recovery.	Death.	Death.	Recovery.	Death.

Name and number....	H., male, 7322.	S., male, 6936.	G., male, 7066.	L., female, 7067.	W., female, 7068.	V., female, 7069.
Age	Twenty-seven.	Twenty-five.	Twenty-seven.	Twenty-seven.	Twenty-six.	Twenty-six.
Chief symptoms	Chills, fever, cough, pain in chest.	Pains all over body, chills, cough, headache.	Chill, fever, pain in chest.	General pains, cough, and expectoration.	Headache, fever, cough.	Chills, pains, cough.
Chest signs	Double lobar pneumonia.	Lobar pneumonia.	Localized bronchitis.	No signs.	No signs.	Double bronchopneumonia.
Cyanosis	Absent.	Absent.	Absent.	Absent.	Absent.	Absent.
Abdominal signs	None.	None.	None.	None.	None.	None.
Blood culture	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Wassermann reaction	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Urine	Albumin trace.	Albumin trace.	Albumin trace.	Normal.	Albumin trace.	Albumin trace.
Blood pressure	Syst. 114, diast. 78.	Syst. 110, diast. 65.	Syst. 118, diast. 80.	Not taken.	Not taken.	Syst. 118, diast. 84.
Meningeal signs	Absent.	Absent.	Absent.	Absent.	Absent.	Absent.
Complications	Epistaxis.	None.	None.	None.	None.	None.
Previous history	Negative.	Measles, typhoid.	Diphtheria.	Negative.	Negative.	Negative.
Incubation period	Undetermined.	Four days.	Four days.	Two days.	One day.	Six days.
Maximum temperature	106.2° F.	102.2° F.	102.6° F.	103.6° F.	102.8° F.	106.2° F.
Throat culture	Negative.	Staphylococcus, pneumococcus.	B. Influenza.	Negative.	Negative.	Negative.
Sputum	Diplostreptococcus.	Diplostreptococcus.	B. Influenza.	Diplostreptococcus.	Diplostreptococcus.	Diplostreptococcus.
Blood count	W. B. C. 5,280, polynuclears 88 per cent.	W. B. C. 13,400, polynuclears 77 per cent.	W. B. C. 6,900, polynuclears 78 per cent.	Not taken.	Not taken.	W. B. C. 14,600, polynuclears 49 per cent.
Mode of onset		Gradual onset.	Sudden onset.			
Result	Death.	Recovery.	Recovery.	Recovery.	Recovery.	Death.

ANALYTICAL TABLE OF INFLUENZA CASES.

Name and number...	B., female. 7323.	A., female. Eighteen. Pains all over, pains on urina- tion.	T., male. Thirty-four. Pains all over body, headache, cough, pain in right chest.	P., male, 7252. Twelve days. Pain in back.	S., male, 7323. Twenty-seven. Pain in back, cough.	L., male, 7404. Thirty. Chill, pain in chest, cough.
Age	Eighteen.	Eighteen.	Thirty-four.	Twelve days.	Twenty-seven.	Thirty.
Chief symptoms	Chill, cough, pain in chest.	Pains all over, pains on urina- tion.	Pains all over body, headache, cough, pain in right chest.	Twelve days. Pain in back.	Twenty-seven. Pain in back, cough.	Chill, pain in chest, cough.
Chest signs	Lobar pneumonia.	No signs	Double broncho- pneumonia.	No signs	Slight bronchitis.	Double broncho- pneumonia.
Cyanosis	Marked.	Absent.	Marked.	Absent.	Absent.	Slight.
Abdominal signs	None.	Tenderness in right lower quadrant.	None.	None.	Note.	None.
Blood culture	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Wassermann reaction	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Urine	Albumin trace.	Albumin trace.	Albumin trace.	Albumin trace.	Albumin trace.	Albumin trace.
Blood pressure	Syst. 100, diast. 70.	Not taken.	Not taken.	Not taken.	Not taken.	Not taken.
Meningeal signs	Absent.	Absent.	Absent.	Absent.	Absent.	Absent.
Complications	None.	None.	None.	None.	None.	None.
Previous history	Negative.	Measles.	Measles, typhoid fever, diphthe- ria, scarlet fe- ver, pneumonia, cardiac insuffi- ciency.	Measles, dysen- tery, gonorrhea.	Negative.	Measles.
Incubation period	Two days.	One day.	Two days.	Five days.	Five days.	Nine days.
Maximum temperature	105.4° F.	103.4° F.	104.2° F.	105.4° F.	101° F.	105.6° F.
Throat culture	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Sputum	Negative.	Negative.	Negative.	Negative.	Diplostreptococ- cus.	Pneumococcus, group two.
Blood count	W. B. C. 5,900. polynuclears 78 per cent.	W. B. C. 4,660. polynuclears 54 per cent.	W. B. C. 7,200. polynuclears 78 per cent.	Not taken	W. B. C. 7,600. polynuclears 68 per cent.	W. B. C. 6,600. polynuclears 79 per cent.
Mode of onset	Death.	Sudden onset.	Death.	Recovery.	Recovery.	Death.
Result	Death.	Recovery.	Death.	Recovery.	Recovery.	Death.

Name and number...	B., male, 7421.	M., female, 7455.	U., female, 7086.	B., male, 7327.	F., male, 7207.
Age	Fourteen.	Twenty-five.	Thirty-six.	Thirty-one.	Twenty-five.
Chief symptoms	Fever, cough.	Chills, fever, cough.	Headache, general weakness.	Headache, tired feeling.	Pains all over body, cough.
Chest signs	Slight bronchitis.	Double lobar pneumonia.	Double broncho- pneumonia.	Bronchopneu- monia (left lower lobe).	Bronchopneu- monia, internal pulmonary ede- ma.
Cyanosis	Absent.	Absent.	Absent.	Slight.	Absent.
Abdominal signs	None.	None.	None.	None.	None.
Blood culture	Negative.	Negative.	Negative.	Negative.	Negative.
Wassermann reaction	Negative.	Negative.	Negative.	Negative.	Negative.
Urine	Albumin trace.	Albumin trace.	Albumin trace.	Albumin heavy trace.	Albumin trace.
Blood pressure	Not taken.	Not taken.	Not taken.	Syst. 102, diast. 60.	Syst. 112, diast. 88.
Meningeal signs	Absent.	Absent.	Absent.	Absent.	Absent.
Complications	None.	Pregnancy three and one half months, incom- plete abortion.	None.	Otitis media.	None.
Previous history	Bronchopneu- monia.	Measles, gripe.	Measles, gripe.	Frequent colds.	Negative.
Incubation period	Four days.	Three days.	Three days.	Six days.	Five days.
Maximum temperature	104.8° F.	105° F.	105.2° F.	105.2° F.	105° F.
Throat culture	Negative.	Negative.	Negative.	Negative.	Negative.
Sputum	Negative.	Negative.	Negative.	Negative.	Diplostreptococ- cus.
Blood count	W. B. C. 5,500. polynuclears 65 per cent.	W. B. C. 8,800. polynuclears 82 per cent.	W. B. C. 6,800. polynuclears 65 per cent.	W. B. C. 8,800. polynuclears 78 per cent.	W. B. C. 5,600. polynuclears 62 per cent.
Mode of onset	Gradual onset, with cough.	Gradual onset, with cough.	Gradual onset, with cough.	Gradual onset, with cough.	Gradual onset, with cough.
Result	Recovery.	Recovery.	Recovery.	Recovery.	Recovery.

Name and number...	K., female, 7399.	R., male, 7357.	B., female, 7372.	Z., male, 7482.	F., male, 7484.	R., male, 7242.
Age	Thirty-two.	Thirty-three.	Three and one half.	Seventy-eight.	Twenty-eight.	Thirty-four.
Chief symptoms	Headache, dizzi- ness, tired feel- ing, weakness, fever.	Headache, pain in legs.	Cough, dyspnea, drowsiness.	Pain in chest, cough, chills, sweats.	Pain all over, chills, fever, cough.	Pains all over body, chills.
Chest signs	No signs.	No signs.	No signs.	Lobar pneumonia.	Lobar pneumonia.	Bronchopneu- monia.
Cyanosis	Absent.	Absent.	Absent.	Marked.	Marked.	Absent.
Abdominal signs	None.	None.	None.	None.	None.	None.
Blood culture	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Wassermann reaction	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Urine	Normal.	Albumin trace.	Normal.	Albumin trace.	Albumin trace.	Albumin trace.
Blood pressure	Not taken.	Not taken.	Not taken.	Syst. 168, diast. 90.	Syst. 140, diast. 80.	Syst. 88, diast. 50.
Meningeal signs	Absent.	Absent.	Absent.	Absent.	Absent.	Absent.
Complications	None.	None.	None.	None.	None.	None.
Previous history	Measles, pneu- monia.	Gripe.	Negative.	Measles.	Measles, scarlet fever.	Pneumonia.
Incubation period	One day.	Five days.	Seven days.	Seven days.	Six days.	Four days.
Maximum temperature	100.8° F.	101.8° F.	104° F.	104° F.	105.8° F.	104° F.
Throat culture	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Sputum	Negative.	Diplostreptococ- cus.	Negative.	Negative.	Negative.	Diplostreptococ- cus.
Blood count	Not taken.	W. B. C. 6,880. polynuclears 76 per cent.	W. B. C. 6,000. polynuclears 57 per cent.	W. B. C. 6,000. polynuclears 62 per cent.	Not taken	W. B. C. 14,300. polynuclears 89 per cent.
Result	Recovery.	Recovery.	Recovery.	Death.	Death	Recovery.

ANALYTICAL TABLE OF INFLUENZA CASES.

Name and number....	R., male. 7409.	B., female. Forty-nine.	G., female. 7206. Twenty-three.	B., female. 7283. Twenty-nine.	C., female. 7473. Four.	M., female. 7462. Twenty-eight.
Age	Thirty-three.	Forty-nine.	Twenty-three.	Twenty-nine.	Four.	Twenty-eight.
Chief symptoms	Headache, pains in legs	Weakness all over body.	Backache, fever.	General aches, headache, fever.	Pain in right lower quadrant of abdomen, vomiting, cough, dyspnea.	Pain in chest, dyspnea.
Chest signs	No signs.	No signs.	Generalized bronchitis.	Localized bronchitis.	Bronchopneumonia (left lower lobe).	General bronchitis.
Cyanosis	Absent.	Absent.	Absent.	Absent.	Marked.	Absent.
Abdominal signs	None.	None.	None.	None.	Abdominal distension, mass in upper right quadrant of abdomen.	None.
Blood culture	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Wassermann reaction.....	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Urine	Normal.	Normal.	Normal.	Normal.	Albumin heavy trace.	Albumin trace.
Blood pressure	Syst. 115, diast. 70.	Not taken.	Not taken.	Not taken.	Not taken.	Not taken.
Meningeal signs	Absent.	Absent.	Absent.	Absent.	Absent.	Absent.
Complications	None.	None.	None.	None.	None.	None.
Previous history	Grippe.	Diphtheria, pneumonia, grippe, lung abscess.	Measles, asthma.	Measles, pneumonia.	Croup.	Rheumatism.
Incubation period	Five days.	Three weeks.	Undetermined.	Five days.	Four days.	Seven days.
Maximum temperature.....	101.8° F.	101.8° F.	103.6° F.	105.8° F.	100° F.	102° F.
Throat culture	Negative.	Negative.	Negative.	Negative.	Negative.	Negative.
Sputum	Diplostreptococcus.	Negative.	Diplostreptococcus, pneumococcus, group two.	B. influenza.	Negative.	Negative.
Blood count	W. B. C. 6,880, polynuclears 76 per cent.	Not taken.	W. B. C. 3,600, polynuclears 81 per cent.	W. B. C. 7,203, polynuclears 76 per cent.	W. B. C. 22,300, polynuclears 80 per cent.	Not taken.
Mode of onset.....			Gradual onset, with chills.			
Result	Recovery.	Recovery.	Recovery.	Recovery.	Death.	Recovery.

Name and Number....	L., male, 7438.	L., male. Twenty-four.	G., female, 7184. Twenty-nine.	S., female, 7184. Twenty-six.
Age	Twenty-six.	Twenty-four.	Twenty-nine.	Twenty-six.
Chief symptoms	Pains all over body, chills, fever.	Cough, chills, weakness.	Headache, cough, pain in ear, chills.	Chills, fever, vomiting, pain in limbs and back.
Chest signs	Lobar pneumonia (left lower lobe), empyema (left).	Bronchopneumonia.	Bronchopneumonia.	Lobar pneumonia (right lower lobe).
Cyanosis	Absent.	Absent.	Absent.	Absent.
Abdominal signs	Rigidity in upper right quadrant.	None.	None.	None.
Blood culture	Negative.	Negative.	Negative.	Negative.
Wassermann reaction.....	Negative.	Negative.	Negative.	Negative.
Urine	Albumin heavy trace.	Albumin trace.	Albumin trace.	Albumin trace.
Blood pressure	Syst. 98, diast. 70.	Not taken.	Not taken.	Syst. 108, diast. 82.
Meningeal signs	Absent.	Absent.	Absent.	Absent.
Complications	Empyema.	Parotitis.	Otitis media.	Urinary retention.
Previous history	Measles, scarlet fever, rickets, pneumonia, jaundice.	Negative.	Diphtheria, sciatica.	Measles, hemoptysis (fifteen months ago).
Incubation period	Seven days.	Two weeks.	Two days.	Seven days.
Maximum temperature.....	105° F.	105.2° F.	104.4° F.	105.4° F.
Throat culture	Negative.	Negative.	Negative.	Negative.
Sputum	Diplostreptococcus.	Streptococcus and staphylococcus.	Pneumococcus (no grouping).	Diplostreptococcus.
Blood count	W. B. C. 13,000, polynuclears 90 per cent.	Not taken.	W. B. C. 18,000, polynuclears 89 per cent.	W. B. C. 3,700, polynuclears 70 per cent.
Mode of onset.....			Sudden onset, with chills, fever, and sweat.	
Result	Recovery.	Recovery.	Recovery.	Recovery.

three; parotitis, one, and a number of cases of meningitis.

Pregnant patients.—The most severe cases of illness occurred in pregnant women. Abortion occurred and the infection raged among them with undue violence. The particular violence of the infection on the genital system was indicated even in the nonpregnant women. Most of the affected women menstruated profusely and many of them had marked metrorrhagia.

Duration of illness.—In a series of cases the average length of the uncomplicated influenza was eight days and the duration of the pneumonia was about seven and a half days.

Cause of death.—I believe the cause of death in the fatal cases can be classified into three groups: 1, Acute myocardial insufficiency; 2, acute pulmonary edema, and 3, hemolysis.

The first group included those patients without cyanosis who did not respond to stimulation, the pulse growing gradually weaker and more rapid, the patient finally succumbing to the intense toxemia which manifested itself particularly on the heart. In the second group were those patients who did well until the sudden occurrence of a classical but intense pulmonary edema which proved fatal. In the third group were the patients with cyanosis who gradually grew worse until death ensued.

These deaths we believe were all due to hemolysis.

Mortality.—It is difficult to draw any conclusions from mortality statistics. In private practice when proper and early care could be had the mortality was low. In the hospital cases the mortality among the uncomplicated influenza cases was nil, while among the pneumonia cases it was forty-three per cent.

Autopsy findings.—About fourteen of our cases came to autopsy. In these cases our findings were interesting in the following respects: The lesions gave evidence of a general infection of toxemia usually with the presence of a pneumonia with or without a pulmonary edema. The heart was usually soft and flabby, almost mushy, and on microscopic section showed myriads of leucocytes between the muscle fibres, often with the features of small abscesses.

The lungs usually showed bronchopneumonia, a lobar pneumonia with or without an acute pulmonary edema. Fibrin was present in the exudate although others have emphasized its absence. There seemed to be no regular relation between the physical signs of pneumonia and the type found at autopsy. When we thought a bronchopneumonia was present we often found a lobar pneumonia and vice versa. The liver showed areas of degeneration with atrophy and infiltration with small round cells. All the organs showed marked congestion and in a number of instances there were small thrombi and infarcts in the spleen. The leucopenia, which was a regular feature in these cases, may be accounted for by the sudden accumulation of the large numbers of leucocytes which were found in the viscera.

TREATMENT.

Little may be said as far as treatment is concerned. We have had only one opportunity to try the use of serum from convalescent patients and this was in a moribund case. We have had no experience with the use of the influenza or mixed vaccine. In the mild case the hourly use of an astringent gargle is useful as we believe in most instances the infection travels by contiguity. A solution of boric acid salt and glycerine has been found efficient as a gargle. The free movement of the bowels, and good nourishing food with the addition of wine or whiskey is usually sufficient. When the wine or whiskey cannot be tolerated by the stomach champagne may be substituted. We do not believe in the value of coal tar products; they only reduce the temperature and increase the prostration. Since the disease is usually a self limited disease there is no indication for these depressing remedies.

When pneumonia is manifested vigorous stimulation of the heart is indicated from the beginning. There is nothing better for this purpose than large doses of digitalis. In addition we have found the use of rectoclysis or hypodermoclysis with normal saline solutions together with combinations of pituitrin and adrenalin valuable. The increase in the total volume of fluid tends to raise the blood pressure and dilute the toxins.

CONCLUSIONS.

1. The recent pandemic was a severe pandemic of influenza.
2. The severe cases were complicated by pneumonia most of which were cases of bronchopneumonia.
3. We did not find the influenza organism in the blood or sputum in most of the cases.
4. Most of the severe cases, which were complicated with pneumonia, showed a diplostreptococcus in the sputum resembling the *Streptococcus hemolyticus*.
5. The pneumonia was probably due to an infection with a secondary organism such as the streptococcus or staphylococcus, the infection with the former type of organism usually being fatal.
6. A persistent temperature of 105° F. or over was usually a bad prognostic indication.
7. The white blood and differential counts were the best prognostic signs. A leucopenia and high polynuclear count usually meant a bad prognosis.
8. There were three causes of death: a, cardiac failure; b, acute pulmonary edema; c, hemolysis.
9. The autopsy findings showed evidences of a general infection with parenchymatous degeneration of the viscera and the infarcts in the spleen and other viscera.

1114 MADISON AVENUE.

CLINICAL NOTES FROM FRANCE.

Forms of Hodgkin's Disease—Etiology.—Clinical and Pathological Findings.—Forms of Treatment.—Present Therapy. X Ray Exposure.—The Use of Serum.—Types of Vomiting in Pregnancy.—Adrenal Disturbance.—Precautions.—Therapeutic Notes.

By CHARLES GREENE CUMSTON, M. D.,
Geneva, Switzerland.

The treatment of aleucemic lymphadenia, or Hodgkin's disease, is of practical interest. The principal therapeutic indication would be to treat the cause of this morbid process, but this is still unknown and arsenical medication cannot be regarded as a specific, although it has given some excellent results. In every patient with lymphadenia, the digestive functions must be maintained in an excellent state. The bowels should be properly emptied daily and constipation avoided. Consequently, preference is to be given to purgatives which act by increasing the phenomena of intestinal osmosis. The patient should be liberally fed in order to better his physical condition as well as strength, which is usually very much below par. For this reason it is well to prescribe preparations of bitters to stimulate the appetite.

Life in the open, with short but frequent walks are desirable, but they must not be long enough to tire the patient. Milk, eggs, starches and fats must form the basis of diet. There is only advantage to be gained by allowing the greatest possible latitude in the choice of food, on the condition that enough is taken in twenty-four hours. Good, red Bordeaux wine may be given, but alcoholic drinks and heavy wines are to be avoided. Hematosis is improperly carried out in lymphadenic subjects.

The blood being poor in red blood corpuscles does not take oxygen in sufficient amount and consequently all the metabolism of the economy suffers. Therefore, when microscopic examination reveals a diminution in the red cell count an attempt must be made to activate the circulation and to facilitate the contact of the blood with oxygen. With this end in view inhalations of oxygen may be given and repeated as often as possible. The first effect of this medication is to diminish the dyspnea, which is frequently very distressing and may occur during rest in cases where the lymphadenia is well developed. This treatment has given good results which of course are not of long duration, but it has the advantage of giving much relief for several hours at a time each day and although it does not cure, it invariably brings comfort to the patient.

The functions of the skin are to be closely supervised. They should be stimulated by very short douches, cold or tepid, according to the case, and followed by a strong friction, or better still, by massage.

The splenic hypertrophy can sometimes be made to decrease by cold local douches on the left hyperchondrium. When the patient is too weak to support the douch it can be advantageously replaced by friction of the limbs morning and evening with some stimulating mixture such as the following:

Alcoholis, 90°	100 c. c.
Ol. lavandulæ	50 c. c.
Ol. terebinthinæ	25 c. c.

Empirical medication may be tried. Codliver oil, iron, sulphate of quinine or cinchona have all been tried systematically, but the results obtained have always been incomplete. Iron preparations, as advised by Trousseau, occasionally give rise to improvement when employed either in the form of the protoxalate or perchloride. Quinine recommended by Widal and Mosler is unquestionably indicated when the patient has suffered from paludism. Mosler's formula is a good preparation:

Quinina hydrochloridi,	4 grams
Acid. hydrochloridici,	2 grams
Aq. dest.,	150 c. c.
Mucilago acaciæ, {	aa 20 grams
Syr. simpl.	

M. S.: A dessertspoonful at 6 a. m., 7 a. m., and at 8 a. m.

When the liquid preparation is not well borne by the patient, Mosler prescribes the following pill:

Quinina hydrochloridi,	5 grams
Acid. hydrochloridici,	gtt. xv
Aq. dest., q. s. ad solut.	

Add:

Pulv. althææ.
Sacchar. alb., aa q. s.

F. S. A.: Pil No. c.

S.: Five pills morning and evening.

The iodides have been exhibited in the form of both the iodide of iron and potassium, but without any beneficial result. The so-called Jettmann's treatment, mercurial medication, should only be mentioned because of the bad results obtained. Phosphorus was in vogue for a time but was finally abandoned on account of the uncertain results and particularly the danger to which the patients were exposed from its use.

Arsenic has been employed since Billroth first advocated its use in 1871. His example was first followed in England, then in Germany, Italy and Sweden, and finally in France, by such men as Panas, Tenillon, Reclus and Barth. Many case reports showed much amelioration obtained from this drug and even some complete recoveries were noted. At present the arsenical treatment is the one about universally employed.

Internally arsenic may be given in the form of Fowler's solution. It should be gradually increased in amount, beginning with five drops daily and increasing one to three drops each day until the maximum dose is reached, which varies with the age and susceptibility of the patient, from forty to a hundred drops. It can also be given subcutaneously as follows:

Sol. Fowlerii,	8 c. c.
Aq. laurocerasi, q. s. ut p. 20 c. c.	
S.: One c. c. subcutaneously two or three times daily.	
Sol. Fowlerii,	10 c. c.
Glycerini,	5 c. c.
Aq. dest., steril., q. s. ut p. 20 c. c.	
S.: One half to one c. c. hypodermically two to three times daily.	
Sol. Fowlerii, } aa	10 c. c.
Aq. dest., steril. }	

S.: For intraglandular injections. Begin with one c. c. and progressively reach five c. c. per injection, to be given every second day.

The injection is made directly into the enlarged glands and it is well to vary the points of injection because, although its action extends throughout the organism, the drug produces a more rapid atrophy in the parts directly injected. Injections of this solution given directly into the parenchyma of the hypertrophied spleen may likewise be resorted to.

The intraglandular method is not without faults. Arsenic is often tolerated badly by the patient; the diarrhea and intestinal disturbances are the first phenomena of intolerance and should be carefully avoided. In order to prevent them opium can be associated with the arsenic solution in the form of the tincture of laudanum.

Combinations of arsenic and iron can be exhibited internally as follows:

Ferri et potass. tartrat.,	20 grams
Sol. Fowlerii,	30 c. c.

Dissolve, filter and keep in glass stoppered bottles. Dose: From eight to thirty drops daily, in two doses taken in the middle of the two principal meals in beer or milk preferably.

Ferri et ammon. citrat.,	10 grams
Sodii citrat.,	2 grams
Sodii arseniat.,	10 centigrams
Aq. q. s. ad	200 c. c.

S.: A tablespoonful twice daily.

Cacodylate of sodium, arrhenal (sodii methylarsenas) and hectine (sodii benzosulfonparaaminophenylarsenas) can be used in place of Fowler's solution and in reality they are much more easily handled. Arrhenal contains one third of its weight in arsenic, the arsenic tenor of hectine is twenty-one per cent. All three can be given by mouth or by intramuscular injections. The writer is strongly in favor of hectine because of its usual excellent tolerance and low toxicity. Given in pill form twice daily for ten to twenty days consecutively, but not longer at a time, it seems to work

as well as when given by intramuscular injections.

But no matter what form of arsenic is chosen, the clinician must always have the accidents of intolerance constantly in mind. These are, it is hardly necessary to say, headache, neuralgic pains, a febrile state and, lastly, tinnitus aurium, pharyngitis, coryza, ocular disturbances, congestion of the face and exanthemata. The duration of arsenical treatment is quite long. When interstitial injections of the drug are given, atrophy of the gland masses occur with extraordinary rapidity during the first week, more slowly afterwards. It will take months to arrive at a satisfactory result.

It would seem that at present, of all the treatments attempted in aleucemic lymphadenia, that of arsenic should be given the preference. The mechanism of its action is still ignored, but its therapeutic effect appears to be real. Therefore, it should be exhibited because its contraindications are few; they are in particular hemolyticicterus, nephritis and diseases of the fundus oculi. The writer is not aware that on the continent, at least, 606 or 914 have ever been tried in the affection under consideration.

Treatment by the x rays has been more especially employed in the leucemic form. It reduces the number of leucocytes while the spleen and lymph-nodes decrease in size. In aleucemic lymphadenia an amelioration is usually longer in manifesting itself; it is also less regular and complete.

Röntgenized serum was first used by Ambrosio and consists in injecting the blood serum of a healthy horse previously subjected to the action of the x rays. It can be administered intravenously, in which case its action is so rapid that it is manifest in four hours' time, but it disappears within twenty-four hours. When given hypodermically its effects are slower to appear but they are durable. By this treatment an improvement in the general health and a notable reduction of the splenic tumefaction take place.

Hérard advises chlorated arsenical waters of La Bourboule and the spas of Saxon, Salies de Béarn and Biarritz. Opothrapy in the form of splenic medication has not been successful. Excision of the lymphnodes has rarely given any result worth mentioning, so that this procedure should never be entertained excepting in cases of a single lymphadenoma and this at the very onset of its evolution. Splenectomy should be proscribed; it usually results in death with all the symptoms of a rapidly progressing cachexia.

Clinically, the vomiting of pregnancy is encountered in three different forms, simple vomiting, incessant vomiting and incoercible vomiting. Suprarenal vomiting of pregnancy which I shall discuss in this letter may offer in a general way all the classical characters of gravid vomiting, but the symptomatology becomes enriched by suprarenal affections. Nevertheless, the cases so far published do not lead one to suppose that the adrenals participate in the genesis of simple vomiting and in all instances of the adrenal forms the vomiting was either incessant or incoercible and offered the aspect of the very serious types of cases.

Simple vomiting has only been observed as a

form of onset of the later accidents of a more serious nature and in these phenomena of the early phase of pregnancy, which have been regarded as sympathetic phenomena, it is possible to discover at this period few symptoms which may lead the physician to fear the later development of serious accidents. In reality, if in the majority of cases, simple vomiting consists in a regurgitation of undigested food, in matutinal pituita or the rejection of watery fluid occurring from external causes, it is, however, possible to already detect more marked digestive disturbances at this phase, such as ptyalism, little hematemeses, obstinate constipation and arterial hypotension; once these signs are observed they must be looked upon as a true indication of a more severe intoxication, perhaps, than that which gives rise to ordinary simple vomiting without any superadded phenomena. Zanfrotnini deserves the credit of demonstrating the importance of adrenal opotherapy in these minor manifestations of pregnancy and in some cases he has successfully employed suprarenal medication in simple vomiting of pregnancy. It can be admitted that in certain cases the participation of a lesion of the adrenals should be suspected when, besides simple vomiting, general symptoms of asthenia and hypotension arise.

Simple vomiting of pregnancy is consequently only a form of onset of the serious forms of vomiting which themselves should be quite frequently regarded as suprarenal vomiting, because a woman, whose vomiting is not frequent and is simple and without the presence of general symptoms, may any day offer more severe vomiting occurring as soon as food has been ingested. These women can only tolerate water and refuse all other food with the result that they commence to lose strength and emaciation is not long in making itself evident.

Finally the point is reached where there is no calm, the vomiting occurs at any time in the day, upon the slightest movement and is accompanied by constipation, headache and even nervous symptoms. There is hypotension, the phenomenon of the white line, lumboabdominal pain and such marked asthenia the patient is obliged to stay in bed from the very onset. These symptoms of suprarenal insufficiency may not only accompany the vomiting, but may even precede it as has been noted in a few instances. These signs indicate how the intoxication may give rise to more serious and even grave symptoms and that the so-called incoercible vomiting appears which nothing can control excepting induced miscarriage.

Up to the present there is not a single complete clinical report of extremely severe suprarenal vomiting of pregnancy recorded and this is to be regretted. Suprarenal vomiting of pregnancy is serious, because it is added to the intoxication of pregnancy which ordinarily provokes vomiting, the intoxication produced by suprarenal insufficiency. Consequently, the symptomatology of suprarenal vomiting is confirmed by the coexistence of serious or incoercible vomiting with symptoms of suprarenal insufficiency. And it is above all the imprint of intoxication which will be noted when examining a woman with serious vomiting occurring dur-

ing the first months of pregnancy that a diagnosis of the suprarenal origin of the vomiting will be made.

It is usually difficult to differentiate the serious suprarenal vomiting from other vomiting of pregnancy and it is also certain that it is especially by the search for the syndrome of suprarenal insufficiency that its diagnosis can be confirmed. I repeat that when fully developed this syndrome is essentially composed of asthenia of all grades, lumbosacral pain, digestive disturbances and lastly vascular disturbances, viz.: hypotension, the phenomenon of the white line and tendency to syncope.

There are many affections in which vomiting is one of the symptoms and although suprarenal insufficiency often takes an important part in the etiology of the vomiting of pregnancy, it is nevertheless true that other affections may likewise explain the intensity of this symptom. This is why, when in presence of a pregnant woman with severe vomiting, the practitioner should consider whether the vomiting is really that of pregnancy and if a causal factor can be discovered, such as a gastric ulcer or cancer, renal affections or locomotory ataxia. These points are very important because in a pregnant gastropathic subject there may develop serious vomiting with greater ease than others not so afflicted. Certain cases of serious vomiting in pregnancy can be accounted for by some preexisting nervous affection or one beginning with the pregnancy, but although serious vomiting may develop in a neuropathic woman this symptom is not enough to account for the gravity of the general condition as well as certain special symptoms.

The etiological diagnosis having been made, the evidences of suprarenal insufficiency are next to be looked for. Often the syndrome will be only at its onset, there simply being a slight degree of hypotension or asthenia. The sign of the white line is usually accompanied by both symptoms, but hypotension is unquestionably the danger signal; therefore the blood pressure should be taken every day with some reliable sphygmomanometer and although frequent variations will be noted it will always remain below normal. The white line is sometimes difficult to detect. However, the characters given by Sergent distinguishes it from other manifestations of a similar kind met with in other morbid processes. It must above all be differentiated from furfuraceous epidermic desquamation and the white line of scarlet fever; and lastly from the dermographic disturbances observed in nervous subjects. The suprarenal line possesses distinctive characters. No pressure is required to produce it and all that is necessary is to draw the finger lightly and rapidly over the cutaneous surface. It will appear from thirty to sixty seconds later and it is always broader than the body passed over the skin, it is not preceded by a red tint and its edges are not bordered by a rosecolored zone as is seen in the physiological white line. It lasts from two to five minutes or longer. In all cases where the diagnosis is doubtful a treatment test should be attempted as is done in syphilis and other diseases and this brings me to the subject of treatment.

In ordinary cases offering the syndrome of suprarenal insufficiency opotherapy is ordinarily resorted to, but in vomiting of pregnancy those cases must be considered where suprarenal insufficiency is probable, those where it is doubtful and those where it really exists. Opotherapy should be attempted in all three, but when all the clinical signs of the suprarenal syndrome are noted the results obtained with suprarenal extracts or adrenalin will be astonishing. However, too much must not be expected from adrenalin and in the particular cases under discussion obstetricians have shown the value of the usual treatments of serious or incoercible vomiting of pregnancy. Induced miscarriage resorted to in time gives unhoped for success, but frequently it is only done as a last resource, at a time when the most serious results of the vomiting have developed.

But at present the importance of the symptoms of suprarenal insufficiency are well known. As to their value from the viewpoint of a subsequent prognosis it is not too much to say that suprarenal therapy begun as soon as the first clinical manifestations are noted will ward off the serious vomiting. Suprarenal opotherapy may also be used as a prophylactic treatment of serious vomiting of pregnancy when adrenal insufficiency is known to exist in the patient. Suprarenal therapy consists of suprarenal extract and the active principle, adrenalin. From the viewpoint of vasoconstriction both products can be used, but it seems more logical when one wishes to supply the secretory deficit of the glands to employ the total suprarenal extract which contains all of the gland, including adrenalin. Both preparations have, besides a hemostatic property, antitoxic and hypersthenic qualities as well. Adrenalin corresponds especially, or rather exclusively, to the medullary substance. Now, in suprarenal insufficiency it is above all the cortical substance of the gland that is in a state of physiological bankruptcy so that theoretically it would seem more rational to use suprarenal extract which contains the entire gland.

It is difficult to administer suprarenal extract, which is given in the dry form or powder in cachets in thirty centigram doses three times daily. Now these cachets are difficult to digest and the patients are prone to rid themselves of them by vomiting. Secondly, it is difficult to procure absolutely fresh suprarenal glands and it is well known how quickly these glands change. Therefore in ordinary practice, adrenalin has been generally employed. From the material point of view this product is always identical and can be later used by mouth or given hypodermically. The usual dose of adrenalin hydrochlorate by mouth is from five to ten drops, while the maximum quantity in twenty-four hours is thirty drops, but some writers, Bédère, for example, give larger amounts. Hypodermically, it is given at the dose of one half to one milligram. Adrenalin has given excellent results in infections and intoxications so that it is quite natural that its action in pregnancy should be favorable when antitoxic and angiotonic insufficiency exist, because the product may be regarded as having a specific action on these two functions.

Editorial Notes and Comments

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HEART DIAGNOSIS AFTER THE WAR.

The experience gained in the examination of millions of hearts during the war has emphasized certain features of cardiac diagnosis and has opened up a vista of possibilities of recognizing heart weaknesses. There has been a tendency to judge the condition of the heart by the disturbance of heart sounds, as heard in the stethoscope, due to the presence of pathological conditions. The value of heart auscultation is well known and yet we all know how many fallacies and false suggestions are encountered. All of us have seen patients who tell the story of having had a distinguished heart diagnostician discover some rather serious valvular condition by the heart sounds alone and who have lived for forty years after the discovery. Old Prof. Karl Gerhardt used to ask his pupils when there was question of a heart affection, "Is the apex best displayed?" If he was assured that it was not he used to say, "Then there is nothing in that heart for which you would venture to try to treat it." His meaning was that until the heart itself, in response to the overwork demanded by the pathological condition present, began to hypertrophy in order to do the work, the heart muscle was accomplishing its purpose as well as could be expected and conditions in the body must not be attributed to the cardiac affection no matter what abnormal sounds might be heard. The expression was true for the class of patients seen in office practice, though there are exceptions in terminal pathological conditions. The

principle, however, that the all important element in heart diagnosis must be the recognition of the heart's activity and power is extremely important.

Studies of the heart during the war have emphasized the necessity of noting the heart's reaction to exertion. Whenever the heart is steadied by exertion, as often happens in women who are suffering from subjective heart complaints such as pseudoangina, which has been growing commoner in recent years, it is certain that the heart muscle is in good condition and only craves exercise. Considerable nervous disturbance, distinct irregularity and even some functional murmurs may be present in these patients, and the signs disappear with regular exercise in the open air.

On the other hand when certain symptoms are emphasized after exertion there is always a suspicion of some serious underlying condition of the heart muscle. Circular 21 of the Surgeon General's Office suggested that if rapidity of the pulse persisted for more than two minutes after taking a hundred hops on one foot, the presence of muscular heart trouble should be suspected. This disturbance is, however, so often associated with functional nervous conditions in the heart that it is doubtful whether this can be taken as an absolute diagnostic sign and yet it is undoubtedly a valuable adjuvant in leading to the recognition of the obscure myocarditic conditions. The personal element counts for much in these cases and no decision must be made until the patient has been examined several times and has lost that exaggerated timorousness of the physician.

The most important favorable prospect in the knowledge of the more obscure forms of heart disease concerns the noting of the effect upon blood pressure which follows exercise. Excellent authorities on cardiac conditions have insisted that the pulse rate change after exertion can be depended upon for diagnostic purposes only in a comparatively small number of cases. The effect upon blood pressure may, however, prove to be a more pathognomonic sign. The rise in blood pressure after exercise takes place normally in half a minute. If the heart's reserve power has been exceeded in any way it may be delayed for more than a minute. This may be the first sign of disturbance of the heart muscle and yet may prove to be as valuable a preliminary symptom of impending heart failure as a local prolonged expiration is for incipient tuberculosis.

In spite of all the opportunities for observation during the war this has not been decided as yet,

and much more study will be required. In view of the frequency with which blood pressure observations are made, it would seem as though some definite knowledge might be obtained if only a sufficient number of the younger physicians were interested in the determination of their significance. It is a question of studying the heart's power for work and power to maintain the circulation properly, rather than any cataloguing of valvular deficiencies supposed to be revealed by heart sounds, that is all important for prognosis in these cases, and prognosis is even more important than diagnosis where the heart is concerned.

THE STANDARDIZATION OF DENTAL PRACTICE.

The importance of dentistry, especially as it relates to the study of medicine, is now generally conceded by the medical profession. The conception of that importance, however, is somewhat varied. Some dentists regard the new theories of focal root infections as a definite factor in establishing systemic disorders as merely good slogans for general exploitation. Grave dangers are threatened and the misinformed dentist, pleased with the success of his intellectual showing, immediately proceeds to establish within his patient the very infection from which he has sought to guard him. On the other hand, some physicians shift the responsibility of a careful diagnosis to focal root infections as the cause of the somewhat obscure ailment.

It is true that a realization of existing oral conditions have had a far reaching influence on medical science. As long as our hospitals for joint deformities continue to overflow with a constantly increasing number of patients whose malformations may be traced to the deformities contrived by human endeavor in their buccal cavities, and evidence is being amassed daily that foci of infection in the mouth, however established, may be directly responsible for very serious and even fatal reactions, medical practitioners can not regard this situation lightly.

The greatest share of the responsibility must be looked for to the dentist. On him rests the responsibility, not only of eradicating existing infections in the mouth, but, what is of infinitely greater significance, of preventing the establishment of infection as the result of supposedly constructive intervention. That is the big problem—a problem for which the dentist is not quite prepared. At present there is confusion in the field of dental science; there is no standardization. The dozen or more

leaders of as many factions are too much concerned with their primitive "chief of clan" instincts to devote any energy to a constructive analysis of their own work or the work of others. In fact, if they were at all introspective, they would soon discover that their conclusions had been arrived at through a process of infantile reasoning devoid of any basis of fact. They would soon find that they were trying to change the shape of the foot to fit the shoe, for they have really concerned themselves but little with studying natural conditions as they exist in the human mouth—natural phenomena that should guide the dentist in all his constructive endeavors.

Unfortunately there have been but few real observers of the buccal cavity and its component parts. G. V. Black was one. So keen was his eye that today very little can be added to the appreciation of the anatomical structure of the tooth in its entirety, of its relation to the adjacent tooth, and to that part of the maxilla within which it is situated. So important was his message that today an earnest effort is being made to infuse the results of his investigations with the interpretative quality of the dentist's work. Therein are we beginning to have standardization. And why? Because we have found someone to bring home to us the existence of certain natural phenomena. But Black's work was in the dissection room, upon the cadaver, so to speak. His was not a living tooth—a component part of a living organism. His tooth was stripped of its functions and constant physiological changes that govern every part of the complex human organism.

In *Cast Gold and Porcelain Inlays*, by Dr. Herman E. S. Chayes (St. Louis: Mosby & Co., 1919) we find the influence of another great observer. Believing as he does in working with the laws of growth, tendency and cosmic progression of the creative forces, Doctor Chayes seems quite conscious of his power when, in the introduction, he regards as his vital problem the task of how best to accelerate the work of that force, whereupon he approaches his task with a clear and powerful insight into the consummate functional efficiency of the mastication apparatus. Influenced by Black and Taggart, the author continues to develop the technic of partial tooth restoration with extreme delicacy and minuteness, adhering firmly to his appreciation of the functional activities of teeth, governed by their accompanying physiological changes, and thereby ever on guard to prevent any inhibitions of these functional activities. Here, then, we seem to have the secret that makes for standardization.

CLINICAL ASPECTS OF TUBERCULOMA OF THE DORSAL SEGMENT OF THE CORD.

From the cases recorded of tuberculomata of the dorsal segment of the spinal cord it is now possible to draw a fairly accurate clinical picture. The onset of the affection is characterized by unilateral development of the disturbances. This unilateral development is noted in twenty-eight out of thirty-eight cases collected from the literature by Ackerman (*Thesis*, Paris, 1914), but in the ten other cases the onset of the affection is not given. The characters of these unilateral symptoms are of either a motor or a sensory type. According to Schlesinger the latter are more commonly observed, especially in the form of thermic paresthesias. It is to be noted, however, that this paresthesia may be present in other forms. Oberndorfer's case began with sensory disturbances. The phenomena of paresis of one of the lower limbs must be regarded as fairly common.

According to a correct remark of Schlesinger, the localization of the tubercle in the anterior horn is made evident by disturbances of the motor functions and by paresthetic disturbances when in the posterior horn. In Luce's case both horns were involved and both varieties of disturbance were present. Finally, attention should be called to a rather frequent manner of onset—it occurred in twenty-five per cent. of the cases collected by Ackerman—which is of great diagnostic importance, namely, pain. This is sometimes of the truly piercing variety or it may be fixed, of the nature of intercostal neuralgia, increased by movement or sneezing; in other words, it offers the unmistakable character of radicular pain. It is probable that it is related to lesions of the posterior roots. At the initial phase the paretic phenomena extend over an entire limb. Contracture may appear later in the paralyzed limb.

The tendon reflexes are usually exaggerated; those of the patella and tendoachilles are exaggerated only on the side of the lesion and normal on the opposite side. Babinski's sign is positive on the side of the lesion. In some cases this phase of unilateral exaggeration of the tendon reflexes is absent. The cutaneous reflexes are generally attenuated or absent. The sensory disturbances have been mentioned. The disturbances of the objective sensibility may have been looked upon as absolutely essential and often as characteristic by the majority of writers. If in many cases the abolition of all the sensory impulses has been noted in the lower half of the body it is because the case was first examined at a time when the lesion had become bilateral. In

a certain number of instances the maximum of unilateral sensitive disturbances is distinctly noted. It would appear that the anesthesia before becoming complete, involves certain modes of sensibility, that of the temperature being the most easily disturbed. In other cases the anesthesia is of the syringomyelic type which, when seated in a nonparalyzed leg, resembled Brown-Séquard's syndrome. As to dissociation of the sensibility—the principal symptom of the affection—it was seen by Oberndorfer fifteen times in twenty-five cases and by Ackerman eleven times in thirty-two cases. But it should be observed that these figures cannot serve as a basis for forming a conclusion as to the frequency of dissociation of the sensibility because, in the majority of cases, the onset of the process had escaped the notice of the medical attendant.

THE STIGMA OF DISEASE.

The occurrence of measles, diphtheria, whooping cough, and like diseases is often looked upon as an inconvenience and the fact of their presence in the family is hidden from public knowledge in order that a physician need not be called, and that the movements of the other members of the family may not be limited by the action of the department of health. Such an attitude is disastrous to the stamping out of such diseases and can only be overcome by a more highly socialized medicine and the most enlightened quarantine. Venereal disease, though once boasted of by the nobility, is now unmentioned. It is strange that so common a disease should be so looked upon, but it does not lend much promise of its early suppression. The fear of publicity, as in the diseases mentioned above, interferes with its early treatment and reporting, though we have never been able to see why it should not be as certainly reported as any other communicable disease. Fortunately, the venereal diseases are not transmitted in so miscellaneous a manner as are nose and throat infections.

A sense of family disgrace has long been attached to epilepsy and also to cancer, but doubtless with little harm to those unaffected by these diseases. Many people have a similar feeling toward tuberculosis, and with ill consequences both to the sick and the well. Why tuberculosis should be so looked upon is a mystery. This attitude of mind has prevented many from seeking a diagnosis until the disease is considerably advanced, and in the meanwhile those in contact with the sick may have become infected. It has also interfered with early reporting. Moreover, it has caused not a few self-seeking physicians to be lax in reporting since they were aware that they would

lose patients by so doing. Cases of tuberculosis are soon lost, as a rule, and are seldom profitable. Moreover, the risk to society is too great for us to neglect their careful handling. In many cases the most important step toward a cure is the removal of his state of mind. A visit to a sanatorium is an entering wedge toward removing any sense of disgrace for such a feeling will not long survive in such large company. It is high time that this feeling of disgrace over the presence of preventable disease be transferred from the individual to society, for only when the presence of disease becomes more of a social stigma will there be rapid progress toward its eradication.

Obituary.

BRITTON D. EVANS, M. D.,
of Morris Plains, New Jersey.

After a long period of service as superintendent of the State Hospital for the Insane at Morris Plains, N. J., Dr. Britton D. Evans died on January 14th. He was born in Maryland in 1858 and graduated from the College of Physicians and Surgeons in Baltimore. Early in his professional career he specialized in the study of mental disease. His ability was early recognized through his appointment to the institution which he continued to serve for the remainder of his life. His wise administration and his keen observation and thoughtful study of the problems presenting themselves in the treatment and care of those mentally diseased gave him the position of leader among his profession.

His articles concerning these subjects were published in various medical journals. He had been at work recently upon a report which has been published in Trenton since his death. This concerned the duty of America toward the number of mental cases which are to be cared for among returned soldiers. Doctor Evans was of the opinion that many mentally unfit had been admitted to the army and had believed that there would be an increase of those needing care after the war so that increased facilities should be provided.

Doctor Evans came prominently before public attention at the time of the Thaw trial when he served as expert witness for the defense, maintaining with his associate expert witnesses that Thaw had been temporarily the victim of a paranoia, but that his condition at the time of the trial was such as to permit his release. This decision was not upheld by a subsequent committee of alienists.

Doctor Evans was a man of wide sympathies and of genial disposition, which endeared him to the members of his profession and aided in the recognition which his professional ability won for him with his colleagues in his specialty. He was a member of a number of medical societies and formerly president of the Morris County Medical Association.

News Items.

American Proctological Society.—This association will hold its annual meeting April 22d and 23d in Memphis, Tenn., under the presidency of Dr. Collier F. Martin, of Philadelphia.

British Medical Association.—The eighty-eighth annual meeting of the British Medical Association will be held June 29th to July 3d at Cambridge, under the presidency of Sir Clifford Allbutt.

Physicians Honored.—Dr. Joel E. Goldthwait and Dr. Frederic A. Washburn, both of Boston, were made companions of the Order of St. Michael and St. George by the Prince of Wales during his visit to this country.

Appointment of Doctor Jablons.—Dr. Abraham Jablons, formerly lieutenant, Medical Corps, U. S. Army, having been released from duty at the Navy Yard, New York, has been appointed medical inspector for the Bureau of Child Hygiene, New York City Health Department.

Bequest to Brooklyn Hospital.—The Brooklyn Hospital is one of the two chief beneficiaries under the will of the late Samuel Haslett, of Brooklyn, which bequeaths an estate of more than \$1,000,000. The residuary estate goes to the Brooklyn Hospital and the Church Charitable Foundation of the Episcopal Church.

Bill for Medical Appropriation.—A bill providing for the expenditure of \$85,000,000 in the next four years for hospital and other facilities for discharged soldiers and sailors, marines and nurses, has been introduced in Congress by Senator France, of Maryland. The medical aid contemplated would be under the direction of the U. S. Public Health Service.

Influenza Epidemic in Poland.—A particularly virulent epidemic of influenza is reported to be sweeping across Poland. The disease is marked by sudden attack and a high percentage of fatalities, death in many instances occurring within twenty-four hours. Women and young people appear to be especially susceptible. Hundreds of persons are said to be dying daily in Warsaw, and three fourths of the hospital attendants have been stricken.

Medical Society of the County of New York.—A stated meeting of this society will be held Monday evening, January 26th, in Hosack Hall, New York Academy of Medicine. Dr. Charles Howard Chetwood will present the inaugural address of the president, and Dr. Sigmund Pollitzer will read a paper on Prognosis of Syphilis as Affected by Treatment, which will be discussed by Dr. John A. Fordyce, Dr. Howard Fox and Dr. Isadore Rosen.

Physicians' Motor Club of Philadelphia.—The Physicians' Motor Club of Philadelphia recently held its annual business meeting, at which the following officers were elected for 1920: President, D. S. Leon Gans; first vice-president, Dr. John J. Robrecht; second vice-president, Dr. Charles R. Haig; third vice-president, Dr. J. T. Rugh; secretary, Dr. Howard A. Sutton; treasurer, Dr. Lewis H. Adler, Jr.; directors, Dr. S. E. Tracy and Dr. E. S. Saylor.

Influenza in Switzerland.—Influenza and sleeping sickness are reported in press dispatches from several localities in Switzerland. Numerous deaths from influenza are said to have resulted in the Vorarlberg region.

Graduate Medical School at Western Reserve.—A postgraduate school is to be established in the medical department of Western Reserve University, Cleveland, O., courses in which will be begun next June. There will be short intensive courses without degrees and also a longer course leading to the degree of A. M. in medicine.

Foreign Medical Students Here.—Four physicians from Czechoslovakia are studying methods of public health administration in American medical schools under fellowships of the Rockefeller Foundation. There are also eight Chinese physicians, eight Chinese undergraduate medical students, four Chinese nurses, eleven medical missionaries on furlough from China, four Brazilian physicians, and one physician from San Salvador.

Low Death Rate for 1919 in New York.—Records of the New York city department of health for 1919 show the lowest death rate since the establishment of accurate vital statistics fifty years ago. The death rate for the year was 12.39 in 1,000 of population, as compared with a rate of 16.71 in 1918 and 13.94 for the five year period, 1913 to 1917 inclusive. The number of deaths in 1919 was 74,433. Increases are shown in the mortality from cancer and influenza.

Health Survey in Cleveland.—A health and hospital survey of Cleveland is being conducted under the direction of Dr. Haven Emerson, of New York. Existing hospital and health facilities, public and private, will be studied and a special study of morbidity, accident, mortality rates, remedial care and industrial hazards will be made. Assisting in the survey are Dr. Donald B. Armstrong, of Framingham, Mass., tuberculosis; Dr. Thomas W. Salmon, of New York, mental diseases; Miss Josephine Goldmark, of New York, nursing service; Dr. Gertrude E. Sturges, assistant director, and Dr. Wade Wright, of Boston, industrial survey.

Influenza in America.—Press dispatches tell of a rapidly increasing number of cases of influenza. In Chicago 1,789 cases of influenza and 307 of pneumonia were reported to the health department within forty-eight hours. Fifty deaths from pneumonia and sixteen from influenza were reported. Chicago is said to need at least 10,000 nurses to handle the situation adequately. Health department officers of Gary, Ind., estimate that there are 500 cases of influenza there.

New York seems to be suffering little. Figures given out by the health department early in the week showed there were less than 500 cases in the city, though the number of cases was increasing. Thirty-five cases of influenza were found among passengers arriving December 17th on the Spanish liner *Prince de Satrustegi*. The vessel was held in quarantine and passengers were not permitted to land until they were found to be free of the disease.

Influenza in Army Camps.—Influenza has become epidemic in several army camps, particularly in the Middle West, and it has also spread among the American troops in Germany, according to an announcement by Surgeon General Ireland. The disease is said to be of a mild type and the death rate is proportionately far below that of the wartime epidemic. The incidence of pneumonia is also said to be much lower. The U. S. Public Health Service is cooperating with State authorities in combating the malady.

Anesthesia Research Society.—Announcement is made of the launching of the National Anesthesia Research Society, for the purpose of collecting data and prosecuting original research in this field of medicine. The research committee, which will have supervision of original work and the editing of material designed for the profession and professional press, is headed by Dr. F. H. McMechan of Avon Lake, Ohio, editor of the quarterly supplement of the *American Year Book of Anesthesia and Analgesia*. W. I. Jones, D. D. S., president of the Interstate Anesthetists' Association, will have an active part in the committee's work. Representative anesthetists who have distinguished themselves by research and progress in their field, are being invited to join the committee. The society has been endowed with limited funds which will permit it to demonstrate that there is a field of usefulness for it.

Child Hygiene Demonstration.—A health survey and demonstration by which it is hoped to establish standards for child hygiene work in the school and home has been undertaken by the U. S. Public Health Service in Missouri, at the request of the State Board of Health and of several volunteer agencies. The Missouri legislature at its last session created a department of child hygiene, and the public health service was asked to come and make a demonstration of how this department could best function.

Dr. C. P. Knight, of the public health service, is in charge of the work, assisted by Dr. Lydia A. DeVilbiss. A comprehensive field investigation and demonstration in child hygiene will be conducted along modern scientific lines. In addition it is planned to organize a division of child hygiene within the State Board of Health and to assist and encourage local child hygiene activities. Field agents of the public health service will make a house to house canvass in the localities selected, and a physician and public health nurse will visit each home where there are children of preschool age. Recommendations will be made to the parent and the teacher; where necessary, glasses will be fitted, teeth will be looked after, and mentally backward children will be classified so that proper corrective measures may be taken. Infant health stations will be established and prenatal supervision will be provided wherever it is possible or desirable. With the cooperation of the State Tuberculosis Association, a modern health crusade will be conducted in the schools, and school children will be inspected. Each community will be asked to make the work permanent and also to provide for a full time health officer.

Meetings of Local Medical Societies.—The following medical societies will meet in New York during the coming week:

Tuesday, *January 27th.*—New York Academy of Medicine (Section in Obstetrics and Gynecology); New York Dermatological Society; New York Medical Union; Metropolitan Medical Society of New York; New York Otological Society; New York Psychoanalytical Society; Therapeutic Club; Valentine Mott Society; Washington Heights Medical Society; Clinical Society of the Hospital and Dispensary for Deformities and Joint Diseases.

Wednesday, *January 28th.*—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Society of Internal Medicine; New York Surgical Society; Brooklyn Pediatric Society.

Friday, *January 30th.*—Hospital Graduates' Club, Brooklyn.

Mental Hygiene Convention.—The third convention of mental hygiene societies of the United States and Canada will be held in New York February 4th and 5th, under the auspices of the National Committee for Mental Hygiene and the Committee on Mental Hygiene of the State Charities Aid Association. Mental hygiene lessons of the war will constitute one of the chief subjects to be considered.

Surgeon General Merritte W. Ireland will preside at a meeting at the Waldorf-Astoria at which this topic will be discussed. The examinations which were used to determine in advance whether or not American soldiers could bear the strain of war will be dealt with by Dr. Pearce Bailey, formerly chief of the division of neurology and psychiatry in the office of the surgeon general. Dr. Thomas W. Salmon, medical director of the National Committee for Mental Hygiene, who was in charge of the care of mental and nervous cases in the A. E. F., will describe methods for applying to civil life the procedure employed in dealing with mental and nervous diseases in the American army in France. The effect of the war on research in neuropsychiatry will be discussed.

Other subjects discussed will be the mental hygiene of childhood, the mental hygiene of industry, and mental factors in physical disease. Among the speakers will be Dr. E. E. Southard, director of the Massachusetts Psychiatric Institute, Boston; Dr. E. Stanley Abbot, medical director of the Pennsylvania Mental Hygiene Committee, Philadelphia; Dr. William A. White, head of the Government Hospital for the Insane, Washington, D. C.; Dr. C. Macfie Campbell and Dr. John B. Watson, of Johns Hopkins University, Baltimore. In addition to Major General Ireland, the presiding officers will be Dr. Walter B. James, president of the National Committee for Mental Hygiene, and others prominently identified with child welfare work. At the last convention, held in New Orleans in 1916, seventeen State societies were represented. Since that time new organizations have been formed in Maine, Kansas, Iowa, Virginia, Alabama and Mississippi, and a national committee for Canada has also been organized.

Resolution on Health Insurance.—A resolution declaring compulsory health insurance to be "both undesirable and pernicious" and condemning its establishment was passed by the Medical Association of the Greater City of New York at a regular meeting held January 19th in the Academy of Medicine, under the presidency of Dr. Edward E. Cornwall. The text of the resolution and its preamble follow:

There is now going on in this State a movement to secure legislative enactments establishing compulsory health insurance of the wage earning class. Such legislation appears undesirable and pernicious for many reasons and especially for the following:

Compulsory health insurance is contrary to the fundamental principles of Americanism and encouraging class consciousness and being essentially socialistic and destructive of that individualism which is necessary for best national development. If the medical profession, whose members are naturally highly individualistic, can be socialized, there is no limit to the extent to which socialism may be carried in this country. The adoption of compulsory health insurance would be equivalent to the acceptance of socialism as a universal dogma.

Compulsory health insurance would substitute for the medical care and treatment now received by the wage earning class, medical care and treatment of an inferior character, thereby doing a positive injury to that class. It would also injure the wage earning class by practically depriving them of the benefit of the personal relation between patient and physician, the great value of which is universally recognized, both in regard to its effect on the character of medical treatment which the patient receives and on the patient's peace of mind.

Compulsory health insurance compels citizens to invest their savings in a certain way, and it fixes the remuneration of a class of special workers (physicians, dentists, and nurses) without their consent. It would practically deprive the wage earning class of the free choice of their medical attendant. It would impose on the wage earning class the annoyance of extensive inquisition into their private affairs by government officers and agents, and would impose a heavy financial burden on the community.

Compulsory health insurance would damage the medical profession both morally and materially. It would change the character of the occupation of those who participated in it from that of a learned and noble profession, which to a considerable extent is its own reward for hardships and poor financial returns, to a poorly paid, poorly esteemed trade characterized by drudgery and routinism and an appendage to a political machine, and it would, as a preliminary measure, confiscate what is of the nature of property, viz., the medical practices of the physicians, to acquire which they have in many cases worked for years, and from which they derive their incomes.

Compulsory health insurance would lower the general standard of medical practice and the personal standard of the medical profession; would be a potent factor in checking the advance of medical science; by making the profession less attractive, would drive many now practicing it into other occupations and would discourage many from taking it up; it would invite malingering and idleness.

Compulsory health insurance has proved a comparative failure in Germany and Austria, where it has been in existence for a generation, and where the character of the people and of the institutions make the field more favorable for it than the character of the American people and institutions. It has also proved far from satisfactory in England. In view of the facts herewith mentioned, be it

Resolved, That the Medical Association of the Greater City of New York is thoroughly convinced that compulsory health insurance as we now understand it is both undesirable and pernicious, and that legislation to establish it should be and hereby is condemned absolutely without reservation.

Committee: George L. Brodhead, M. D.; Nathan B. Van Etten, M. D.; Robert E. Coughlin, M. D., *Chairman*.

Practical Therapeutics and Preventative Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,
of Philadelphia.

(Continued from page 119.)

Fibrositis is sometimes mistaken for a true rheumatic disturbance. According to L. J. Llewellyn, 1917, the majority of the soldiers invalidated for "rheumatism" had been suffering from the muscular form of fibrositis. Indeed, the term fibrositis is by many taken to include the common condition known as muscular rheumatism, which may be conceived of, from the pathological standpoint, as an inflammation more particularly of the fibrous investment and attachments of the muscles rather than of the muscular tissue itself. Since fibrositis may be acute as well as chronic, and is associated with pain, confusion with the conditions more properly referred to as acute rheumatic disturbances may readily occur.

Just as in true acute rheumatism the operation of such factors as exposure to cold and moisture, and tonsillitis and pharyngitis, commonly precedes the onset of acute fibrositis. Other factors that have been emphasized include the absorption of irritating, toxic material from the alimentary tract, local injuries and strains, and fibricula or grippe. Luff, 1910, refers to pads upon the finger joints, usually confined to the dorsal aspects of the proximal interphalangeal articulations, and seemingly unrelated to arthritis deformans or gout, as one of the forms of fibrositis, under which also are placed inflammation of the plantar fascia and Dupuytren's contracture. Acute fibrositis, once experienced, tends to recur and eventually results in the formation of indurations or definite nodules in and about muscles. According to Llewellyn, the medical profession in general does not sufficiently realize the importance of searching for fibrous overgrowths of this nature, localizing them, and prescribing appropriate treatment. Where nodules remain undetected, the muscles concerned continue stiff and painful, and after a time wasting through disuse follows.

That fibrositis in the lower extremities may be mistaken, not only for rheumatism but likewise for varicose veins, gout, or a disturbance due to flat foot, has been emphasized by Lorenzen, 1916. In the cases he describes, fibrous infiltration could be felt in certain portions of the foot, in particular along the flexor brevis digitorum or the extensor tendons of the great toe. Sometimes the entire ankle, foot, and lower part of the leg were swollen, and occasionally the enlargement due to the fibrositis extended up as far as the knee joint. Frequently the veins were in a varicose condition and the tissues in the vicinity sensitive to pressure, though actually the tenderness could be located in the underlying muscle. The tenderness and pain

resulting from the process of fibrositis in these cases were sometimes such as to hinder use of the limb. Occasionally the pains extended upward beyond the knee, and even tonic contractions of the muscle tissues were observed. Pain was increased by muscular activity, and among young subjects disturbed function was commonly in evidence, the foot showing either general weakness or an improper posture of the member. Nearly always there was a tendency to hammertoe, and in not a few instances flat foot accompanied the painful condition. Induration of tissue, due to the fibrositis, could be palpated both in the area of most pronounced tenderness and elsewhere in the leg, or even in the opposite limb. Fibrositis was found more frequently in the shoulders, neck, arms, and lumbar regions than in the lower extremities.

In the treatment of fibrositis, massage figures as one of the most important measures. The necessity, from the standpoint of treatment, of proper differentiation between this condition and true acute rheumatic disturbances of the joints is thus obvious. Lorenzen refers to the futility of applying treatment for rheumatism, varices, gout, or flatfoot in the condition of fibrositis in the lower extremities described by him. Even heat and warmth, or a special attitude of the foot, had usually failed to procure relief in these cases. On the other hand local palpation and exercise of the tendons and muscles involved were regularly followed by prompt recovery. Llewellyn emphasizes the necessity, where a fibrositis patient is placed in the hands of a masseur, of the physician himself locating the nodule of fibrous tissue inflammation, demonstrating its existence to the masseur, and making it clear to the latter that the end to be attained in the massage is dissipation of the nodule, to obviate permanent stiffness, pain, and wasting of the involved muscle. According to J. Madison Taylor, who considers the outstanding pathological feature of fibromyositis to be plastic adhesion of contiguous structures, causing pressure on sensory nerve fibres, the chief aim in treatment is to free these adhesions by certain manipulations, such as deep pressure with lateral traction, torsion, etc., and lifting and actually separating the adherent structures. In acute fibrositis, Luff recommends an initial saline aperient, acetylsalicylic acid to relieve marked pain, and potassium iodide in full doses, combined with nux vomica or compound syrup of hypophosphites. In addition, hot fomentations are applied and later a mixture of equal parts of chloral hydrate, camphor, and menthol. Local rest and diaphoresis are important early measures, to be followed by massage, at first gentle. In a localized fibrositis counterirritation, and in the later stages of a muscular fibrositis a weak, rapidly interrupted faradic current are recommended. Luff makes special note of the fact that in these fibrositis cases salicylates are of little curative value.

(To be continued)

Nerve Compression by First Dorsal Rib.—Stopford and Telford (*British Journal of Surgery*, October, 1919) cite ten cases which they encountered in less than two years. Eight belonged to the idiopathic group while two were of traumatic origin. The manifestations are all due to compression of the lower trunk of the brachial plexus, but the clinical picture may vary considerably according as to whether the motor, sensory or trophic disturbances predominate. In the former the atrophy and loss of power in the intrinsic muscles of the hand are likely to be mistaken for progressive muscular atrophy. The typical pain induced by carrying anything or wearing heavy clothing suspended from the shoulder is usually present from an early date in all patients and is one of the most helpful points in suggesting the correct cause of the trouble. Inattention to the details of the pain frequently leads to such unfortunate errors in diagnosis as neuritis, rheumatism or even tenosynovitis. It is most important to make a full investigation in the case of any patient complaining of persistent pain along the inner border of the forearm, particularly if it is increased by conditions which are likely to stretch the plexus over the thoracic inlet.

The nonoperative treatment consists in the development of the trapezius, particularly the upper fibres, to such a point that it can support the pectoral girdle and so prevent the lower trunk of the plexus being compressed by the rib. The success of this treatment will depend on a careful selection of cases. Those of traumatic origin may be expected to respond and improve rapidly, since there is no underlying muscle weakness responsible for the disability and there is no reason to suppose that before the injury the nerve trunk and rib were in an extra close relationship. In the nontraumatic group only a portion can be expected to benefit by any attempt at muscle development, since it appears likely that muscle weakness has been frequently responsible for the onset of the symptoms. In this group it is only logical to attempt development of the trapezius in early cases, when the general physical condition suggests some possibility of success, and of course it is essential that the patient be treated for any systemic condition which may have given rise to the loss of muscle tone. If definite improvement is not manifested after a course of three or four weeks' treatment, it seems unwise to persevere further without considering very seriously the advisability of surgical interference, since continuation of the compression and irritation by the rib is likely to lead to intramural changes, which may prevent the occurrence of complete recovery even after the excision of the rib at a later date. The best method of developing a muscle appears to consist of faradic stimulation, suitable exercises and massage.

In following the surgical treatment, the patient having been placed in the position advised for ligation of the subclavian artery, an incision some two and a half inches long is made parallel to and just above the clavicle. The incision begins at the hinder border of the sternomastoid insertion. Better access can be gained by adding a short incision in an upward direction parallel to the hinder border of

the muscle, since by this method a skin flap can be turned upwards and outwards. This plan should be followed in all cases where a short, stout neck is likely to cause difficulty in dissecting to the requisite depth. The skin having been retracted, the termination of the external jugular vein is caught and divided between the forceps. Removal of the fatty tissue beneath the vein at once brings to view the posterior belly of the omohyoid, which is retracted upwards and outwards. The hinder border of the sternomastoid is then cleared and retracted; the edge of the scalenus anticus is readily found by dissecting deeply to the posterior border of the sternomastoid. The outer edge of the scalenus anticus is followed down to its insertion in the first rib, and immediately behind this point lies the artery, easily identified by its pulsation. Behind the vessel there is found the lower trunk of the plexus, and posterior to this the glistening tendinous insertion of the scalenus medius. At this stage a careful examination is made of the relations of the artery and lower trunk to the rib, and the size and position of the contribution ascending from the second dorsal nerve are noted. The next step is the removal of a portion of the rib sufficiently large to free the lower trunk from any risk of pressure. The insertion of the scalenus anticus is partially divided, so that a considerable area of the rib is exposed in front of the artery. The artery and the lower trunk are then lightly drawn inwards with a buttonhook retractor and the insertion of the scalenus medius is freely divided. The rib is next carefully separated from its attachment. This is done with the aid of a blunt dissector, and for the separation of the under surface of the rib an aneurysm needle will be found useful. The rib, after it has been cleaned, is divided in front of the artery and again at a point well behind the trunk, the intervening portion is then easily withdrawn.

Preoperative Treatment of Hyperthyroidism.

—W. D. Haines (*Ohio State Medical Journal*, January, 1920) considers it best to keep the patient in a dark room, excluding visitors and administering alkalis and carbohydrates. General tonics and heart tonics in the form of digitalis and strophanthus, with chloral and bromides to induce rest and sleep, are of great value. The diet should be well selected and nutritious and castor oil should be administered daily. Morphine should be used as a last resort and, if used at all, the solution of the bimeconate, in doses of from one to four c. c. should be given. Tincture of belladonna, four to six c. c., three times daily for a week, will cut down the excessive bronchial secretion. The removal of focal infections, such as tonsils, teeth, sinuses, gall-bladder, appendix and tubes is advisable. Little result can be expected from the x ray and direct exposure to the sun's rays. The injection of boiling water into the substance of the gland has helped. Removal of the superior and middle sympathetic ganglia has been practically discarded as an operative procedure. The ligation of two or more arteries supplying the thyroid is constantly followed by immediate and marked abatement of symptoms and a small percentage of permanent cures.

Surgical Treatment of Exophthalmic Goitre.—

George W. Crider (*Surgery, Gynecology and Obstetrics*, January, 1920) presents conclusions as to the surgical treatment of exophthalmic goitre based on personal experience in 2,250 thyroidectomies of which 1,169 were for exophthalmic goitre. Of these 660 were ligated. No case was rejected for operation unless it was in a state of dissolution. In the last series of 331 thyroidectomies 116, or thirty-five per cent., were first ligated and no case rejected. Among 116 ligations there was only one death. The series of 1,169 thyroidectomies for exophthalmic goitre began with operations under ether alone, and with no special precautions. The mortality rate in these early cases was sixteen per cent. After the adoption of anociassociation with the anesthetization of the patient in his room the mortality rate fell to between two and five per cent. Finally the rate fell to 0.6 per cent. By the adoption of nitrous oxide oxygen, the use of local anesthesia, the multiple stage operation, the exclusion of the psychic factor, and the application of the principle of carrying the operation to the patient, it seemed that every precaution had been taken, yet an occasional case was lost as a result of postoperative hyperthyroidism; the cause of death being excessive chemical activity.

With each degree of rise in temperature, the chemical activity within the organism is increased ten per cent. and decreased ten per cent. with each degree of fall. So it was found that by packing the patients with ice the destroying metabolism was controlled. The patient was covered with a rubber blanket, surrounded and covered with broken ice, and an electric fan was used to promote evaporation. In grave risks the principle of graded operation was further extended by leaving the wound open and dressing it with 1:500 flavine, which held the wound *in statu quo* for one, two or three days, as required, when further operation on the thyroid or closure of the wound was done in the patient's room.

Ligation was always done in the patient's room, under nitrous oxide analgesia and local anesthesia. In certain serious cases lobectomy was done in the patient's room. The following are the principal factors in the system of management:

1. The differential diagnosis was aided by the Goetsch test and metabolism determinations.

2. The operative procedures were graded according to the severity of the disease.

3. The inhalation anesthetic was nitrous oxide oxygen, administered to the patient in bed; the operation being performed either with the patient in bed or after his transportation, under anesthesia, to the operating room.

4. In moderate cases the entire operation may be completed in one seance.

5. In more severe cases the thyroid activity was diminished by a preliminary ligation with the patient in bed under nitrous oxide oxygen and local anesthesia.

6. In extremely grave cases the thyroid activity may be diminished by ligation of one vessel; ligation of the second vessel; partial lobectomy; com-

plete lobectomy; allowing intervals of a month or more between stages.

7. If during the operation the pulse runs beyond the safety point, the operation is halted, the wound is dressed with flavine, and the operation completed at a later day.

8. In certain cases lobectomy is performed while the patient is in bed and under nitrous oxide analgesia and local anesthesia.

9. Psychic control of the patient is required to diminish the intense drive. The preoperative and postoperative management are of almost equal importance to that of the operation itself.

10. If, after the operation, the temperature becomes excessively high, with greatly increased pulse and respiration, the patient is promptly packed in ice.

11. To avoid the effects of a too sudden withdrawal of thyroid secretion, thyroid extract is given the night before lobectomy. This seems to supply the deficiency, and the action of the injected drug appears to tide the patient over the crucial period occasioned by the temporary change, compensation by other glands soon taking place.

Treatment of Influenza.—F. H. Wetmore (*Canadian Medical Association Journal*, December, 1919) gives the following treatment for influenza which he has found satisfactory: The things that count in the general management of a case are absolute rest in bed from the beginning of the attack, fresh air, and good nursing. The bad cases are those in which the patients persist in being around, or who are compelled to look after other members of the family after they are themselves affected. Prophylactic and therapeutic inoculation may be unable to prevent the development of a dangerous pneumonia. In such cases the windows should be kept open from the first, and if there is any suspicion of lung complications, order the patient's bed brought as near to the open window as possible and see that the order is carried out before you leave the house. When possible, put the bed in a corner of the room between two windows, kept wide open, top and bottom, day and night. Of course see that the patient is provided with plenty of bed clothing, with artificial heat inside the bed. As in ordinary pneumonia and tuberculosis, fresh air is life saving in influenza.

Good nursing is very important. Put a nurse in charge early so as to conserve the resisting power of the patient and also to prevent other members of the family from becoming over-fatigued. When called to a case, isolate the patient, arrange masks and hand washing for the attendants, and see that the sputum is properly taken care of. This last can be done by having bits of rags or paper, with a paper bag pinned to the bed as a receptacle and later burned. See that a bedpan is available.

In regard to diet, give liquids entirely at first. A mixture of milk and lime water is good, one part lime water to two parts milk, of which the patient may take from six to eight ounces every two hours; or milk and raw eggs may be taken, an egg to a pint of milk, half the quantity

every two hours. If the case is serious, see that the patient has sufficient nourishment during the night as well as during the day.

In the medicinal treatment, first clear out the digestive tract with a saline cathartic, preceded by fractional doses of calomel in case of vomiting, and repeat the saline each day unless contraindicated. Acidosis being usually present, alkaline treatment, I think, does as much good as any other, without doing harm. Some give both bicarbonate of soda and citrate of potash, giving from seven to ten grains of each drug separately and alternately each hour. A third form of alkali is the lime water and milk. The treatment generally agrees well with the digestive system and the bicarbonate of soda has a tendency to lessen the pains gradually. When alkalis are administered, a somewhat smaller dose of the therapeutic vaccine is required. In view of the oncoming toxemia and tendency to vasomotor paralysis, the coal tar products should be avoided as much as possible. Acetosalicylic acid is usually given for the pains. For the cough, moderate doses of heroine (one and a half grain) are given. Insomnia also may be treated by heroine, or a stronger opiate. Some autopsies having shown disorganization of the adrenals, one would be inclined to recommend adrenalin chloride solution in cases showing vasomotor paralysis and lowered blood pressure; and in two or three cases I have found it helpful in tiding the patient over a weak spell. To combat the circulatory failure accompanying pneumonia, tincture of digitalis in five to fifteen drop doses every four, six or eight hours has been used a good deal, with or without alcoholic stimulants in half ounce doses. In influenza, as in other diseases, a dangerous toxemic condition would appear to be an indication for free alcoholic stimulation.

Prevention and Treatment of Influenza and Influenzal Pneumonia.—George A. Hogan (*New Orleans Medical and Surgical Journal*, January, 1920) described a treatment which he designated the "closed" method of treating pneumonia. He has used this method in treating pneumonia for several years, and in the vaccine treatment of different diseases for ten or twelve years. He has found that his results in the use of vaccine, in the negro race, were so much better than those in the white that it caused him to think out the difference in the natural way that these different races applied their individual mode of treatment. The negro would probably be in a tight room, out of draughts, with a good deal of cover, a profusion of poultices, and partake of an assortment of hot teas and drinks of various kinds, and would get well with half the attention usually given to the white patients. In the white patient, on the other hand, the "open" method of treating pneumonia would be carried out. Very little clothing on patient, covering enough to make patient comfortable, windows open, cold applications, sponging and cold drinks for fever, and even with double the attention, the time of recovery would be twice as long, and the mortality greater. These facts he discovered a few years ago in treating frank pneumonia, lobar and bronchial.

Vaccines in Influenza.—W. H. Watkins (*Boston Medical and Surgical Journal*, December 25, 1919) has collated a number of opinions on the subject and finds a practical unanimity in favor of the idea that active immunization by the use of vaccines may be obtained. This is not scientific proof, but is a matter of distinct value. Another interesting note is found in the comment on reactions. These, while infrequent, were almost always mistaken for the beginning of influenza, being characterized by sudden chill, fever, headache and prostration, persisting for a few hours and subsiding gradually.

Treatment of Influenza Pneumonia by Use of Convalescent Human Serum.—William R. Redden (*Boston Medical and Surgical Journal*, December 11, 1919) says that after the treatment of over 250 cases of influenza pneumonia by the use of pooled serum from convalescent patients, there remains no doubt in his mind that when a proper diagnosis is made and the treatment is correctly carried out, both in hospital and in private practice, the course of the disease is decidedly shortened, the death rate is at least cut in two in cases chosen for their severity, and reduced about three fourths in any large series in hospital practice where the cases are seen early.

Enlarged Thymus Gland in Infancy and Its Treatment by Radium.—Howard W. Brayton (*Boston Medical and Surgical Journal*, December 25, 1919) says that judged solely from the end results there is little choice between radium and x rays. By both methods a cure is effected, if the child survives the effects of thymic pressure until the radiotherapy has had an opportunity to reduce the gland. He thus summarizes the advantages of radium: The action of radium is more rapid; with radium one treatment alone suffices to effect a cure, even in the severest forms of the disease; radium is portable thus obviating the difficulty of transporting the patient to a röntgen laboratory; the application of radium is simple, thus eliminating the dangerous element of fear from the mind of the patient, and at the same time rendering unnecessary the use of an elaborate x ray equipment and a highly skilled operator.

Treatment of Enlarged Thymus.—Ernest R. Brooks (*Ohio State Medical Journal*, January, 1920) reviews the various forms of treatment. Thymopexy gave very poor results. Intubation does no good as the point of compression is below the reach of the tube. Thyrectomy gives great relief in a number of cases, but is associated with a mortality of about eleven per cent. The operation is a severe one and advised only in severe cases. The x ray has proved very beneficial, at times improvement resulting in from eighteen to forty-eight hours. The treatments are given at intervals of about a week for three to six treatments, the child being kept under observation and brought in later for subsequent exposures if necessary. In cases of asthma in which no enlargement of the gland can be demonstrated, the therapeutic test of x ray treatment should be given and a most gratifying result will very often be obtained. Organotherapy has been tried with poor results.

Treatment of Tetanus.—Charles G. Beall (*Journal of the Indiana State Medical Association*, December 15, 1919) reports six cases of tetanus treated with tetanus antitoxin. Three patients died, and three recovered. He says that the intravenous injection had best be given just before the spinal puncture so that the blood stream, heavily charged with antitoxin, will furnish a cerebro-spinal fluid rich in antitoxin. The intravenous injection should always be preceded by a hypodermic injection of morphine and atropine as a preventive of anaphylaxis. A hypodermic syringe with fifteen minims of a one in 1,000 solution of adrenalin should always be at hand for immediate use in case symptoms of anaphylaxis develop. It is seldom necessary to use more than a local anesthetic to make the spinal puncture. Because of the opisthotonos and the consequent approximation of the vertebral spines it is best to make the puncture not in the midline, but one half to one centimetre from the midline. The entire technic must be carried out with strict attention to asepsis.

Picric Acid a Preoperative Disinfectant.—O. C. Cassegrain (*New Orleans Medical and Surgical Journal*, January, 1920) advocates the use of picric acid instead of tincture of iodine for this purpose, as first used by Doctor Gibson, but modifies the technic slightly. Instead of washing the skin over the area of the proposed operation with soap and water and then painting it with a five per cent. solution of picric acid, he first wipes the skin with alcohol and then paints on the five per cent. solution of picric acid. He does this simply for the purpose of saving time. He advocates the use of picric acid as a preoperative disinfectant, 1, because it thoroughly disinfects and can be used with soap and water, while iodine does not sterilize after the use of soap and water; his explanation of the latter being that the epithelial cells absorb water, and as iodine is insoluble in water none is absorbed and therefore there is no sterilization; 2, because it does not irritate the skin, and, 3, because it is approximately forty per cent. cheaper than iodine.

Picric Brass Preparations in the Treatment of Lupus.—H. A. Ellis (*Lancet*, November 8, 1919) enlarges upon a previous paper concerning the treatment of lupus. The original method gave dramatic initial results but the improvement slowed down as the deeper portions of the tissue became protected by healthy surroundings. A solution capable of continuing the improvement was produced as follows: About two per cent. of picric acid is added to sulphanic acid and the temperature raised to 100° C. A subsequent addition of one per cent. carbolic acid is made. This solution increases the effect of the picric brass preparations. The use of either the sulphanic or the plain brass preparations tends to light up other foci and to produce gradual constitutional deterioration but when the two are used in combination, untoward results are avoided. First a few applications of "bro" are made at intervals of two days according to directions in the original paper. Then anesthetize with cocaine and adrenalin applications and apply the sulphanic picric preparation with a glass rod to about two inches

of growing edge or, if insensitive, to two square inches. There may be considerable pain if the surface is broken. After five to ten minutes, if quick action is desired, brass paste understrapping is applied. If slower action is required, apply picric brass and leave exposed. In bad cases, "bro" fomentos or painting with "bro" gives better results. The applications are repeated twice or thrice weekly, with occasional rests for observation.

In cases of deep sinuses of the neck, caution must be used because of absorption by the lymphatics and extensive solution of tuberculous tissue. Such cases are more safely treated with "bro" at first, and later cautiously treated with the sulphanic picric solution. For lupus of the mucous membranes of the mouth, nose and even of the eyelid, the sulphanic picric solution is safe and satisfactory.

The Treatment of Gastric Ulcer.—H. Laveson (*Indianapolis Medical Journal*, December, 1919) gives the following method which he considers the best for gastric ulcer: The patient is kept in bed for three weeks. Nothing is allowed by mouth for three days, fluid being furnished by the Murphy drip method. One half quart (1,500 c.c.) is given in twenty-four hours, thirty drops a minute. This relieves the distressing thirst so often present in this disease. The addition of forty-five grains of strontium bromide to the drip helps to keep the patient quiet and comfortable. Feeding is begun on the fourth day, consisting of two ounces of fully peptonized milk every hour or two from 7 a. m. to 7 p. m. Half way between the feedings a powder, consisting of ten grains of bismuth and twenty grains of bicarbonate of sodium, is used. If the bowels are not constipated, and if pain and acidity have been permanent symptoms we may rely on the following prescription:

Extracti hyoseyami.	} aa.....gr. ss
Argenti nitrat.	
Misce et fiat pilula, No. 1.	
Mitte No. xxiv.	

Signa.: One pill three times a day.

Each day the milk is increased one ounce until four ounces are taken every hour, or eight ounces every two hours, depending on the need of the individual patient, i. e., some do best on hourly feedings, some on nourishment every two hours. After eight days of feeding a tablespoonful of well cooked farina is allowed, at first twice a day with the milk feedings which are kept up continuously. On the tenth day farina and cream of wheat are allowed with three of the milk feedings. On the twelfth day the cereal is increased to two tablespoonfuls, and a small sprinkling of powdered sugar is allowed. On the fifteenth day four soft feedings are allowed, evenly spaced throughout the day, milk toast being used once. On the seventeenth day a soft boiled egg is allowed or custard. In the fourth week the patient is allowed to be up, but can do no real work for a period of seven or eight weeks. His diet consists of two soft boiled eggs, cream soups, vegetable purees and soft foods, such as jellies, custards and creams, may be added. Farina, cream of wheat and rice cooked to a pulp are best. The bismuth is continued for six to eight weeks and for a year or more only soft unirritating foods should be taken.

Miscellany from Home and Foreign Journals

Flat Foot and Other Static Foot Troubles.—

Frederic J. Cotton (*Boston Medical and Surgical Journal*, January 1, 1920) asserts that most foot troubles are physiological, static in origin. In a large share bad shoes are responsible; in many, bad habits in the use of the feet are responsible. In certain cases proper shoes and carefully supervised exercises, properly carried out, will bring about a cure in a very large proportion, probably a majority, and certainly in a majority of the younger patients, those below twenty-five years of age. These are the cases in which plates are too often used, for plates are still used too much; they can help, but never cure. Flat foot cases, as we meet them, call for either physiological cure, palliation by straps, plates, etc., and then systematic exercise, or else they do ill under the routine and call for more or less permanent support, or rather rarely, for radical correction by manipulation or by open operation. Anterior arch troubles are readily relieved, as a rule, but very often are not curable. Hallux valgus and hallux rigidus may be relieved effectively, but can be cured only by surgery.

Osteitis Fibrosa.—E. G. Slesinger (*Lancet*, November 15, 1919) indicates that this disease is commoner than was once supposed and, on account of differences in prognosis and treatment, should be carefully differentiated from other diseases of bone in which there is cyst formation, e. g., extreme degeneration of myelomata, blood cysts, callous cysts, and von Recklinghausen's multiple fibrocystic disease. There are two main views of its etiology, 1, that it represents a metaplastic transformation of the bone marrow into a fibroid tissue, and 2, that it is the result of chronic inflammation of unknown origin occurring in the endosteum. Trauma may be an important factor. Certainly pathological fracture is often the first symptom recognized. The sex incidence is equal. The most common age is twelve years, with a majority of the patients under twenty.

The bones most frequently affected are the femur, humerus, and tibia. The solid form of the disease is most often found in the femur; probably because on account of the weight bearing function of this bone, early deformity occurs here and is promptly recognized. The lesions appear in the juxtaepiphyseal regions. Where there are cysts, these may be small and multiple, or large and single. Usually a definite cyst wall shows the microscopical characteristics of osteitis fibrosa. The fluid may be considerable, but not under high tension. It is clear or light brown, never hemorrhagic. The surrounding bone is thinned up to the epiphyseal line, without new deposits. Where there are no cysts, the bone cavity is filled with fairly firm fibrous tissue, often edematous. The marrow is partially replaced by fibrous tissue, evidently from the endosteum. There is active and irregular bone formation and absorption, with giant cells near by. Islands of cartilage near the epiphyseal cartilage are rare. Cyst fluid cultures are sterile.

The first symptoms may be those of a pathological fracture, or the patient may complain of a dull ache at night. There may be a tender enlargement of the bone, extending down the shaft. In the femur coxa vara deformity is early, without the rigidity and pain of tuberculosis. X rays show expansion and thinning of bone, and the appearance of a clear space in the bone, crossed by trabeculae. The clear area is likely to be prolonged down the shaft in a pointed extension, whereas the lower limit of a myeloma is rounded. The treatment is thorough curettage of the diseased area, filling the resulting cavity with decalcified bone, Mosetig or other paste, correcting any deformity at the same time. One case of recurrence after this treatment has been reported. Two deaths and one amputation as a result of hemorrhage are noted.

Recently Acquired Experimental Facts Bearing on Prophylaxis Against Tuberculosis.—A.

Calmette (*Bulletin de l'Académie de médecine*, November 11, 1919) estimates that, whereas before the war the social value of a single adult between twenty and forty years of age was equivalent to thirty thousand francs, at present this value may be estimated as at least fifty thousand francs. Since tuberculosis claims at least 100,000 victims yearly in France, a total sum of five billions of francs is lost annually through insufficient application of the known principles of prophylaxis. Two hundred million francs expended annually along correct lines would in a few decades result in disappearance of tuberculosis and constitute a most satisfactory investment. Stress is laid on the fact that tubercle bacillus infection is, in the vast majority of tuberculizable subjects—human and bovine principally—not incompatible with the appearances of satisfactory health. Massive infections in young or adult subjects previously entirely free of infection alone give rise to general tuberculosis involvement or localized disease of the lymphatics. Milder infections, occult or latent for years, bring about increased resistance to fresh infections; but where such fresh infections do set in, they awaken a special form of intolerance of the tubercle bacillus known as Koch's phenomenon, resulting in abscesses and cavities. The essential factors in propagation are the disseminators of virulent germs; these include not only the expectorating consumptives and those with open lesions, but also the subjects with occult or latent tuberculosis, who, while apparently in good health, eliminate their germs intermittently with their glandular and alvine excretions. The tuberculin test shows that at the age of fifteen years, hardly five per cent. of the total population remains completely uninfected. A fact sometimes lost sight of, however, is that poverty, alcoholism, inadequate nutrition, and unhealthy living quarters cannot bring on the disease when the tubercle bacillus is absent; the germ is by no means ubiquitous, but exists only where it has been deposited by infected human or bovine organisms. In tuberculosis prophylaxis, efforts should be concentrated toward preventing this

deposition of germs by those infected. All persons or cattle giving a positive tuberculin test should be considered suspects. Not only should consumption of milk from positive animals be avoided, but likewise contamination of food from dirty hands, towels, and vegetables, and fruit soiled with excreta from tuberculous animals, as well as from flies, pasture soil, and street dust. Sputum from diseased subjects remains the most dangerous factor in propagation, owing to the frequent and massive doses of tubercle germs excreted. Prophylactic watchfulness on the part of the physician; dispensaries, and proper hygienic instruction of those in contact with patients or having charge of cattle, are necessary features in tuberculosis prevention.

Medical Education.—Sir George Makins (*British Medical Journal*, November 8, 1919) discusses 1, changes possible in dealing with preliminary and intermediate subjects of the medical school curriculum and 2, whether the present methods of teaching general subjects are adapted to the production of both the ordinary practitioner and the scientist and teacher. He finds that increase in the scientific material in medicine has crowded the medical student, worried him with many details, and caused a neglect of broad general principles and of his preparation for actual practice. The instruction is scattered and the subjects are not correlated. He suggests the following regrouping and simplification of courses:

Elementary biology as a separate course to be excluded from the curriculum, and the congeries of subjects dealt with in the existing syllabus relegated to their respective positions at the commencement of the courses of anatomy, physiology, and pathology; the first year of study to be devoted to anatomy, chemistry, and physics; the second year to be devoted mainly to physiology, together with classes in anatomy so arranged that the subjects dealt with run concurrently with those to which they relate in the course of physiology; the third year to be devoted to the study of pathology and pharmacology, including such elements of the course of materia medica as may be retained; with elementary instruction in clinical methods during the summer session; the fourth and fifth years to be devoted to professional subjects as at present.

In regard to examinations he makes the following suggestions:

An examination in anatomy and physiology at the end of the second year; no examination in chemistry and physics to be held by the licensing bodies, but the whole responsibility for sufficient instruction in these subjects to be thrown upon the respective teachers in the schools, who would satisfy themselves by means of class examinations; an examination in pathology and pharmacology at the end of the third year; a final examination in professional subjects to be held, as at present, after the termination of the fifth year.

The subjects are to be further correlated by having frequent meetings of teachers and demonstrators in related departments and by having demonstrators teach in more than one department at one time. The clinical years are at present well suited to the needs of the general practitioner. It is neces-

sary to bear in mind the need of teaching simple diagnosis, exact observation, and the relative unimportance of laboratory findings except as corroborative evidence. The five years do not sufficiently prepare men who wish to become primarily scientists and teachers. For them and for graduate practitioners who wish to refresh and augment their store of knowledge or to study specialties, a secondary medical school should be established. It should possess a large and well appointed hospital and sufficiently equipped and extensive laboratories. Probably full time professors would be necessary in the laboratories, but for the clinical work, accomplished general practitioners might properly be induced to give part time and officers in various medical schools in London might be secured to serve for limited periods of five years or so as professors in the secondary school.

Cholera Prophylactic Vaccination: An Experiment in a Village during an Epidemic.—Ashtosh Roy (*Indian Medical Gazette*, November, 1919) reports a remarkable decrease in the number of both cases and deaths following the introduction of prophylactic vaccination in a village in which ordinary sanitary measures could not be carried out effectively. The test was the severest possible because of the insanitary condition not only of individual houses, but of the entire village, the poverty of the villagers, the poor health of the latter and their undue exposure to the moisture and dampness of the soil and the rigors of the weather, as they were working all day in the fields, ankle deep in mud with rain pouring over them, and the fact that the epidemic was at its height. Dr. T. C. McCombie Young also gives figures to show the great reduction in cholera by prophylactic vaccination.

Specificity of the Agglutinins Produced by Pfeiffer's Bacillus.—A. Fleming and F. J. Clementer (*Lancet*, November 15, 1919) report work on the question as to whether Pfeiffer's bacillus is the primary infective agent in epidemic influenza or whether it is a secondary invader along with pneumococcus and streptococcus. Against the first proposition are these points: 1, Influenza has not been produced by spraying the throat and nose with pure cultures of the bacillus. 2, The bacillus is present in respiratory affections other than influenza. 3, Agglutination reactions, carried on by the authors, using the serum of eight rabbits immunized against as many strains of Pfeiffer's bacillus, show that in most cases the agglutinins formed are quite specific to the particular strain injected, or nearly so. Dr. William H. Park, of New York, using various strains from several cases of influenza in one small community, all of them infected from a common source, found the same results. This difference in the immunity reactions suggests that the primary infective agent is of a different nature, and merely awakens the activity of organisms which may have been leading a saprophytic existence in the respiratory tract. The only argument in favor of the bacillus as the primary cause is its presence in ninety per cent. of the cases. It is also pointed out that the experiment shows the desirability of using a large number of strains in preparing Pfeiffer bacillus vaccine.

Syphilis of the Stomach.—R. Bensaude and L. Rivet (*Presse médicale*, October 25, 1919) emphasize the frequency of this condition. Its clinical manifestations are variable and there are no pathognomonic signs. To recognize it, it must be borne constantly in mind and a systematic inquiry made for a specific history or for active specific disturbances, such as skin or visceral lesions, syphilitic sarcocele, tabes, or general paralysis. In the absence of such features, the Wassermann reaction should be taken. Chemical and x ray studies may furnish some probable indications. Hayem advises careful consideration of the various symptoms and signs favoring ulcer, cancer, ulcer and cancer, perigastritis, etc. If these symptoms and signs are not in harmony and suggest none of the diagnoses just mentioned, syphilis should be thought of. Multiple lesions of the digestive tract, e. g., of both the stomach and esophagus, and an unusual x ray appearance favor syphilis. The probable diagnosis should always be supplemented by the therapeutic test, which should give prompt results in spite of previous failure of dieting and the usual gastric remedies. In the treatment, all observers have been struck by the fact that iodides and mercury are usually well borne in these cases, while in other disorders they would do manifest harm. Both local and general improvement is almost immediate, organic signs disappearing, and the body weight showing a progressive increase. If recurrence takes place, the results from treatment are the same as before. Stenosing forms of syphilitic lesion, however, are often more resistant to specific treatment, and recurrence frequently occurs, necessitating other specific measures and even operation. The aim should be to recognize these cases before serious complications have set in or contractile fibrous tissue formed which is refractory to specific treatment.

Effects of Pyretics and Antipyretics on Catalase Production.—W. E. Burge (*Journal of Pharmacology and Experimental Therapeutics*, October, 1919) concludes from experiments on dogs that adrenalin, caffeine, tetrahydrobetanaphthylamine, and sodium chloride stimulate the alimentary glands, particularly the liver, to an increased output of catalase or oxidizing ferment, and offers this in explanation of the increased oxidation produced by these substances, and hence of the accompanying fever in so far as increased heat production is a factor in it. Chloroform decreases catalase both by decreasing its output from the liver and by directly destroying it. Ether decreases catalase principally by direct destruction of it without disturbing the liver function as much as does chloroform. Acetanilid, quinine, and phenacetin produce a slight decrease in catalase by decreasing its output from the liver. Chloroform and ether lower temperature, in so far as decreased oxidation is involved in this, by decreasing catalase, the enzyme principally responsible for oxidation in the body. The fact that acetanilid, quinine, and phenacetin have little or no effect in decreasing catalase suggests that their mode of action in lowering temperature is not a decrease in oxidation.

Chronic Pancreatitis.—J. H. Nicoll (*British Medical Journal*, November 15, 1919) considers that chronic pancreatitis should be thought of in obscure abdominal conditions on a par with cholecystitis, appendicitis, and gastric or duodenal ulcer. He records seven cases which he had diagnosed as gastric or duodenal ulcer, or cholecystitis, and in none of which the expected lesion was found. Sections of pancreas removed at the operation proved that each of these patients had a definite inflammation of the pancreas. He points out the necessity of exploring the pancreas in the course of all laparotomies undertaken for the diagnosis of any of the three conditions with which it may be associated or confused, on account of differences in prognosis and treatment resulting from positive findings. He says that chronic pancreatitis is curable by drainage of the organ by way of the biliary apparatus, or less frequently through the duct of Wirsung, and by proper dietetic and medicinal treatment, whereas cholecystectomy or unwarranted appendectomy or gastroenterostomy delays the cure. Less reliable means of diagnosing chronic pancreatitis than microscopic section are: glycosuria; large, light colored, greasy stools or pale, fatty diarrhea; excess of fat and fatty acids in the stools (shown microscopically); jaundice; Schmidt's test for undigested tissue nuclei in the stools; Wohlgemuth's test for starch splitting ferments in the stools; and palpation of the pancreas. Fat necrosis, which is pathognomonic of pancreatic disease, was rarely present.

Prophylactic Action of Quinine in Malaria.—A. Pitina (*Annali di Clinica Medica*, October, 1919) goes deeply into the use of quinine as a prophylactic against malaria. He reviews the many methods employed and warns against the administration of small doses, irregularly given, recommending instead that the dose should be in direct relation to the endemic index of the malarial district. Small doses are not advised against merely because of their inadequacy but also because of the possibility that they may gradually produce a strain of malarial protozoa which are resistant to quinine. Single doses of .4 gram given daily are the usual requirement in districts of sparse malarial incidence, but larger doses are required in localities of malarial intensity. As a prophylactic, quinine may be given conveniently by mouth with hypodermic administration reserved for special cases. Again, in protection against malaria, a distinction must be made between healthy individuals and those with a latent infection, or so-called "carriers." The idea so long prevalent that the soluble salts of quinine were to be preferred on account of their rapid absorption, has been disproved, and it has been shown that the insoluble salts and compounds are equally efficacious. Further, the insoluble or slowly soluble preparations are free from the gastric irritation of the soluble ones, inasmuch as their slow breaking up and absorption prevent such irritation. Lastly, the bases or alkaloids of quinine have been found to be of great value both in the prevention and cure of malaria.

Proceedings of National and Local Societies

SOUTHERN MEDICAL ASSOCIATION.

Thirtieth Annual Meeting, Held at Asheville, N. C., November 10, 11, 12, and 13, 1919.

The President, Dr. LEWELLYN F. BARKER, of Baltimore, was the Chair.

(Continued from page 132)

Nonhypertrophic Forms of Prostatic Obstruction.—Dr. BRANSFORD LEWIS and Dr. NEIL S. MOORE, of St. Louis, Mo., felt that from a study of their cases the following conclusions could be deduced: 1. Nonhypertrophic obstruction at the bladder neck is a definite pathological condition, appearing at any age, but most common in later life. 2. Its diagnosis is practically easy, providing a systematic examination is made. 3. Of the different points in the examination, probably cystoscopy is the most important. 4. The treatment used is simple. The patient does not have to go to the expense or spare the time for an open operation. The risk is comparatively small, and the results in appropriate cases have been very satisfactory.

Treatment of the Acute Abdomen.—Dr. J. P. RUNYAN, of Little Rock, Ark., stated that after a careful study of his results and of the answers to a questionnaire sent to a number of prominent surgeons in different parts of the United States, he had formulated the following conclusions: 1. It is a safe and sane procedure to operate early in the attack of acute suppurative peritonitis. 2. After the stage of contamination comes the stage of diffuse peritonitis in which the Ochsner treatment offers the largest proportion of recoveries. 3. The exceptions are perforation of duodenal ulcer and gunshot wounds of the hollow viscera. 4. Do not be in a hurry to operate once the Ochsner treatment has been begun. 5. Following the Ochsner treatment operation should be done and Crile's principles applied in the aftertreatment in all cases of septic peritonitis. 6. Where there are large areas of denuded peritoneum, from which may be expected a considerable flow of pus and serum, gauze drainage after the manner of Mikulicz or Price will give the most satisfactory results. 7. In cases in which no peritoneal denudation has occurred rubber tube drains will suffice.

Malignant Moles.—Dr. H. H. HAZEN, of Washington, D. C., stated that prevention was better than cure. Every acquired mole should be removed, preferably by cautery. Every congenital mole which may be subject to irritation should also be removed by the same method. Whenever a mole began to grow or to show signs of either irritation or ulceration it was an imperative sign for immediate extensive operative interference, preferably with the cautery, though this would often be too late. When numerous metastases had appeared treatment was useless. In the cases where involvement was only in the lymph nodes extensive block dissection might occasionally effect a cure. He knew of two such cases which had been well nearly six years following intensive röntgen ray therapy.

Pulmonary Syphilis.—Dr. J. H. GIBBES, of Columbia, S. C., reiterated the following ideas: 1. A chronic pulmonary disease, physically indistinguishable from the common types of chronic pneumonitis, and producing a symptomatic picture similar to that of pulmonary tuberculosis, was not infrequently associated with a positive Wassermann reaction, and the favorable change in general and local conditions following antisyphilitic treatment was so striking as to lead one to the opinion that the syphilitic process was, at least, in part, responsible for the pulmonary pathology. 2. A Wassermann reaction should be a routine in the investigation of all chronic pulmonary diseases.

Ileocolitis.—Dr. N. C. WOMACK, of Jackson, Miss., stated, first, that ileocolitis was mainly due to a gas producing bacterium and, in his opinion this bacterium was an attenuated or malignant form of the colon bacillus. Second, that there was always an attending pyelitis in which the colon bacillus was found in great numbers and that this pyelitis might antedate and certainly was the immediate complication of ileocolitis, and assumed the major rôle from the viewpoint of the cause of death. Third, in the treatment of ileocolitis attention should be paid first to the kidney. Fourth, forced feeding of a selected carbohydrate diet with plenty of water should be given. Fifth, all forms of rectal irrigations or alimentation should be interdicted on the ground that they were distinctly harmful.

The Use of Radium in Gynecology.—Dr. WILLIAM C. GEWIN, of Birmingham, drew the following conclusions: 1. Radium is the treatment of choice in a, cases of menorrhagia of the menopause not associated with large fibroid tumors, and in which the possibility of carcinoma has been definitely eliminated; b, cases of menorrhagia in patients between the ages of thirty-five and forty years of age who have small sized mucous fibroid tumors with no demonstrable evidence of malignant conditions existing; c, cases of myomata in which there is a contraindication to operation; d, cases of menorrhagia in young persons who have resisted all medical treatment. 2. In all cases with a malignant tendency. 3. In all operable cases after a complete surgical extirpation of all cancer possible as a prophylactic, and also to destroy such cancer cells as are not possible to be removed by the surgeon. 4. In all inoperable cancers of the uterus radium will relieve pain, eradicate the offensive odor from the discharge and stop the hemorrhage, and in many cases produce an anatomical and symptomatic cure when the patient seems to be moribund. 5. Radium will render operable many cases that are inoperable. 6. The use of radium is practically the only means of relief in cases of recurrent carcinoma of the uterus. 7. In the use of radium it is very essential that one have a thorough knowledge of the technic of its application and of its physical properties as modern scientific research has given to the profession.

The Value of Radium in the Treatment of Bladder Tumors.—Dr. J. T. GERAGHTY, of Baltimore, stated that while benign and malignant papilloma and early papillary carcinoma disappeared under the influence of radium the infiltrating types had proved very resistant to this agent. It was his procedure, therefore, when the infiltrating character of the growth had been determined and when the tumor was sufficiently localized to permit of complete removal, to carry out a radical resection. Following the removal of an infiltrating papillary carcinoma, cystoscopy should be done at an early date as the not infrequent recurrences yield promptly in many instances to radium, notwithstanding the resistance of the primary tumor. It was of interest to note that the use of radium had not diminished the tendency of bladder tumors to recur, recurrences being observed in about thirty per cent. of the cases treated. The recurrence, however, responded to radiation in most instances, although in three cases it did not yield. Radium had certainly proved to be a valuable aid in the treatment of bladder tumors and while the results obtained in the infiltrating types were far from satisfactory, improved technic whereby more intensive radiation might be safely accomplished might offer a more encouraging outlook in the future handling of these cases.

Acute Infections of Childhood.—Dr. R. M. POLLITZER, of Charleston, S. C., stated that notwithstanding some recent excellent work the causative factor of measles had not been found; until it was found we should have to postpone the solution of many of its problems. Clinically, however, the diagnosis was easily made before the rash appeared. This early diagnosis was most important for the safety of others. Our great field here would seem to lie in teaching the people, first, that measles was most contagious before the eruption, and second, that it was a very serious disease, especially in early childhood. The most important point in the management of the case was close attention to ears, mouth, and lungs.

It had been well said that whooping cough was a disease, the mortality from which entitled it to more serious consideration than it usually received from physicians and parents. In 1918 alone, 224 children died from it. Because the disease at its onset was only a cough, and throughout its course usually did not necessitate the patient being in bed, it was spread easily. It was the common practice to advise keeping the child in the open as much as possible, but it was uncommon to caution against going near others. We must sharply differentiate between the use of a vaccine as a means of prevention or as a cure. It was true that, at times, where it was begun as a prophylactic we realized after the first or second dose that the disease already was present. Nevertheless it might be used in children who were well before exposure or before the onset as an immunizing agent. The reports as to its efficacy varied. In a few cases he had employed the vaccine in children who were well and had never had the disease; subsequently they were unintentionally exposed to infection and did not contract the disease.

Notwithstanding the finding of a diphtheroid bacillus in the throat of scarlet fever patients by Mallory in 1916, as yet sufficient evidence was lacking. Unlike many other of the acute infections, aside from the clinical phenomena, our knowledge of this disease was very incomplete. We were not even sure that it had been transmitted to monkeys. There was not a single drug that had the least effect in modifying its course. It had a greater variability in its virulence than most diseases except influenza and infantile paralysis. We knew that it was not nearly so contagious as measles and whooping cough, notwithstanding the popular belief to the contrary.

Unlike scarlet fever there was unfortunately nothing alarming in the onset of diphtheria. The average individual judged of the severity of any disease by the amount of fever or pain present. The fact that diphtheria frequently gave rise to less constitutional disturbance at least for several days than the ordinary tonsillitis was undoubtedly responsible for many deaths. When asked what medical science had accomplished for humanity we could point with pride to what had been done in diphtheria. Our knowledge here was more complete than in any other disease. Beginning with the discovery of the organism in 1883, the introduction of the serum in 1893, and finally the Schick intracutaneous test for immunity in 1915, we had made great strides in the conquest of this once dreaded disease, which even as late as 1889 was written of by J. Lewis Smith as "one of the most fatal and unfortunately one of the common maladies of childhood." There were fewer unsolved problems in diphtheria than with most of the other infections. By the use of the Schick test we had learned the percentages of immune people at different ages. Further, we knew the individuals who had sufficient natural antitoxin to prevent the acquiring of the disease under ordinary conditions.

Facts and Fallacies Relating to Maternal Feeding of Infants.—Dr. J. D. LOVE, of Jacksonville, Fla., said that in the field of medical practice probably more frequently than elsewhere were serious errors made in connection with, 1, premature withdrawal of the infant from the mother's breast, 2, conclusions from laboratory examination of breast milk and, 3, dieting of the mother to overcome defects in her milk supply. Concerning the mother's dietary, the only general rule he knew, susceptible as it was to some modification, was that it should consist of food generous in quantity, easily digested, and, above all, a food to which she was accustomed. We might regard it as axiomatic that a food that caused indigestion in the mother would cause trouble for her nursing baby. And, on the other hand, if a mother could digest easily even the most indigestible food, her baby would rarely suffer in consequence.

Summary: The gross appearance of breast milk furnished an unreliable index as to its suitability for the baby. Before pronouncing the milk too rich in quality, the presence or absence of colostrum bodies should have been determined by microscopic examination. The mere fact that the milk was scant in quantity furnished no valid ex-

cuse for the withdrawal of the infant from the breast, but rather called for supplemental feedings. Conclusions drawn from chemical examinations of breast milk, as usually practised, were likely to be misleading. Laboratory findings should be confirmatory of clinical observation. In influencing the quality of breast milk the maternal dietary, while of some importance, was a smaller factor than causes which operated through the medium of the mother's nervous system.

Otitis Media.—Dr. LAWRENCE T. ROYSTER, of Norfolk, Va., said that otitis media might occur with fever and without pain, or with pain and without fever. The former was more frequent in infancy and early childhood, while the latter was more likely to occur in later childhood; though temperature was also frequent here, notable exceptions to this general rule were common. It could not be emphasized too strongly, that it was an error to suppose that because a child had not an earache, there was no middle ear inflammation.

In Norfolk the first outbreak of influenza affected comparatively few children, while during the second, which occurred after a lull in morbidity, a comparatively larger number of children were affected. In both outbreaks the incidence of otitis was large. The phase of otitis media which he wished to emphasize on this occasion was the variety and manifestation of inflammation of the middle ear, the tympanum and the mastoid cells, which routine examination of the ears of all children coming to our attention presented.

The treatment of otitis media, uncomplicated by mastoid involvement, was comparatively simple, though the results were by no means always gratifying. He could see no rational reason for treating an otitis media by applications to the drum through the external auditory canal. Such applications might relieve pain temporarily, but he failed to see how they could do permanent good, since in the majority of instances there was pus in the middle ear. Some otologists asserted that occasionally inflammation subsided under this procedure; it was known that inflammation in many cases subsided without any treatment, and Doctor Royster was quite sure he had seen more cases treated in this way which eventually required an incision than cases which had subsided under this treatment.

He might appear somewhat radical in his ideas as to treatment but he believed that most pediatricists agreed that uniformly red drums, even without bulging, should be incised. In so many instances he found pus on incision in cases in which there was redness, even without bulging that he felt it was better to be on the safe side. When the cases were seen early, and when we had an opportunity to watch the patients closely, we might temporize. There could be no doubt of course, that many inflamed membranes resolved without rupturing. We had all seen ear drums with marginal redness, or little fanlike or wedged shaped areas of inflammation, spreading toward the centre, followed by general redness, which resolved in a short time. On the other hand, we had also examined drums with marginal redness only, which ruptured and discharged pus before an examination on the next

day. In cases of slightly red membranes it had been his custom to use nose drops of menthol, camphor and white oil, with the idea that such a mixture contracted the swollen mucous membrane at the inner opening of the eustachian tube, and thereby promoted drainage of the middle ear.

When cases of middle ear inflammation were accompanied by tenderness over the mastoid cells it was generally agreed that the drum should be cut under the supposition that drainage of the mastoid cells through the middle ear was promoted. Conversely then, why should not early incision be made, thereby promoting drainage and relieving pressure, thus preventing extension to these cells.

Spinal Muscular Atrophy Probably of Werdnig-Hoffman Type.—Dr. J. H. MASON KNOX, Jr., and Dr. GROVER F. POWERS, of Baltimore, Md., that in 1900 Oppenheim described a disease considered by him to be a new clinical entity of which the outstanding features were a marked muscular weakness probably congenital, symmetrical in distribution, affecting particularly the lower, and to less extent the upper extremities and back. There was no actual atrophy or disturbance of sensation, the tendon reflexes were abolished and electrical contractility was much diminished. He called the condition myatonia congenita. But little was known of the etiology. In most of the cases the unusual condition of muscular flaccidity was noted shortly after birth and in a considerable number the absence of quickening was remarked by the mother. The cases examined anatomically were comparatively few. The absence of rigor mortis was noted a number of times. Macroscopically the affected muscles appeared delicate, pale and flabby. Microscopically the muscle tissue showed striking alterations. The individual fibres were for the most part reduced in size but presented marked irregularities, certain fibres being of normal size and a small number hypertrophic. The changes in the muscles seemed to affect particularly the sarcolemma while the nuclei of the sarcolemma were probably unaltered in number. Most of the observers described an increase in the fat and connective tissue between the muscle fibres. In short, the changes in the muscle were similar if not identical with those found in muscular dystrophies.

The most striking symptom was the loss of muscular power affecting particularly the muscles of the legs, arms and back. Complete paralysis apparently was not present. Slight contractions could be elicited in the affected muscles but they could not overcome even moderate resistance. The centrifugal character of the muscular involvement is striking, there being almost complete inhibition of the muscles of the thighs and shoulders, but slight general movements of the feet and hands were possible. The face was rarely involved, but sphincters practically never and the muscles of deglutition were also spared. The deep reflexes were always diminished and usually could not be obtained at all. Sensation was apparently not interfered with. They were inclined to believe that the symptoms in these three cases, namely, general symmetrical muscular weakness noted at birth with loss of reflexes and diminution in response to elec-

trical stimulation, could be explained most satisfactorily on the assumption of a primary spinal atrophy and secondary muscular involvement, although the possibility of a reverse process could not be excluded. The third patient, who was still living, had apparently improved somewhat, which might be accounted for by the development of certain intact and innervated muscle fibres remaining. It would seem from a consideration of the growing literature that many transitional cases did occur between the group of cases described as myatonias congenita (Oppenheim) and those of infantile spinal muscular atrophy (Werdnig-Hoffman); that both these conditions might be due to a congenital defect in the development of the lower motor neuron tract, affecting certain ganglion cells of the cord and the muscles they supplied.

Surgical Intervention of Acute Intracranial Injuries.—Dr. YOUNG C. LOTT, of Atlanta, Ga., stated that intracranial injuries should have free catharsis, preferably magnesium sulphate, ice caps to the head, and above all, absolute rest. Chloral and bromides might be used per rectum for sedatives, but not morphine, which affected respiratory conditions. Atropine, one fifteenth of a grain, hypodermically, might be used for beginning edema of the lungs and medulla. The avoidance of excessive stimulation, the application of heat, and the use of coffee per rectum were excellent to revive the patient. Remember that absolute rest is most essential, even more so than any other known medicinal therapy. During convalescence, which should extend over months instead of weeks, there should be absolutely no mental strain, physical exertion, or stimulation of any kind. It was difficult for patients as well as physicians to understand this.

Treatment of Enterocolitis in Infancy.—Dr. W. W. HARPER, of Selma, Ala., said that the indications for treatment were: 1. Prompt cleansing of the intestinal canal by catharsis and enema. 2. Withdrawal of all food for twenty-four to forty-eight hours. 3. Sowing intestinal canal with virile strains of lactic acid bacilli. 4. An abundance of water by mouth, rectum, and hypodermoclysis. 5. Free administration of alkalies and, if acidosis threatened, the use of carbohydrates. 6. Adopting measures to prevent urinary suppression. 7. Early return to the breast or bottle. As an initial purge the writer preferred castor oil. If the first dose was vomited a second dose was given at once, and if this was vomited, a third dose was given. From the three doses sufficient oil would be retained to act. A soda enema (two teaspoonfuls of soda bicarbonate to a quart of warm water) was given every six hours for the first twenty-four to forty-eight hours. These enemas not only cleared the bowels of foul feces but they furnished water and alkalies to the tissues. All food was withdrawn at once and water forced—the minimum amount of water to equal the amount of milk taken in health.

When the infection was confined mainly to the colon as, evidenced by blood, jellylike mucus, and tenesmus, the treatment described above was carried out with some modifications. After the initial purge, paregoric was given to relieve pain and to diminish the frequency of stools. An enema

was given only once a day as frequent enemas irritated the bowel and disturbed the patient. For tenesmus, and to hasten the cure, nothing had served the writer so well as an enema of silver nitrate solution, one half to one per cent. in distilled water. The technic was as follows: The bowels having been flushed with sterile tap water, eight ounces of silver nitrate solution was allowed to run into the colon through a large catheter. While the patient was straining to pass this back, the mucosa of the rectum was painted with silver nitrate, twelve per cent. The whole painted area being neutralized by allowing a strong solution of sodium chloride to flow through the rectal catheter. This gave marked relief.

Aneurysms.—Dr. EDWARD B. ANDERSON, of Chattanooga, Tennessee, stated that the patient's history, his radial aneurysm, the hemorrhage in the liver, the gangrene in his toes and later his leg, caused by general arterial disease, made it almost certain that the hemorrhage in the liver must have been the result of a rupture of a small aneurysm of one of the branches of the hepatic artery. The fact that it occurred in the substance of the liver, and that it was controlled by parenchymatous sutures (two mattress sutures) and a gauze pack, would indicate that only a peripheral branch was involved. This was the rare and exceptional feature of the disease, because, while the literature of hepatic aneurysm was rich in the reports of cases in which the main artery or its branches had been involved, the aneurysms had rarely, if ever, developed in the hepatic substance where the vessel was well supported by the prolongation of Glisson's capsule. Of course, whether the hemorrhage was the result of a rupture (probably miliary) of the aneurysm, or of a simple breakdown of an atheromatous artery, had not been determined. While the hepatic artery, or its branches, had been ligated eleven times, there were only two cases in which this ligation was done for aneurysm of the artery or its branches.

The Treatment of Empyema.—Dr. DUNCAN EVE, of Nashville, Tenn., said that the treatment was purely surgical and usually the sooner it was applied the better, for delay allowed the pleura to undergo changes and caused adhesions to form, thereby interfering with lung expansion. The ordinary surgical methods for the various stages of empyema consisted in aspiration, incision, rib resection and the operations of Schede, Estlander and Fowler. In cases of recent empyema, incision and proper drainage, or, in other words, rib resection and drainage, would often accomplish a cure. In many such operations, however, the results were very unsatisfactory, for the drainage ceased and the lung function was not restored, or a fistula persisted, or amyloid disease might arise. In many respects a chronic closed empyema was drained, as already suggested. If, however, after about a year the lung did not fully expand but remained stationary, the Schede or Estlander operation should be made. Tuffier and Depage had both shown, and hundreds of others had confirmed the observation, that if the cavity was sterile it would remain closed and the lung would expand. This,

then, must be our practice in civil life in the treatment of empyema, and when one remembered the prolonged suppuration in these cases and the difficulty of obliterating the cavities by various plastic operations, one must admit that here again we were indebted to military surgery for a great advance.

The Cautey in Acute Epididymitis.—Dr. J. C. VINSON, of Tampa, Fla., said that the procedure when properly carried out was painless. The treatment was essentially an office procedure. The effect upon the infection was obvious. The immediate and remote effects were as good as, if not better, than the cutting operation.

The Value of Large Single Doses of Digitalis in the Treatment of Heart Disease.—Dr. G. CANBY ROBINSON, of St. Louis, Mo., stated that the administration of the tincture of digitalis in large single doses was advocated as a useful method of treatment in certain cases of heart disease. provided the tincture was standardized, the dose regulated and the patient kept under close observation. This method of administration not only brought the heart rapidly under the influence of the drug, but also afforded a much closer means of studying its effect than the older method of small repeated doses. The use of large single doses was apparently not dangerous under the conditions specified. Problems of dose, especially in relation to body weight, still needed solution. The beneficial effect of digitalis in patients with cardiac irregularity caused by articular fibrillation was especially emphasized by his experience with large single doses in this condition.

Injuries of the Spleen.—Dr. E. B. CLAYBROOK, of Cumberland, Maryland, said that the two most significant symptoms that he had noted were absence of peristalsis and the transmission of the heart and respiratory sounds so that they might be heard all over the abdomen. These, of course, did not especially indicate splenic injury, but did indicate injury to the abdomen, and with a proper history, would often be sufficient to prompt a presumptive diagnosis of splenic injury. In the second case the only sign of internal injury was a slight tenderness in the left flank with transmission of the heart and respiratory sounds, and with these present, in spite of the fact that the man had suffered a crushing of the left leg below the knee, he felt that it was not safe to attribute the shock and the anemic appearance of the patient to the leg injury. An abdominal exploratory incision was first made and it was found that the spleen had been torn from the bottom, up through the hilus, and the abdomen was filled with blood. Had the leg been amputated and the patient put to bed without further examination of the abdomen, he would have died promptly and his death would have been attributed to shock following amputation of a crushed leg. The treatment should be prompt laparotomy and removal of the spleen if much lacerated. These patients had already lost a quantity of blood and if we depended upon packing or suture we were running a risk of recurring hemorrhage that was not justifiable. Furthermore, as a rule, splenectomy could be done more quickly and with less operative trauma than packing or suture.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Précis de biochimie. By Professor E. LAMBLING. Second Edition, Revised and Enlarged. Paris: Masson et Cie, 1919. Pp. xxvi-708.

The proof sheets of the second edition of this excellent hand book on biological chemistry were ready for the press when the war broke out. During the four years which ensued, Professor Lambling rewrote the book so that this second edition is in reality, a new book. The writer has included in its pages all the newer research work and that derived from the war, so that the book is quite up to date. Among the newer subjects treated may be mentioned: The colloidal state, the progressive hydrolysis of nucleic acids, the chemical specificity of organisms and tissues, the formation of gallstones, the composition of the feces, the comparative value of proteins in nutrition and the special nutritive part played by the amino acids. Gout, the production of glycose from proteids, diabetes, fat metabolism and the physiological significance of urinary acidity are especially well written and highly interesting. The book will be appreciated by those desirous of obtaining a complete review of modern biochemistry.

Births, Marriages, and Deaths.

Died.

BYERS.—In Philadelphia, Pa., on Wednesday, January 7th, Dr. Edgar H. Byers, aged fifty-three years.

CARLSON.—In Milwaukee, Wis., on Wednesday, January 7th, Dr. Oscar Wilhelm Carlson, aged seventy-seven years.

CARPENTER.—In Baileyville, Ill., on Wednesday, December 31st, Dr. Edwin A. Carpenter, aged seventy-four years.

CHRISTIAN.—In Philadelphia, Pa., on Wednesday, January 7th, Dr. Hilary M. Christian, aged sixty-one years.

CLARKE.—In Philadelphia, Pa., on Thursday, January 8th, Dr. Thomas Walter Clarke, aged forty-seven years.

COCHRANE.—In Brooklyn, N. Y., on Friday, January 16th, Dr. Frank Lawrence Cochrane, aged forty-five years.

CULBERTSON.—In St. Petersburg, Fla., on Thursday, January 8th, Dr. Emma Valeria Pintard Bicknell Culbertson, of Boston, aged seventy-six years.

FREEMAN.—In Trenton, N. J., on Tuesday, January 13th, Dr. Samuel Freeman, aged forty-three years.

GRANT.—In Louisville, Ky., Dr. William Edward Grant, aged seventy-five years.

HOLMES.—In New York, N. Y., on Friday, January 9th, Dr. Christian Rasmus Holmes, of Cincinnati, aged sixty-two years.

KOCH.—In Petersburg, Pa., on Sunday, January 11th, Dr. John G. Koch, aged seventy-seven years.

LANCE.—In Portsmouth, N. H., on Saturday, January 3d, Dr. Arthur Joseph Lance, aged forty years.

LICEAGA.—In Mexico City, Mexico, on Friday, January 16th, Dr. Eduardo Liceaga.

MARVEL.—In Philadelphia, Pa., on Wednesday, January 7th, Dr. Emery Marvel, of Atlantic City, aged fifty years.

SIMONDS.—In Riverdale, Md., on Saturday, January 3d, Dr. Justin F. Simonds, aged ninety-three years.

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Original Communications

WASSERMANN CONTRADICTIONS CONSIDERED FROM THE CLINICIAN'S POINT OF VIEW.*

By ABR. L. WOLBARST, M. D.,
New York,

Cystoscopist and Chief of Urologic Clinic, Beth Israel Hospital;
Consulting Urologist, Central Islip and Manhattan State Hospitals;
Gonorrheal Surgeon, West Side Dispensary and Hospital.

It must have been the experience of every clinician who has employed the Wassermann reaction, either as an aid in diagnosis or as a therapeutic guide, that the reaction exhibits a most exasperating and embarrassing perversity at times. Often when a positive reaction is expected the serum is reported negative by the serologist, and on the other hand most of us have become quite reconciled to the shock of a strongly positive reaction in a patient who is clinically and historically absolutely devoid of the slightest suspicion of lues. Generally speaking the clinician cannot make this test himself. He is too busy with his patients to devote the necessary time to its proper performance, or he has neither the facilities nor the training requisite for making the test and the interpretation of its results. The Wassermann test is therefore a laboratory procedure, pure and simple, analogous to any one of the many laboratory refinements that have been added to our diagnostic methods within recent years; and because of this fact, it is quite obvious that the clinician is entirely at the mercy of the serologist in this matter.

When the clinician sends a patient's blood to a serologist it is for one of two reasons; either for assistance in making the diagnosis in a doubtful case, or for aid in determining the progress of a patient while under antiluetic treatment. A patient with clean-cut clinical manifestations does not require a Wassermann test, though it is excellent practice to fortify one's clinical diagnosis with the serological findings. It is only when there is some doubt as to the diagnosis that the Wassermann test assumes prime importance. And it is a most unfortunate and dangerous sequel of the popularity of this and other laboratory procedures that we are unconsciously, yet assuredly, neglecting the more difficult clinical aspect of medicine in favor of the easier but less satisfactory laboratory methods. The diagnosis of syphilis is being made everywhere, every day, solely on the strength of a positive find-

ing of a laboratory worker without regard whatever to the absence of clinical or historical evidence on the part of the patient. And now that the treponema has come to our notice, all one has to do is to send a drop of serum to the laboratory and the diagnosis of primary lues is made. The clinical picture has been crowded to the rear while the front of the stage is occupied by Wassermann and the treponema.

I would not be understood, for one moment, as minimizing the importance of the Wassermann reaction and the treponema as evidence in the diagnosis of lues; but it is a regrettable fact that the clinical aspects of lues are being neglected, while the laboratory findings are being looked up to as the final word on the subject. This reliance on laboratory findings has become so strong in the minds of unthinking practitioners, that they sometimes ignore actual clinical manifestations because of negative laboratory findings. Only recently I saw a typical and unmistakable initial lesion treated as a chancroid by cauterization and dusting powders because the practitioner had had three smears made and the laboratory reported "no treponema present."

Undoubtedly there have been numerous instances in which a positive reaction has been the first intimation of the presence of syphilis; and in such cases, the Wassermann reaction has proved to be a veritable godsend. But it must be questioned whether we are justified in accepting a positive Wassermann reaction without clinical corroboration as proof of the presence of syphilis. Not only is this true because of conflicting opinions as to whether the reaction is really specific in character, but because of the still more important reason that one can never be certain that the laboratory findings in any given case are absolutely correct.

Like any other complicated procedure, there is likelihood of error in the Wassermann reaction. In an illuminating article on this subject (1), Stone tabulated forty-three independent sources of error and showed quite conclusively that existing laboratory methods did not assure reliability. He believes, to quote his own words, "that many workers apparently labor under the delusion that if an individual applies for a complement fixation test, that person must have syphilis, and every effort is directed toward obtaining serological proof." And Kaplan, in his excellent work on serology, says that "the desire to detect as many

*Read at a meeting of the Eastern Medical Society, New York, November 14, 1919.

syphilitic sera as possible and thereby, so to say, show an increase in his efficiency, makes the serologist with a moderate experience commit many avoidable errors; such a worker, if he is in possession of facts suggestive of syphilis, is really afraid to report as negative the findings in such a patient, with the result that many innocent persons are made to carry the burden of a supposed infection and besides, are unnecessarily subjected to antilutetic medication."

This brings us face to face with the startling fact that serologists have not yet standardized their work, with the result that they often obtain contradictory results in a given serum. Nor have they been able to agree on what constitutes a standard, and in consequence, our laboratory reports merely reflect their findings based on a particular technic employed by a favorite serologist. I believe a standard technic is an impossibility and never can be fully realized, however closely we may approach it. This is due to the intrinsic nature of the many factors, human and otherwise, that are involved. No less an authority than Noguchi has stated (2) that "the same syphilitic serum will give reactions from complete negative to the strongest positive, according to the kind of antigen used or the mode of making the antigen emulsion," and he adds that "we shall never come to an agreement as long as we use different kinds of antigen which have no common basis for titration."

Now it must be perfectly obvious that the findings of serologists will vary in accordance with the kind of antigen or antigen emulsion which they employ; and since there is no uniformity among serologists in the matter of antigen, it follows that there can be no uniformity in their results. They may argue and discuss this matter and debate among themselves whether this or that technic is the better and more trustworthy, but the clinician has no interest in these debates. To him the Wassermann reaction has become an appeal to a higher court—often the court of last resort; and if the verdict of this court cannot be accepted as authoritative and beyond question, the clinician is perhaps as well off without it, as with it. The point I wish to emphasize is that these differences in technic are not merely academic and of interest only to the serologist; they are fundamental and vital in character, and of the greatest importance to the clinician and his patient. If one serologist using a certain technic declares a certain blood serum strongly positive, and another equally capable serologist using a different technic finds the same serum negative, what shall we say to our patient in a doubtful case?

It can be urged in response to this question, that the safe course to pursue is to select a reliable serologist and place absolute dependence on his findings. But this is merely begging the question and not meeting it bravely as scientists should. It is simply an exhibition of faith, where scientific truth is demanded. Clinicians are not in a position to tell which serologist is reliable and which is not, because serologists differ among themselves as to what is good and what is bad in the Wassermann technic.

It is quite within the truth to say that every serologist has his favorite technic, and that the more capable and reliable he is, the greater is his conviction that his own favorite method is the best one. The mediocre technician is perhaps more likely to follow the original Wassermann technic without modifications or improvements than the more able and capable student and philosopher who has his good and sufficient reasons for making this or that modification. It all depends very much on the man's outlook on life and on his attitude toward the patient whose serum is being tested. One serologist may feel that it is his duty to discover a positive reaction in every serum submitted to him, if it can possibly be done, and he devotes his best efforts to the elaboration of modifications that tend to make the test more highly sensitive. Another serologist views his work from another angle, and believes that "the chief function of the laboratory worker is not so much to detect every syphilitic, but to protect the nonluetic person from a wrong diagnosis and useless treatment" (3). The former would convict an innocent nonluetic rather than let a guilty one escape; the latter, would prefer to have a guilty luetic escape rather than convict an innocent nonluetic. And their reports will necessarily reflect their extremely contradictory views; the first serologist will obtain a larger number of positive reactions, while negative reactions will preponderate with the second.

Now it is not our problem as clinicians to find or offer a remedy for this serious state of affairs. The solution, if there is one, must come from the serologists themselves. They must get together and perfect their technic in such a manner that we practitioners may with safety accept their reports on their face value without doubt or hesitation. The Wassermann reaction is too valuable an acquisition to medicine to be permitted to lose its meritorious standing because of technical variations. True, the problem is a purely technical one, but inasmuch as the clinician and his patients are interested parties, they have a right to interfere and demand that the reaction be standardized as far as such standardization is possible, so that differences in the findings shall be brought down to the irreducible minimum.

Serologists must regulate the technical workings of their laboratories in such a manner that a Wassermann report shall be the same wherever the serum happens to be tested. In other words, we must feel sure that all serologists will give us the same findings on the serum submitted to them. It is an intolerable situation that faces the clinician when he realizes that he cannot accept the serologist's findings without a feeling that some other serologist using a somewhat different technic might find a totally contradictory reaction. Whatever value the Wassermann reaction may have in the diagnosis of lues, we must admit that these discrepancies and contradictions must necessarily cast a grave doubt upon it, until the technic has been so perfected by the serologists that we can with safety accept their reports as absolutely correct. Until such improvements have been made, it is the duty of the physician to check up the work of his

chosen serologist, in such manner as he deems proper, so as to minimize the possibilities of error in the laboratory findings. The method that has been found most useful in my own personal experience has been to have the blood serum tested in three laboratories simultaneously and compare the results.

This subject has been of peculiar interest to me since 1911, when these contradictions first came to my notice. In 1913 I published a report (4) based on the findings of two serologists working in thirty-seven cases. This was probably the first recorded study of this matter of contradictory findings in the American or English literature.

In the German literature a few references were found involving a small number of observations. Freudenberg (5) reported two cases of contradictory results in the same serum. In the discussion which followed the reading of this report, Wossidlo mentioned twenty cases which were studied in seven different serological institutes in Berlin; of these twenty cases, seven agreed and thirteen disagreed. Brief reports on the subject were also found by Saalfeld (6) and Wesener. (7) The latter obtained disagreements in eighteen per cent and absolute contradiction in 9.6% of the cases. Gratz (8) stated that the term *reaktion paradoxa* is more nearly correct than *sera paradoxa*, indicating his belief in the fallibility of the reaction itself rather than in any inherent quality of the serum. Altman (9) thought the temperature had some bearing on the results of the tests.

In a second paper, published in 1915 (10) I reported a series of eighty-five cases worked by three serologists and forty-nine cases worked by two serologists. Since that time, other observers have taken up this matter of contradictions, and all have found the same results, the proportion of contradictions, however, varying in the hands of different observers.

The present paper deals with two hundred and seventy-one cases observed in private practice. Of this number some of the patients were concededly luetic; some were possibly luetic; while still others showed no suspicion of the disease whatever, but had the test made as a precautionary measure for various reasons. In forty cases the tests were worked by two serologists; in two hundred and nineteen cases, by three serologists; and in twelve cases, by four serologists, all working independently. In every instance, the blood was taken simultaneously and sent to the laboratories as quickly as possible, always reaching the serologists within twenty-four hours after being drawn and most of the time within two to six hours. These conditions correspond as closely as possible with the manner in which the Wassermann reaction is employed by the general practitioner. The serologists were the same as those who did the work for the previous studies, and it may be mentioned that they represent the different serological tendencies above referred to. Serologist A works in his own private laboratory and makes no effort to obtain positive reactions; a weakly positive or doubtful reaction is designated negative. Serologist B is in charge of a commercial laboratory in

which many thousands of Wassermann tests are worked each year. Serologist C is in charge of a public laboratory, perhaps the largest in the country, in which every effort is made to obtain a positive reaction, if it can possibly be found.

It may be mentioned in passing, that on thirteen occasions, blood serum sent to this laboratory, was reported "hemolyzed" and unfit for testing by the time it reached the laboratory. This is said to be due to delay in collecting from the collection boxes during the heat of midsummer. Nevertheless it is curious to note that not a single specimen was reported hemolyzed by the two other laboratories, though they were all subjected to the same influences of the hot weather.

It should also be noted that this study does not take account of the clinical data presented by the patient. For the present purposes the patient is of no importance; we are concerned solely with the fact that these serologists on whom we depend for our serological findings, did not always obtain the same results on the serum taken from the same patients at the same time.

Let us briefly consider these data:

Taking up first the series of twelve cases which were worked by four serologists, we find that they all agreed in four cases (thirty-three per cent.) three of them agreed in three cases, and in four cases only two agreed; in one case all four serologists differed materially, i. e., four plus, two plus, slightly positive and negative.

A further analysis of these figures shows that

Serologist A reported 4 positives and 8 negatives.
Serologist B reported 7 positives and 5 negatives.
Serologist C reported 5 positives and 7 negatives.
Serologist D reported 2 positives and 9 negatives,
and one doubtful.

It is therefore perfectly obvious that clinicians sending their sera for examination to serologists B and C will get many more positive reports than they would from Serologists A and D. It is likewise worthy of note that the reaction was negative in the four cases in which all four serologists agreed. In not a single instance did they all agree on a positive case. How can that be explained?

A glance at Table 1 will show that in two cases the serologists gave three negatives and one positive on the same serum, and in one case (E. R.) there were three strongly positive reports to one negative.

Considering the forty tests worked by two serologists, we find they were in agreement in twenty-nine cases (seventy-two per cent.), they differed slightly in three cases (eight per cent.) and there were flat contradictions in eight cases (twenty per cent.). (In this paper we use the term "difference" when a strong positive reaction is compared with a weaker reaction, or when a slightly positive is compared with a negative. By "contradiction" we mean a positive as against a negative.)

These data show that two serologists working independently will be likely to agree in about seventy-two per cent. of the cases and will give contradictory reports in about twenty per cent. of cases. In a former study we found agreement in sixty-five per cent. and contradictions in twelve per cent. It is again worthy of note that in the present

series, the two serologists agreed in twenty-three negative cases and in only six positive cases.

Considering the 219 cases in which the tests were worked by three serologists, we find agreement in 116 cases (fifty-three per cent.), differences in twenty-three cases (eleven per cent.), and flat contradictions in eighty cases (thirty-six per cent.). And let us note again that in the 116 cases in which they all agreed, seventy-three were positive and forty-two negative; in one case they all agreed on a "doubtful" reaction.

Looking at these data from another angle, we find that

Serologist A reported 93 positives (43%) and 126 negatives (57%).

Serologist B reported 104 positives (48%) and 115 negatives (52%).

Serologist C reported 121 positives (55%) and 98 negatives (45%).

Here again we are confronted with the conclusion that the clinician will obtain a much larger proportion of negative reactions if he sends his sera to serologist A than to any of the others. It is interesting to observe that serologist C obtained fully twelve per cent. more positive in these cases than serologist A.

Let me state here that I do not question the value of the Wassermann reaction as an aid in

pendable, however capable he may be. We cannot afford to take any chances on a wrong report. When, however, three capable serologists working independently agree, we may feel safe in accepting their unanimous finding as a correct interpretation of the reaction.

I thought it would be of interest to see what the serologists would do with the complement fixation

TABLE II.

COMPARISON OF FINDINGS IN GONORRHEA AND LUES (THREE SEROLOGISTS).			
	Agreement.	Difference.	Contradiction.
Lues, (219 cases) . . .	116 cases (53%)	23 cases (11%)	80 cases (36%)
Gonorrhea, (26 cases) . . .	11 cases (42%)	3 cases (12%)	12 cases (46%)

test for gonorrhea, and I have had this test made in thirty-three private cases. As with the preceding series of cases, some of these patients had gonorrhea, some had the disease many years ago, and others never had it, as far as they or I were able to determine, twenty-three tests were worked by the three serologists who did the Wassermann tests. In these thirty-three tests, seven specimens were reported hemolyzed and unfit for testing by the same laboratory as was above referred to. I am unable to account for this phenomenon.

In the twenty-six cases worked by three serologists we find that they agreed in eleven cases, forty-two per cent.; they differed materially in three cases (twelve per cent.), and there were flat contradictions in twelve cases (forty-six per cent.). They agreed in nine negative cases and two positive cases.

It will be observed that serologist A obtained seven positives (twenty-seven per cent.) and nineteen negatives (seventy-three per cent.); serologist B obtained thirteen negatives (fifty per cent.) and thirteen positives (fifty per cent.), while serologist C obtained five negatives (twenty per cent.), sixteen negatives (sixty per cent.) and five doubtful (twenty per cent.) reactions. These data would seem to show that serologist B, with thirteen positives, was using a much more sensitive technic than either of the other two, and in consequence he obtained almost twice as many positives as serologist A and almost three times as many as serologist C.

In the seven cases worked by two serologists, we find they agreed in six cases, and contradicted each other in one case. The number of cases is too small to draw any conclusions, but the proportions

TABLE III.

Serologist.	Positive.	Negative.	Doubtful.
A: Lues	93 cases (43%)	126 cases (57%)	.....
Gonorrhea	7 cases (27%)	19 cases (73%)	.....
B: Lues	104 cases (48%)	115 cases (52%)	.....
Gonorrhea	13 cases (50%)	13 cases (50%)	.....
C: Lues	121 cases (55%)	98 cases (45%)	.....
Gonorrhea	5 cases (20%)	16 cases (60%)	5 cases (20%)

correspond in the main with those found in the Wassermann series. It is also worth noting that they agreed in five negative cases and in but one positive case.

Comparing the findings in the Wassermann series with the gonorrhea series we note (see Table II).

Three serologists working the Wassermann

TABLE I.

SHOWING RESULTS OF TESTS MADE BY FOUR SEROLOGISTS.

Patient.	Serologist A.	Serologist B.	Serologist C.	Serologist D.	Result.
M. G.	++	++	—	—	Contradiction.
J. M.	++++	++	+	—	Contradiction.
J. M.	—	—	—	—	Agreement.
A. W.	—	—	—	—	Agreement.
M. J.	++	++	—	—	Contradiction.
E. R.	+++++	+++++	+++++	+++++	Contradiction.
E. R.	+	++	++	+	Contradiction.
E. R.	++	++	++	++	Contradiction.
E. R.	+++++	++	++	—	Contradiction.
G. W.	—	—	—	—	Agreement.
G. W.	—	—	—	—	Agreement.
F. W.	+	—	—	++++	Contradiction.

diagnosis or as an indicator of therapeutic progress, but it must be accompanied by clinical data, and it must be obtained by several serologists working independently. There is every reason to question the reports given us by serologists and their assistants who make the tests. Not infrequently these assistants are young girls who have become more or less competent technicians through training. They work conscientiously enough, but what reliance can be placed on their findings? It is my practice to accept the findings of my three serologists if they agree, but if they do not agree, I study their reports and give to each of them the value which I think it deserves. When serologist C reports negative on a serum, I attach much more importance to it than to the negative report of serologist A, who usually obtains more negatives than the others. On the other hand, when serologist A finds the reaction positive, his finding receives greater consideration than the positive finding by serologist C. In other words, knowing that these serologists do not agree, and having studied their serological tendencies, it is advisable to study their reports and compare them in the light of what we know of them and their work. One serologist alone is absolutely unde-

series agreed in fifty-three per cent. of cases; in the gonorrhea series they agreed in forty-two per cent.; they differed in eleven per cent. in the Wassermann series and in twelve per cent. in the gonorrhea series; they contradicted one another in thirty-six per cent. of cases in the Wassermann series and in forty-six per cent. in the gonorrhea series. It may be inferred from these figures that these serologists have so perfected their technic of the Wassermann reaction that their percentage of agreement is fully ten per cent. higher than in the gonorrhea reaction, which has not been given so much attention and study.

A further comparative study of the work of the three serologists will show (see Table III) that serologist A obtained the lowest percentage of positive reports (forty-three per cent.) and fifty-seven per cent. negatives, in lues; whereas serologist C, who obtained the highest percentage of positives in lues obtained the lowest percentage of positives in gonorrhea (twenty per cent. positive and sixty per cent. negative). All of which shows the uncertainty of statistics and the unreliability of serologists.

Conclusions: The Wassermann test and the gonorrhea fixation test should be made by at least three serologists working independently; the serum should be taken simultaneously and sent to the different laboratories under identical conditions; one serologist is not to be depended on, however capable he may be.

Three serologists will agree in approximately fifty-three per cent. of Wassermann tests and approximately forty-two per cent. of gonorrhea fixation tests. That is, the chances are about fifty-three in a hundred that three serologists will agree on any given serum. Curiously enough they are more likely to agree in the negative cases than in the positive cases. Probably the serologists can say why that is so. At all events, it is well to devote more study to the clinical features of our cases and trust not quite so implicitly on our laboratory workers for our diagnosis.

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113 EAST NINETEENTH STREET.

The Nutritive Value of the Banana.—Kane-matsu Sugiura and Stanley R. Benedict (*Journal of Biological Chemistry*, December, 1919) report feeding experiments carried out on albino rats and state that milk and bananas, in proper proportions, constitute a complete food.

EXTRACTION OF A RIFLE BULLET FROM THE BLADDER BY THE NATURAL ROUTE.

By GEORGES LUYS, M. D.,
Paris, France.

CASE I.—C. a soldier, aged thirty-three years, belonging to the Forty-first Battalion of the *Chasseurs à pied*, was at Cirey sur Vesouze, Meurthe et Moselle, November 17, 1914. While bending forward to shoot he was struck by a rifle bullet fired obliquely at a distance of about 1,000 metres and wounded in the centre of the right buttock. Immediately after the accident he was able to march about four kilometres, assisted by two comrades, until he reached the Ambulance of Bresmenil, where, on account of the complete retention of urine, a sound was introduced. The catheterization removed some bloody urine and for five days the patient had spontaneous micturition of bloody urine. Bloody stools were also observed during the next two days.

He was removed to the hospital at Baccarat, where he remained from November 17th to December 16th. While he was being treated at this hospital it was frequently observed that he showed the characteristic symptoms of foreign bodies in the bladder. When he made an effort to urinate, and especially at the time of defecation, the stream of urine was abruptly cut off and in order to enable the patient to continue micturition it was necessary to catheterize him in order to drive back into the bladder the foreign body which was in the posterior urethra.

On December 17, 1914 he was removed to the Hôpital auxiliaire No. 104, at Dole, where I examined him. He presented three characteristic symptoms which made me think of the probable existence of a foreign body in the bladder, namely: 1. The absolute impossibility of urinating when he was in the upright position, micturition being possible only when he was reclining. 2. The abrupt arrest of the stream of urine during micturition, with pain radiating to the extremity of the penis. 3. At times, after an effort at stool, the foreign body would become lodged in the canal of the urethra but would easily go back into the bladder when he elevated the pelvis. There was no evidence of cystitis; the urine on emission was only slightly cloudy.

Catheterization with a soft sound did not disclose any foreign body in the urethra. The wound by which the bullet had entered was in the centre of the right buttock which showed a small orifice half a centimetre long, completely cicatrized. A radiograph made on December 18th clearly disclosed the presence of a bullet in the median line; it was in a distinct vertical position, pointing downward and behind the symphysis. It did not show any fracture or perforation of the iliac bone; probably the bullet had traversed the great sciatic foramen. Prismatic cystoscopy on December 19th disclosed the presence of a rifle bullet in the bladder. This bullet occupied the right lateral portion of the vesical reservoir; it was lying in a bedlike depression of the bladder mucosa, pointing to the

left, below and behind the plane of the ureters. It showed a shining surface and did not seem to be encrusted with salts.

Under these conditions the presence of a bullet in the bladder being certain it became necessary and urgent that the projectile should be removed. Thus far the only practical method of removal was by a hypogastric incision, but since the advent of the direct vision cystoscope it was more natural first to attempt the removal with that instrument by the natural route. This was tried with success.

Operation was performed on January 2, 1915. The urine was clear and after the passage of curved bougie No. 59 the bladder was completely emptied. The patient was then placed in an accentuated oblique position and a Luy's direct vision cystoscope, No. 29½ (Charrière), was introduced as far as the bladder. When the stilette was withdrawn and the lamp placed in position, it could be seen that the patient, who was somewhat obese, did not permit his bladder to be manipulated easily, but under gentle vertical pressure on the abdominal wall by an assistant, the outlines of the bladder were readily seen. The bullet was clearly seen with the base looking forward, but with a long forceps placed in the interior of the cystoscopic tube it was moved at the point and firmly grasped by the jaws of the endoscopic forceps. This done, the cystoscopic lamp was withdrawn and at the same time that the patient was being shifted from the oblique to the horizontal position the tube was gradually withdrawn through the urethra, holding within it the bullet which was partially embedded and held by the jaws of the endourethral forceps. The bullet was then introduced into the opening of the tube and the diameter of the bullet exceeded the tube by a few millimetres only. As soon as the tube was removed from the urethra the ball was easily removed from the endoscopic tube by a forceps. The bladder was then irrigated with nitrate of silver solution. The time of operation was eight minutes, without either general or local anesthesia.

Examination of the bullet.—Examination of the bullet which had been removed showed an undeformed German bullet. The color was dark grey throughout except at the level of the anterior half, where bright lines showed the grasp of the forceps. Little calcareous concretions were distributed regularly upon the grooves of the bullet, but did not encroach upon the smooth surface. These concretions were thin and easily broken. The base of the bullet was entirely free of concretions. Finally, thanks to the direct vision cystoscope, the foreign body was easily and rapidly withdrawn from the bladder and the patient was spared the surgical opening of the bladder by a hypogastric incision.

The following case is analogous to the one described and is even more interesting:

CASE II.—G., a soldier, was wounded October 14, 1914, in the forest of Apremont and a series of shell splinters entered his buttocks. He was sent to the hospital of the general surgical service at St. Jacques à Besançon where seven shell splinters were removed from his buttocks. He was sent

next to the Hôpital temporaire of the Grand Lycée, where he remained from January 15th to March 16th, and as he presented difficulty of micturition, he was sent to the urological service on April 15, 1915.

At the time of his entry there was marked difficulty of micturition. The stream of urine was extremely small, the urine was purulent, and the calibre of the canal was extremely contracted, admitting only a filiform bougie. On the right lateral side of the penoscrotal angle there was a tumor which, according to the patient, had at one time been the size of a nut but when he entered the hospital was the size of a large cherry. In order to meet the immediate condition an internal urethrotomy was done without incident. A sound was left in the canal for four days, followed by methodical dilatation of the urethra to allow for the subsequent introduction of the urethroscope. Although the patient denied any previous venereal infection, nevertheless there seemed to be present an inflammation of Littre's glands and the urethral mucous membrane, which is ordinarily called urethral folliculitis. Urethroscopy done on April 23d, however, revealed the presence of a calculus imbedded in the inferior wall of the urethra at the level of the penoscrotal junction. This calculus was clearly seen as a white body showing a few black points which suggested the existence of an oxalic calculus. By virtue of its being firmly fixed in the mucous membrane it was not possible to move the calculus with the forceps towards the meatus, but after several ineffectual attempts a more fortunate grip was secured, the calculus was seized, and the urethroscope was rapidly withdrawn. At the very moment, however, when it was thought that the foreign body was about to be brought out, the grip of the forceps was loosened and the calculus was lost.

A second application of the urethroscope was made as soon as possible, and contrary to all expectation, the calculus was not found where it had been originally at the level of the penoscrotal angle. As the penoscrotal tumor had diminished in size, it was thought that the calculus had dropped back into the bladder. A cystoscope was introduced and at the base of the bladder a calculus was found which appeared to be one and one half centimetres in diameter, clear white on almost all sides, and apparently round. As its volume seemed to exceed the normal dimensions of the urethra, and as everything confirmed the belief that it was a calculus, a lithotomy was decided upon. This lithotomy was tried April 24, 1915. After twenty-four hours' application of a resident sound to make the canal more supple the lithoscope was easily introduced, but just when a good grip of the calculus was secured I realized that in spite of considerable muscular effort the calculus could not be broken.

A second hold was secured under the same conditions with the same lack of success; at one time the jaws of the forceps could not be separated. The situation became quite embarrassing, but fortunately after several attempts the jaws were freed and the calculus fell back into the bladder. Cystoscopic examination immediately afterward showed the

strange and unexpected fact that under the influence of the lithotome the foreign body had lost all its white outer surface, which had been composed of salts, and there remained only a blackish body appearing clearly metallic; it was undoubtedly not a calculus but a fragment of shell.

There were two methods by which the foreign body could be extracted, either by a hypogastric incision, or an attempt at extraction by the natural route. It was this last method which was tried with the greatest success, in the presence of many members of the staff of the Hôpital St. Jacques. The patient was placed in a greatly accentuated oblique position and the Luys direct vision cystoscope was applied. The fragment of shell, easily visible in the vesical cavity, was immediately seized in the jaws of the forceps which had been introduced through the cystoscope and was immediately withdrawn with the cystoscope. The extraction occupied exactly a minute and a half.

This was an interesting case and showed clearly, as did also the former case, how easily and rapidly the foreign bodies of warfare could be removed by the natural route with the direct vision cystoscope. This method, which is infinitely more simple and rapid than the hypogastric incision, should certainly be the one of choice.

In conclusion, it may be stated, after these observations, that without exception in every case of a foreign body in the bladder, in either man or woman, the direct vision cystoscope is expressly indicated. This is the method which allows for the extraction of foreign bodies under the best conditions and with the greatest rapidity. The size of the foreign body is not a contraindication for the direct vision cystoscope. As reported in a previous article (1) a hairpin seven and one half centimetres in length was removed in this way. Broken calculi can be removed bit by bit in the same way. Finally, this method takes into consideration the principle of all rational surgery, which is to see clearly the lesion so that it may be treated under direct observation.

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UNMERITED DENTAL SYPHILITIC CHANCRE

Report of Case of Syphilitic Infection Contracted at Site of Tooth Extraction.

BY HERMAN GOODMAN, B. S., M. D.
New York,

First Lieutenant, Medical Corps, U. S. Army; Officer in Charge, Venereal Infirmary, Camp Las Casas, Porto Rico

The following report is thought worthy of publication as the record of syphilitic infections acquired from unsterilized dental instruments is probably decreasing with the advent of modern dentistry. The possibility of infection at the time of a tooth extraction should not be minimized, however, since the condition of the gum is ideal for the well being of the implanted *Spirochæta pallida*.

CASE.—Patient was thirty-two years of age, mar-

ried, two healthy children, wife had no other pregnancies. He had never had any venereal disease and had never had a chancre, sore or pimple on the penis. He dated his present trouble to the time of sailing from New York, at which time he had a painful tooth and his face was swollen. He arrived in San Juan August 13, 1918. He went to duty at the training camp. After four or five days he was so troubled that he went to the training camp adjutant and asked permission to go to the dentists at Camp Las Casas to have it attended to. He was told that the dentists at Camp Las Casas had nothing to do with the training camp and so he consulted a civilian dentist in San Juan, who took him to a sanitarium in order to have him given a gas anesthetic for the extraction of the tooth. Ten days or two weeks after the extraction he noticed his face was swollen and his gum sore. He could see a yellowish ulcer of the gum. The glands under his jaw became swollen. He reported to the hospital on August 28, 1918. During his stay at the hospital there was a slight breaking out of the gum of the left side. Both the left and the right sides healed, but the right side from which the tooth had been extracted and at the site of which the first ulcer had formed took longer. He returned to the training camp much improved. After a short stay, the condition returned but the patient did not regard it seriously. He was returned to the base hospital. He had soreness of the back of the throat and swallowing was difficult as if the food had to pass over a sore spot. He never had an eruption of the body.

It was ten to fourteen days from the pulling of the tooth to the formation of the ulcer. He could not remember the day that the tooth was pulled. He arrived at San Juan on the thirteenth of August and it was either four or five days after that the tooth was pulled. The ulcers had been present about one day when he entered the hospital on the thirtieth day of August. He had not exposed himself to venereal infection in Porto Rico.

The hospital history of the patient was brought before the board and admitted as a true record of the case. The first admission, dated August 30, 1918, showed that at that time there was an ulcer of the gum on the right side. There was no evidence of lesions on the genitals. A Wassermann test performed at the Institute of Tropical Medicine and Hygiene was negative to two antigens. The lesion improved with local treatment. Spirochete examinations made were not conclusive.

The second history of the patient was brought before the board and admitted as a true record of the case. This admission was dated October 4th, and showed that at that time there was inflammation of the jaws and ulceration about the lower right molars, bilateral swelling of the submaxillary glands and pharyngitis. A Wassermann reported on October 14, 1918, on blood taken on October 12th gave a two plus result with the Wassermann and a three plus with the cholesterinized antigen. Antisyphilitic treatment was instituted.

RÉSUMÉ OF FINDINGS.

About the eighteenth of August, 1918, Lieutenant Doe had a tooth extracted. Ten to fourteen days

thereafter an ulcer appeared at the site of the excitation. A Wassermann taken was reported negative. The ulcer healed with local treatment, only to recur. From subsequent manifestations this ulcer was the primary lesion of syphilis. On the fourteenth of October there were evidences of a generalization of the syphilitic disease and a Wassermann taken at this time was strongly positive. Undoubtedly from the change of the Wassermann from negative at the first examination to positive on the second the patient did not have syphilis of the generalized form at his first admission but did at his second. The only point of entry for the disease was the ulcer of the gum. The findings of the board showed that the disease was contracted through no fault of Lieutenant Doe. The recommendation of the board was that the chart of Lieutenant Doe should be signed: *In Line of Duty*. This finding and recommendation were unanimously concurred in.

The results of three doses of arsenobenzol (Schamberg) administered at the hospital were immediate, and the symptoms disappeared. The Wassermann reaction a fortnight after the third injection was negative. The patient was very irregular in his appointments for mercury treatments but received one dose of neodiarsenol (0.6 grams). The blood for Wassermann reaction was taken prior to the patient's return to the United States. His syphilitic register was sent to his new station and the officer was advised as to the treachery of the disease and the necessity for further treatment even if no lesions manifested themselves. The danger of transmitting the disease to his immediate family was emphasized, and we secured his promise to follow treatment faithfully. The last Wassermann taken by us was reported one plus positive. There were no signs of the disease present at his final physical examination at our camp. The outlook for this patient is that of a successful termination of his infection.

COORDINATION OF THE PRINCIPLES OF CHEMISTRY WITH THE LAWS OF IM- MUNITY IN THE TREATMENT OF TUBERCULOSIS.*

BY BENJAMIN S. PASCHALL, M. D.,
New York.

The two chief weapons of defence possessed by the resisting host against an invasion of the tubercle bacillus are bacteriolysis and encapsulation. Neither are wholly satisfactory nor complete in the natural course of events and since encapsulation chiefly covers up the bacteriolytic sins of omission we have confined our researches to the improvement of conditions whereby complete digestion of the tubercle bacillus may take place. In this paper we shall attempt to describe the chief reasons for failure on the part of the body spontaneously to immunize itself in response to the presence of the organism and just how this may be corrected so that successful immunity takes place.

Analysis of the tubercle bacillus shows it to con-

tain one part of waxy matter to two parts of proteid with small quantities of carbohydrates, pigments, inorganic salts, etc. The specific reaction which takes place following the injection of tuberculin we now understand to indicate the presence of abundant specific protein splitting ferments constantly present in the blood of the tuberculous, while serological tests for the wax antibodies give exceedingly irregular results, a fact which might indicate that either these antibodies do not form, are used up faster than they are formed, or that they are inactive in the serum and only activated as the need arises as is the case with all physiological lipases. As a matter of fact all three of these conditions exist to a greater or less degree.

Injections of the emulsified tubercle bacilli (tuberculin) increases the already over abundant proteid immunity and if at all concentrated produces caseation necrosis followed by encapsulation. Injection of the alcoholic ether chloroform or benzol extracts of the tubercle bacillus offers a marked improvement in the immunity response as shown by earlier investigators and prevents the disease from advancing as long as the injections are continued, but doses of over three milligrams of the emulsified wax produces caseation necrosis and encapsulation just as happens when the bacillary mass is used, but wax antibodies now appear more constantly in the serum of the treated animal.

In our own researches we were able so to modify the wax of the tubercle bacillus that three grams (a thousand times the dose) may be injected into the tuberculous patient with complete absorption without necrosis or caseation and complete immunity readily takes place.

It is generally understood by biologists that the methods employed for destroying invading microorganisms or other foreign substances within the body takes place through the medium of ferments already present or manufactured for the specific substance to be destroyed, and there is a growing tendency to simplify the nomenclature by referring to them as such, antigen being foreign particle or food particle, antibody the digesting ferment and complement acting as the activator or coenzyme.

Substances which deviate the complement or prevent the coenzyme from activating the ferment are known, many of them being classed as poisons. In the tubercle bacillus the presence of very large quantities of lipoids with a cholin like base possess this function to a marked degree, and even the addition of egg lecithin protects the wax antigens in such a manner that its presence wholly prevents antigen antibody union in serum reactions. In the case of physiologically active substances possessed by many of the various drugs we find close analogy between their action and the action of substances in which the stimulation of antibody formation takes place.

In each there must be a side chain or anchoring group which has affinity for a special group of cells. In each the specific response depends upon solubility, volatility, diffusibility, ionization, adsorption phenomena or colloidal properties, and in each the action must depend on the configuration and character of the nuclei, the configuration and char-

*Address delivered before the Biological Section of the American Chemical Society, Philadelphia, September 4, 1919.

acter of the side chains, the position of the side chains in relation to the nucleus and to each other, and the configuration and character of the cell or cell groups to be attacked; and in both the side effects produced by transformation products must be taken into consideration as well as temporary or permanent changes brought about in the cells themselves.

It is not known whether ferments take part in the destruction or transformation of various drugs, and here specific antibody formation is doubtful, but it must be remembered that in most cases we are dealing with substances capable of direct absorption and excretion as far as physical properties are concerned, while with most bodies having antigenic properties, splitting into simpler substances must necessarily take place before destruction or elimination can be brought about.

In this connection it is important to remember that where drugs and synthetic substances do break down in the animal body a study of these changes often serves as a guide for the production of new and useful substances in medicine. The application of the knowledge gained by the chemist in producing new and useful synthetic drugs has never before been utilized in the production of new and useful antigens although the possibilities seem extensive. The synthetic chemist is usually seeking for side chains having a specific affinity for certain cells or cell groups while the antibody seeking chemist is concerned with finding side chains for the most generalized action or for cells engaged in general metabolism or where specific action on certain cells is least likely to occur. It is also necessary that the nucleus or molecular arrangement (configuration) remain absolutely undisturbed or the antigen becomes inert. Lowering of melting point and increased solubility are of first importance together with the general character of the side chain.

The numerous experiments which have been carried out by other investigators using direct extracts of the tubercle bacillus have always been unsuccessful because of the caseating and toxic properties of the wax which precluded its administration in immunizing doses. Accordingly the first step taken was to saponify the whole mass of pulverized tubercle bacilli in alcoholic potash which immediately severed the wax proteid lipid complex and the second step was to remove the higher alcohols from the resulting soap solution by benzol extraction. The fatty acids remaining were converted into ethyl esters and are readily assimilated by the tissues. There are several present all unsaturated.

The higher alcohols were then injected into tuberculous animals and were found to be nontoxic, less caseating than the direct extracts, but on the whole not well taken up by the tissues. On boiling with acetic anhydride part of them became soluble and were esterified, part remained insoluble and were only partly esterified and it afterwards developed that they contained two OH groups. Esterification when complete entirely overcomes their caseating properties and renders absorption complete and perfectly satisfactory. It will thus be seen that while the OH groups have some anchoring functions esterification with a suitable substance

commonly metabolized by tissues very greatly enhanced the ease with which these higher wax alcohols combine with the tissues even in enormous quantities.

These observations led us to conclude that suitable haptophore groups were missing on the original wax molecule and that they could be supplied in the laboratory when missing in the same way that side chains may be supplied to synthetic drugs. When these side chains were of an appropriate nature the immune response took place in the tissues of the injected animal and acetates, butyrates, formates, salicylates, benzoates and cinnamates were very satisfactory combining groups.

And finally a physical mixture of the combined esters of the higher alcohols with the ethyl esters of the fatty acids in the same proportions as they originally exist in the wax free from lipoids, proteids and other impurities produced an excellent immunizing substance, which substance in turn digested the waxes surrounding the living tubercle bacillus, thus effecting its destruction. It must be remembered that even were the original wax directly immunizing without any modification, which of course it is to a certain extent, natural immunity would be very likely to fail in many instances from the disproportion between wax antibodies naturally forming and the toxic effects of the other portions of the bacillus liberated at the same time.

For example it has been estimated that the amount of proteid bacillary products discarded to produce enough wax to immunize one tuberculous guinea pig would supply enough total tuberculin to kill 180,000 tuberculous animals; which furnishes another potent reason for the failure of tuberculin to immunize. In spite of this, however, man is so resistant to poisons that in many moderately advanced cases the wax splitting ferments are almost keeping pace with the extension of the disease.

A detailed description of the chemical composition of the wax of the tubercle bacillus cannot be entered into at this time but a general statement as to its composition will, it is hoped, clarify the points regarding its immunizing properties. It consists of a considerable number of substances chiefly as follows: Unsaturated hydrocarbons, unsaturated dihydric alcohols, unsaturated monohydric alcohols, unsaturated free fatty acids, lipoids of the diaminomonomosphatid group, glycerides of unsaturated acids.

The hydrocarbons exist in small amounts under ordinary circumstances. They may be esterified with salicylic acid in the presence of PCl_5 or PCl_3 yielding readily absorbable esters and are fairly active immunizing substances. They react readily with NOCl .

The unsaturated glycols MP 68 readily esterify with one acetic acid radicle MP 55 and with two in presence of a catalyst MP 48. They are insoluble in boiling acetic anhydride alcohol and acetone and stain purple with the fuchsin dye.

The monohydric alcohols are soluble in acetic anhydride alcohol and acetone, readily esterify and have melting points chiefly of 10°C , 34°C . They occur about half as abundantly as the higher group and stain cherry red with fuchsin. They are highly immunizing to animals and man.

Attempts to regard these bodies as open or straight chain compounds have always met with failure. Vacuum distillation of the higher members of the group invariably produces a complex series of hydrocarbons with a strong odor of creosote and other phenolic compounds.

An empirical formula of $(C_7 H_{14})_2^2$ of which the alcohols are multiples as occur in the terpenes seems most probable and the presence of polymethylenes in distilled products has been definitely proved. Free fatty acids occur in small quantities and the reason for their presence is doubtful.

By far the largest portion of fatty acids occur in combination with the lipid complex and cannot be directly extracted from the bacillary mass except in minute quantities. After saponification they may be obtained in large quantities equaling or exceeding the total quantity of alcohols present. Curiously enough the higher alcohols occur chiefly uncombined and not as esters which explains the acid fast properties of the organism.

Esterification of these alcohols completely obliterates their staining qualities which properties are regenerated on resaponification of the esters. The protection offered to the microorganism is largely an adsorption lipid alcohol protein carbohydrate complex. The importance of this may be readily understood when one is reminded that the presence of certain peculiar lipid bodies containing nitrogen and phosphorus, the phosphatides may profoundly affect the reaction which would otherwise take place between antibody and antigen.

Two examples stand out preeminently in this instance. First, all attempts to use the lipoids of the *Treponema pallida* or the whole organism itself in the Wassermann reaction for syphilis have shown this antigen to elicit weak or irregular response and, second, the same has been equally true when alcoholic and ether extracts of the tubercle bacillus have been used for complement deviation tests for tuberculosis and Warden has recently observed that further addition of lecithin to tubercle bacillus antigens suppresses it entirely.

The production of specific wax and fat antibodies has lately been receiving the attention which it deserves. It seems strange that its production should be doubted or denied by so many writers who invariably base their conclusions on failure to elicit the usual immunity reactions. Ordinary physiological lipases do not occur in the active state in the blood stream. The blood serum does not have the power to split fats but carries an activator—the cells containing the inactive part. It is only when this hormone stimulated by fat hunger begins to circulate that normal fat lipases become active. This commonly known fact plays no small part in the demonstration of specific wax antibodies in tuberculosis and explains some of the diversity of results. It is only when tubercle bacilli are proliferating or disseminating that wax antibodies are evident.

In other words the injection of fats and waxes and some of their derivatives does not produce the antibodies in the sense that protein antibodies are produced. What does happen is the production of certain inactive substances within the tissues capa-

ble of being called forth into activity by the injection of more of the same substance. With waxes the process is an exceedingly slow one compared to protein immunity, so slow that in the experimental animal very many injections must be given before enzyme concentration reaches a point where a wax, for example, is completely metabolized in any considerable amount.

In using these esters for treatment in tuberculosis in animals and man caseation is largely done away with and improvement is seen even in advanced tuberculosis, except in the acute miliary types of the disease. Here the time necessary to produce immunity is too short. In the treatment of many hundreds of cases the loss has been less than two per cent. five years after ending treatment, this taking all forms of the disease and in all stages. This is not remarkable when one remembers that the natural immunity of the host is almost keeping pace with the growth of the organism. One is tempted to say we die from tuberculosis while we are getting well.

The duration of treatment and rules for treatment remind one of syphilis. Intensive at first with ever widening intervals between but the immunity is lasting and relapses infrequent.

SUMMARY AND CONCLUSIONS.

The tubercle bacillus is protected by waxy substances consisting chiefly of unsaturated highly complex alcohols and equal quantities of phosphatides with which they form a colloidal complex and which in turn exists in close union, possibly physical, more probably chemical, with the protoplasmic substances of the tubercle bacillus, both proteid and carbohydrate in nature.

Saponification breaks up this complex without destruction of the important immunizing substances and makes possible separation by solvents. By this means toxic and caseating substances of the cholin muscarin group are eliminated as well as the ordinary poisons elaborated by the tubercle bacillus proteins and protein derivatives.

Esterification of the fatty acids with ethyl alcohol forms a valuable immunizing substance as these fatty acids have so far been found not to conform to those found in our common food products. Esterification of the higher alcohols with salicylic benzoic, acetic or other suitable acids establishes a new side chain or anchoring group which greatly enhances the reactivity between the antigens themselves and the receptors of the tissue cells so that absorption of these alcoholic esters takes place in the tissues in a few days without producing caseation and tissue necrosis even when given in doses of from three to five cc., and following these injections of the mixed esters specific wax digesting ferments form in sufficient concentration to split the protective waxes from the tubercle bacillus living within the host whereby disorganization and destruction of the organism ensues and the patient absolutely recovers and remains well.

Thus combining the principles of chemotherapy with the laws of immunity, a new substance was found for the treatment of all forms of tuberculosis which was successfully used in our own practice and named by us Mycoleum.

THE PSYCHOLOGY OF THE CONSCIENTIOUS OBJECTOR.*

BY DAVID EDWARD HOAG, M. D.,
New York,

Adjunct Professor, Diseases of the Mind and Nervous System, New York Polyclinic Medical School and Hospital; Consulting Neurologist, West Side Hospital, etc.

The term conscientious objector is one that has come into common use as a result of the world war, or more strictly speaking, at the commencement of the world war. Historically, however, the problem, so far from being a new one, has occupied the minds of many of the rulers of antiquity, running far back into the history of the ages. Mommsen, in his *Provinces of the Roman Empire* speaks of the Jews having been exempted from war on account of their religious principles and the *Jewish Encyclopedia* tells us that Marc Antony, at the request of Hyrcanus, exempted the Jews from service in the army because they were not allowed to carry arms or travel on the Sabbath. Gibbons, in the sixteenth chapter of his *Decline and Fall of the Roman Empire* discusses the conscientious objector. Marcellus, the Centurian, an officer in the Roman army, on the day of a festival, threw away his belt, his arms and the insignia of his office, exclaiming with a loud voice, that he would obey none but Jesus Christ the Eternal King, and renounced forever the use of carnal weapons. The Mennonites, of whom I shall speak later, were exempted from military service in Holland in 1575. Germany, in the eighteenth century, forbade the Mennonites to hold land because of their objection to military service. In 1790 the exemption of this same sect was confirmed by Napoleon. In the United States the members of certain religious denominations were exempted from general military service during the Civil War.

It is well to remember that since the world began there have been conscientious objectors on many great questions. There always have been and there are still conscientious objectors to all or any of the two or three great religions; to one or other, or all, of the leading political parties, or to any form of government. There have been conscientious objectors to the great schools of medicine. A recent addition to the constitution set the conscience microbe at work. There are men, and women, too, in all walks of life who defy some or all of the conventions observed by the majority of well ordered peoples, who air their own particular views on social customs and moral issues, attributing them to conscience. There are individuals who deny themselves the use of the franchise granted by the government because none of the political parties meet with their approval. But so far as this brief paper is concerned, it is my purpose to consider the conscientious objector in the light of recent happenings offered by the war, and from my own personal observation and investigation.

In attempting such a task I have a lively consciousness of my own limitations. Having devoted what time I could in an endeavor to diminish my own ignorance of the subject, I have written

on the assumption that what I needed to know, others may need to know, too. I believed, and I still believe, that the causes operating to produce the conscientious objector in time of war, are much the same causes that are operating now to produce the state of unrest, the condition of uneasiness, the lack of confidence in the government. I propose to offer neither a criticism nor even an interpretation, but to indicate in broad outline the nature of the problems that confront the conscientious objector, and to analyze his mental mechanisms. It has seemed to me more prudent or useful to provide material for judgments, rather than to provide a series of judgments of my own.

The call to arms was made to millions of young men who were not permitted to elect whether they would or would not serve in the nation's cause. The call was addressed to members of religious societies, of ancient organization and settled creeds, to members of newer religious groups formed to accent some particular phase of religious experience, and to men whose variance from accepted creeds was individual and personal. It was addressed to the learned and the illiterate; to the conservative, the radical, and the liberal; to the native born and the foreign born; to those who had no conscious traditions except those of association with America, and to those whose roots ran back into the soil of the country with which America was at war. The men selected as a response to this call were to be welded into a homogeneous group, and were to be called upon to subordinate the dominance of many philosophies and beliefs which would in time of peace seem most important, and for which lifelong sacrifices had been made, to the single principle of consecration to the death for the preservation of the one ideal of America and her institutions.

For the most part our young men were products of settled and usual communities, subjected to practically identical educational processes. But the call also came to men who had lived remote and apart from the streams of life, in small communities, isolated from the rest of mankind by the observance of curious customs and devoting all their energies to the pursuit of certain ideals of religion or community organization which were held very sacred by the members of the community but were not understood, or at least were not shared, by the rest of mankind. It came also to groups of men whose political beliefs were to them idealistic and who without definite religious basis had on other grounds accepted nonresistance or some other principle as the cornerstone of a new civilization which to their heart's desire was to be free from ills, that in the old way society had not yet overcome.

There were, roughly speaking, found to be in the United States, during the war, about 300,000 males classified as conscientious objectors. About twenty-five or thirty per cent. of these were of military age. Many thousands of these, thanks to a paternalistic government, were given the privilege of noncombatant service and classified as such. An indeterminate number went into the army without demanding exemption under the law but harboring

*Read before the Section in Neurology and Psychiatry, New York Academy of Medicine, December 9, 1919.

in their hearts a resentment toward military discipline. An uncertain proportion, obviously not satisfying the requisitions as desirable for general military service, remained at home, a disturbing element. England and Canada had this matter to contend with in no small degree.

It will thus be seen that the number of men who present their case as objectors, when compared to the population, is not formidable. Numerically, the problem is of small importance; but as a matter of principle it is of great importance. To give a psychological examination and rating, it is necessary as far as possible to reach into the utmost recesses of the objector's mind. There is no sure way of dealing with this problem except to take each objector as an individual, consider his heritage, his education, and his environment. Even then, incorrect judgment may be arrived at, but it has at least the virtue of being arrived at only after patient and persistent inquiry.

In the examination of objectors through the psychological department of the Surgeon General's Office, the purpose was: 1. "To determine the degree of intelligence of the conscientious objector, with a view to finding out whether his objections were due to any abnormal conditions." 2. To obtain the specific ground of the conscientious objector's objection, and to see how well grounded he is in them. 3. To ascertain the extent of the conscientious objector's information concerning the history and tenets of his faith, and of the organization (if any) to which he belongs. This is for the purpose of ascertaining his objections in the same way as that employed by personnel officers with reference to skill in occupations. 4. To determine the degree of the conscientious objector's objection; just what he is and is not willing to do in the war, e. g., wear the uniform, take the military oath, enter noncombatant service or non-military service, reconstruction, or other branches of service. 5. To determine the degree of his sincerity. 6. In any case, to give as many tests involving verbal responses as possible. Write down all responses in full. Watch carefully for all signs of malingering, for responses that indicate a psychopathic condition, and for responses that have a definite religious trend. Calculate the mental age as near as possible, and let subsequent questions be governed by the degree of the subject's intelligence."

It is not at all my purpose to plead the case of the conscientious objector, but I believe that many times injustice has been unwittingly done to both the objector and the nonobjector; injustice to the splendid soldiers of each country who, without any instinctive love of fighting in their breasts, were yet willing to enter the firing line, while these other men, no more godfearing than they, were tamely suffered because of their conscientious scruples to engage in farming or industrial work at home. The virtues of the objector have been extolled as the virtues of one willing to undergo martyrdom rather than sacrifice an ethical principle. He has been represented as a man of ideals, and almost prophetic vision. He has been eulogized by well meaning persons who understand

neither the conscientious objector nor the national interest in time of war. He has been reviled as a coward and a slacker, with no compromise ground. He is diabolically black to his critics, while to his defenders his raiment is of the snows.

It is an interesting fact, and in a spirit of fairness must be so stated, that the majority of objectors were not pro-German, or even of foreign birth; the most of them, strange to say, were native born Americans. A psychological report of the Surgeon General's Office, comprising 720 cases in seven different camps, showed ten per cent. to be foreign born, ninety per cent. to be American born, one third of which were of American parentage. The objector, although a manifestation of war, is a product of peace; the causes of his objecting have long been existent in his environment and heredity. For convenience, we will divide the objectors into two classes, the religious and the nonreligious.

The religious objectors, as a rule, know their Bible thoroughly; they may know it narrowly and unintelligently, but they know it. Although ready to grant that certain passages of scripture seem to contradict each other, they regard the conflict as one of improper interpretation. A number of those interviewed claimed to be followers of the late Pastor Russell, head of the International Bible Students' Association, whose sermons were syndicated in 4000 newspapers and in many languages. Some so-called devout Christians would not admit even that they would undertake a work of mercy for a man in military service. Some of these while actually in the army read their Bibles assiduously, but when a discharge was in sight the Bible was carefully packed away. It is this insincere type of religious objector that one has to be continually on the alert for. He may be quite as honest looking and as obdurate in asserting his opinions. Caught off his guard, he may admit some act inconsistent with his avowed opinions. A so-called member of the church, twenty-nine years of age, had gotten along comfortably without religion until May, 1918, when, as he said, he consecrated himself to the church. The determining factor, however, was his desire to get married, the girl in the case not being willing to have him unless he joined the church. He then endeavored to avoid participation in war, not because he thought war was wrong but because he was reluctant to leave his wife. Inconsistency is part and parcel of this type.

The genuinely sincere religious objector is probably best represented by the sect known as the Mennonites, of whom there are about 80,000 in the United States,—mostly in Pennsylvania, Ohio, Illinois, Indiana, and Iowa. There are also said to be a large number in Canada. I speak of the Mennonites as a class with no prejudice. Many of them are good citizens and entitled to all respect as such. The church has many traditions of which it may be justly proud. Any of you who have read the novels of Helen Martin are familiar with this type; or those of you who have made an automobile trip southward and have pursued the Dixie Trail, a part of the Lincoln Highway, have gone

by way of Philadelphia and Lancaster to Gettysburg, and then on through the Shenandoah Valley. The cities of Lancaster, Lebanon, and Harrisburg form the points of a triangle within which is the stronghold of the Mennonite country. Nonresistance is the cornerstone of the faith of this religious sect. They believe substantially that Christ has forbidden his followers the use of carnal force in resisting evil. Love for enemies cannot be shown by acts of hatred and revenge, but by deeds of love and good works. Most of them are in isolated farming communities; their ancestry is very often German. They are thrifty and hard-working. They marry and intermarry, and have large families; no bad habits, no pleasures, no concern with what is going on in the world. Many cases seem of the moron type. He has a definite obsession against war. He loves his country, likewise his enemies; hence he has no enemies. They usually wear the hair and beard unkempt. Their trousers open only at the side, and do not button but hook together. No jewelry; features heavy, dull, and almost bovine. Pennsylvania Dutch is the language of church and family circle.

They have no education beyond the fourth or fifth grade; never hold public office; take no interest in social life; care nothing about good roads or social uplift. In most cases they never vote: A sinful life to them means on rare occasions moving pictures. You cannot get them to state whether Germany or the United States won the war. They will tell you it is not for them to judge. They show great knowledge of the Bible, and take literally the commandment "Thou shalt not kill." They will in all likelihood state that if some brute were to attempt rape on his sister or mother he would allow her to be raped before he would shoot or injure her assailant. One man had never heard of Foch or Pershing. Numbers of them had never heard of the *Lusitania*. They are as backward as their forefathers three centuries ago. Civilization has apparently passed them by. They remain a curious and an alien survival of an old world people. They are concerned little with what the world thinks and does. It is difficult to realize that we have among our citizenry a class of people so intellectually inferior and so unworthy to assume its burdens and responsibilities; good tillers of the soil and, according to their lights, good Christians but essentially a type of Americans of which America cannot be proud.

It is a pleasure now to turn to the Society of Friends or Quakers who are of an entirely different type. They are educated and well versed in current events; patriotic and willing to take up any kind of reconstruction work, and even to face danger to do so, but balk only at actual fighting. They desire noncombatant service, which they regard as the moral equivalent of compulsory military service. They are inherently narrow, but brave and intelligent, and sustained by a fine sincerity.

The Molokans, or Holy Jumpers, of whom there are about 20,000 in the United States, get the latter name because of their involuntary jumping about when the Holy Spirit is upon them. The

Holy Spirit told them they must not register under the draft act, nor have anything to do with the war. They were, as a class, not willing to accept noncombatant service or take a farm furlough, simply because it was under military control. They were even willing to be locked up, and when informed that a continued refusal meant court-martial, which would perhaps subject them to charges and permanent imprisonment, they said it did not matter, and that they would willingly be shot to death before they would help the government. They are vegetarians, eat no flesh food, and asked in the army that they might prepare their own food so that they could be sure that their vegetables had not been cooked in a vessel where meat had been cooked. They are called Molokans because they drink milk during their fasts. They have always been a thorn in the flesh of every government at war.

The colored race has few objectors. Most are religious fanatics. They take the viewpoint that they do not want to violate their own conscience, but they do not want to disobey the laws of the country. In other words, the negro is quite willing that the government should violate his conscience for him.

Among the nonreligious objectors we find many of the so-called idealist type. They may be cultured and well educated, but are visionary and impractical, often having a halfbaked mentality of the micron type. He declares himself in favor of majority rule, but when the majority decides in favor of war he becomes one of a protesting minority. He who should help, hinders and obstructs; he who should lead, incites others to revolt. He merely looks upon the United States as a pleasant place to live; he is opposed to any and all forms of warfare except interclass war, in which he has no scruples about fighting, but rebels against all other wars. The State and the Army are not real enough to impose commands upon him. Very often this type is careless, picturesque, and fantastic in dress. He is not unlikely to present urgent need of a visit to the tonsorial artist. It must be recalled that the objector is by no means confined to the man called to don the uniform; they are in all walks of life, smug business men, lawyers, doctors, and many others. These men did not so much object to war with Germany, as they did to our being allied with certain countries; it may have been England or perhaps Italy. I have found individuals of foreign birth, enjoying full benefits of naturalized American citizenship who looked with a sort of pharisaical contempt upon their adopted country.

This type, many of them, were often so self-centred and egotistical that it was beyond endurance to even discuss the matter with them. They disagreed with Congress or with the President; some admitted that they would have readily fought in the Civil War, or acknowledged that they would have participated in the Russian revolution, but for some reason or other they could not conscientiously take part in this war. Among the alien residents, many of them declared that they would have been willing to fight for their native country

if they went back to it, but were not willing to fight here.

In camp, the objectors, many of them at least, evinced a disposition to hamper and harass those in authority in every way possible. They grumbled at the food, at their beds, and everything with which they came in contact. Their frame of mind was rebellious, and they incited others to rebellion; some of them refused to assist in any way, as was customarily expected, such as making their own beds, assisting in the serving of food; and in one case a group of objectors, after using the closet in the latrine declined to flush same on the ground that their conscience forbade it. This type, just described might be more appropriately styled the unconscientious objector, and is the most obvious type of the genuine coward or slacker. He needs but little comment. They are antipatriotic. They masquerade as patriots, but really have an active hatred for all that the patriot loves. This vice, for so it may be called, is a morbid mental state. It is a perversion, a diseased natural instinct, a passion not far removed from mania. It is a close kin to a familiar form of mental disease which finds vent in horrible and purposeless cruelty, technically, sadism or masochism, a morbid psychology. There are many other forms, but they are merely accidental varieties arising from one and the same source, namely, a morbid mental condition, often associated with sexual abnormality. This type passes from one condition to another without apparent cause. The man who today, for instance, is antipatriotic, may be a sadist tomorrow. It is this sort of individual that tramples on the flag, burns bridges, or interferes with the shipment of munitions. We may, in a sense, admire the truly conscientious objector, but we have only contempt for the other type who is neither religious nor conscientious. Psychologically speaking, the sentiment of fear is repressed and not admitted, but the fear emotion appears in conscience under apparent hatred or in religious guise. Some persons find and formulate certain apparently logical reasons why war is wrong and their own opinions right, really believing in them, perhaps, as God given, but they are in reality influenced by subconscious motives of fear.

It is refreshing at this time to digress for a moment to the case of Stierheim which reads like a page of romance, and stands out unique in the history of the conscientious objector. It compels one to get away from any preconceived notion that the conscientious objector, particularly of the non-religious type, is at all times to be branded as a coward and a slacker. Stierheim, although an objector, had probably never been offered noncombatant service provided for by executive order. Finding himself in a combatant unit overseas, and his company about to go into action against the enemy, he left his organization and remained absent until apprehended on the Spanish border. Tried by courtmartial, he testified that he had left his company because he did not believe in war, and that his object in deserting was to avoid going into battle. This man, according to his commanding general, exhibited great bravery; he volun-

teered to go out into no man's land north of Verdun at night alone to rescue wounded men. He rescued six wounded men, unassisted, while many machine guns were firing at him. He volunteered at several other times, in the face of great danger, to assist in rescue work of this kind. The lieutenant in command stated that he had never seen such an exhibition of bravery, and recommended clemency in his case. General Pershing, in forwarding his record to the advocate general, stated in these terms: "I have not confirmed the sentence because while the evidence shows that the accused was guilty of desertion as charged and the sentence therefore warranted, his subsequent voluntary and meritorious service in action and the recommendation of the accused's company commander, prompt me to recommend that the entire sentence be remitted, and that he be restored to duty and assigned to noncombatant service. With this recommendation, I transmit the record for the action of the President."

This case will go down in history as one of the psychological examples of the distortion of conscious mental processes through the force of subconscious wishes. We are constantly putting into the subconscious wishes which, being shocking to our moral nature, are repressed, and they only come into our consciousness as a sort of compromise. It was shocking to Stierheim's moral nature to be called a coward and to, perhaps, be punished for deserting, so it was repressed and put into the subconscious; but when he saw the opportunity to show bravery and still not go into battle, it came into his consciousness as a compromise.

It may be wandering far afield, but there is still another class of individuals, a subtype, that are for or against a thing, whichever way the wind blows. They are not conscientious, for they use their conscience as an investment. They are unstable and fickle to professed beliefs. They become obsessed with any idea that is in the air; it may infect, or rather, more properly speaking, afflict thousands at a time, like an infectious disease. It is akin to the maniacal excitement which at times seizes a crowd without apparent reason. It may be likened to that irrational panic that will reduce an army to a maddened mob. Civilization supplies a certain number of individuals who are illbalanced and peculiarly receptive, without sense of proportion. They are potentially dangerous. The mental characteristics of this class render them a prey to any striking idea, and it is largely a matter of chance whether he become a victim of so-called religious mania or develop anarchistic tendencies, or a false estheticism. It is unscientific to blame war, religion, or politics, or whatever may chance to be the stimulus; this phenomenon has been at the bottom of many material movements in the past. Witness, in our own profession the anti-vaccination crusade, and there is no doubt it has played a large part in the conscientious objector movement. The influences of conscience are often completely wanting in this misnamed agitation. There are many individual cases celebrated in history, even modern history, where men of brilliant mind and achievement could be classed in

this category, which, for want of a better name we might term an infectious monomania. This type howled for preparedness, when there was no war in sight, and were as strongly against the war after it had been actually declared. A survey of political literature will show the same individuals that preached the doctrine of upholding the dignity of the government and the President in 1898, now wildly assailing the same attitude shown by the present administration. Merely the difference as to which side of the political arena one may be on.

Upon psychological investigation, we find that many of these cases reveal the very essence of insincerity. Instead of actually being opposed to the object under consideration, as is made to appear, they are in favor of it when their true selves are brought to light, stripped of all pretensions. But to agree to a thing is too commonplace; just because the thing is the consensus of opinion of the masses of the people, *hoi polloi*, as the one of exaggerated ego is apt to view it, it lacks sufficient dramatic effect to bring the selfcentred one into the limelight of publicity; but to oppose it would bring about the desired result. The war gave many such the opportunity to pose. It provided a release from the isolated position felt by many. There were so many positions that could be taken, and thus bring the originator into the public eye. It gave vent to the long pent up desire to be talked about. There were so many opportunities to play safe, so to speak, and still avoid the accusation of being antipatriotic. This was taken advantage of in many cases by those past military age; even women, many of them, saw in the war an opportunity to reclaim themselves from an idle and useless social position. The grossest deceptions were practised. One woman who for years had been very proud of her physical charms found herself in 1917 the victim of a malignant disease which, if operated upon, would rob her of her beauty and attractiveness; 1918 found her on the war front in France; 1919 found her back in the United States with a so-called war wound. As a matter of fact, she had been operated upon while away, but the psychological situation saved the day for her. The psychological observations in this paper, may not entirely correspond with those of an academically trained psychologist and there is no claim to have proved a thesis.

As a closing observation, permit me to say that the term, conscientious objector, has been in a fair way to bring the word conscience into disrepute. It may be therefore of interest to consider just what conscience is. It would seem to be a sacred faculty, and that we should regard it as such; but one must naturally feel a contempt for a so-called spiritual faculty that operates only to secure for its owner preferential treatment. If we do recognize the sacred faculty of conscience, then it would appear to be antireligious not to grant a hearing, at least, to the views of the conscientious objector. On the other hand, however, continued residence in any country must be held to be a tacit agreement to obey its laws. Plato has discussed this in a

way that has never been equalled. It is surely obvious that a man who cannot for conscientious reasons defend his country, cannot, for the very same reason, participate in the benefits earned by methods which his conscience condemns.

Conscience is as common to all men as is thought, but as minds differ enormously one from another in their development, so consciences may presumably also differ in their range of activity and in their intensity, modified, of course, by the degree of education, the vocation, the social class, and, perhaps even the state of health or environment.

To the sincerely religious person, conscience is the direct message of God to the individual, even above so-called conventional morality and the law of the state. But we must bear in mind that we should distinguish between conscience the inward monitor, the intuitive moral judgment, the instantaneous appreciation of right and wrong; and conscientious action or integrity, the doing of what we decide, on whatever grounds, to be right. It follows, then, that although conscience may be a reflection of the laws of the land, the customs, and conventions of the community, it cannot practically be in conflict with the law of the land. If it is, it is a diseased conscience and not to be regarded.

It is hard to conceive of a man of integrity and sanity setting up his own private views against that of the community, or of the majority of his fellow men. The individual citizen has committed the conduct of the nation's affairs to the government, and whether the government acts, as he thinks, wisely or unwisely, his obligation and duty as a citizen is to acquiesce in that judgment.

The late lamented Colonel Roosevelt, universally loved and respected in spite of his often radical opinions, had this to say regarding objectors: "No man has any right to remain in a free country like ours if he refuses, whether conscientiously or unconscientiously, to do the duties of peace and of war which are necessary if it is to be kept free. It is all wrong to permit conscientious objectors to remain in camp or military posts, or to go back to their homes. They should be treated in one of three ways: First, demand of them military service except the actual use of weapons with intent to kill, and if they refuse to render this service, treat them as criminals and imprison them at hard labor. Second, put them in labor battalions, and send them to war behind the lines, where association with soldiers might have a missionary effect upon them and cause them to forget their base creed and rise to worthy levels in an atmosphere of selfsacrifice, of service and struggle for great ideals. Third, if both of the above procedures are regarded as too drastic, intern them as alien enemies and send them permanently out of the country as soon as possible."

It would seem that conscience which, as a plea, is not heeded in a court of law, should carry no more weight when urged as an excuse for war. We who have chosen to live under our government, must abide by its laws. When our nation resolves to take up arms against a foe, it is our duty as citizens to obey the national will and fight for the

maintenance of the institutions under which we have lived.

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15 EAST FORTY-EIGHTH STREET.

CURING THE DRUG ADDICT.

By JAMES A. HAMILTON, Ph. D.,

New York,

Commissioner of Correction of the City of New York.

How to best cope with drug addiction is the great problem confronting us at the present time. Like a cancer gnawing at the vitals of society, it lurks in our midst seeking whom it may devour.

The Municipal Farm, Riker's Island, of which Harry C. Honeck is warden, seems peculiarly adapted for the treatment and care of the sick drug addict; for such he is, mentally, physically and morally. This institution during the past year has received, treated and returned to society over one thousand physically fit men! This remarkable result has been achieved under the professional direction of the resident physician, Dr. Stuart N. MacVean.

On entering this institution patients soon present a characteristic group of symptoms, known as withdrawal signs. First to be noticed is uneasiness or restlessness, with lack of coordination of the mental faculties. The patient is unable to concentrate. We find slight muscular twitchings: yawning, sneezing, and profuse secretions from all mucous membranes, especially eyes, nose, mouth and intestines. The intestinal condition may become so severe as to produce a diarrhea. The muscular twitchings in many cases become pronounced, with severe cramps and abdominal pains that are at times very distressing. The pupils are dilated and the eye itself takes on a staring appearance.

The pulse is generally very rapid. The great majority of these patients are thin, weak, emaciated, underfed and poorly developed. This is brought about by inhibition or retarding of all the functional activities of the body. Excretory products which would normally be eliminated are locked up in the body by the paralyzing effect of the drug. Glandular secretions are greatly relieved. Muscular tone throughout the body is impaired. This accounts for the lack of peristaltic action of the bowels and the consequent constipation suffered by the drug addict. We have as a result the ill effects of autointoxication. This is extremely important to remember when the treatment of these patients is considered.

The average weight of drug addicts coming to the Municipal Farm for treatment, taking 100 as a unit, is 115 pounds. The average gain in weight after ninety days' treatment is thirty-five to 100.5

pounds. Some individuals have increased in weight as high as sixty pounds. The treatment used at this institution aims to take the drug away from the patient as soon as possible. By a process of rapid reduction this is accomplished without much suffering in five days. Mild catharsis should be instituted for the constipation and to promote free elimination. These patients have lost their resistance from being underfed. They are satisfied with very little food when using narcotics, and such food as they do take is usually not of the nourishing, substantial sort. The first procedure then would be to nourish these patients with plenty of good, wholesome, and easily digested food. The diet at this institution for the first week or ten days consists mainly of milk, eggs, and cereals. The impaired digestive organs, owing to lost tone and functional activity, find it difficult to digest the regular diet for at least two weeks. Strychnine is a very valuable drug in these cases for improving the appetite and muscle tone. Blaud's pill containing iron and arsenic has been found very valuable in overcoming anemic conditions.

Insomnia is a common symptom, following withdrawal of the drug. Remedies such as the bromides, trional, hyoscyamus given at bed time have proved very beneficial. The normal activities of the drug addict are usually nocturnal and characterized by irregular habits of eating and sleeping, and especially underfeeding. Contrast this with the regular routine of living followed by inmates in this institution and it can be readily seen why the results are so striking.

Owing to the careless habits of drug addicts in the hypodermic administration of narcotics, i. e., using dirty needles and paying no attention to sterilization, it follows that they suffer the ill effects of numerous abscesses at the point of infection. These abscesses are extremely painful and necessitate surgical measures to evacuate large quantities of pus.

The life led by many addicts resulting in a state of malnutrition, that is, lowered vital resistance, makes the subject susceptible to tuberculosis. Our examinations have found not a few drug addicts to be suffering from this disease. The prognosis is bad in these cases unless the habits and environments of these patients are changed, but it is wonderful what changes for the better occur during a short stay at our institution.

During convalescence, it is found that the patient develops a voracious appetite and consumes too much food; his digestive apparatus being in poor tone rebels, and as a result not a few of our patients suffer from a gastrointestinal hepatic disturbance known as jaundice. This condition soon clears up under a restricted diet, giving the overworked organs a rest; mild cathartics relieve the overcongested organs involved.

It is impossible to give a routine treatment that will apply in all cases, as each patient reacts differently, not only to the drug itself, but also to the corrective agents used.

When the drug is withheld from patients, they are weak and need nursing for a week or more. They should then be given some light form of ex-

ercise in the open air. They are now to all intents and purposes cured of the drug addiction; there is no craving, no withdrawal signs, nor any suffering. This institution has proved beyond all doubt the importance of getting the drug addict into the open where he may receive an abundance of fresh air, sunshine, and exercise in moderation.

So great is the change arising after eliminating the accumulated poisons, which have inhibited all functions of the body, notably nutrition and elimination, that the recovery seems almost miraculous. Pale, emaciated creatures having no appetite, soon develop enormous appetites for good, wholesome nourishment. The phenomenon of returning health was never more beautifully demonstrated. Give the natural laws of health a chance, and the resulting change in these cases is most gratifying to all concerned.

While the drug addict may be cured of any craving for the drug, his association with drug users after having taken the cure, frequently leads to his renewing the habit. There is no prophylaxis that will be of any avail until the manufacture and importation of drugs is closely supervised. A nation wide prohibition of habit forming drugs should be seriously considered, as drug addiction is undoubtedly on the increase.

COMPULSORY HEALTH INSURANCE.*

BY CHARLES HOWARD CHETWOOD, M. D., LL.D.,
New York.

Inasmuch as I have already, prior to election, expressed an opinion upon a subject of importance, not alone to this society but to society in its broadest sense, namely compulsory health insurance, it would seem most appropriate that that opinion heretofore expressed, should be confirmed by me now on this the first opportunity afforded of giving it public declaration. To summarize judgment in plain language: The letter and spirit or the idea and purpose of compulsory health insurance merit only unqualified opposition in any form that up to the present time has been framed for legislative action, or in any amended form that has been or may be suggested, based upon the false representation that its enactment will conserve public health and amplify the medical and surgical resources of the State. Such an assertion is without accepted precedent to justify it and without logical reasoning to support it. Notwithstanding this uncompromising conclusion, we cannot brush aside consideration of the question by arbitrary opinion. The interests of a large body of people are concerned, and several branches of society are represented in the discussion and entitled to a hearing.

Your indulgence must be solicited in advance for the lack of proficiency that I am able to bring to the consideration of this subject. There are many who have given to it much more time and extensive study, who are far better equipped with literature and statistical data. But where there may be a short allowance of knowledge and skill in handling the

issues put forth there is no lack of sincerity of conviction with respect to the attitude that should be assumed.

Before attempting to arrive at a conclusion in any matter it is advisable first to examine the attitude of mind with which we attack the question. In approaching this subject, as in all catholic thinking, we must be careful to separate opinions from facts. At the outset we should avoid unsupported conclusions and misleading side issues, as, for instance, the declaration that since it is absolutely essential that the wage earner and his dependents should be cared for in time of illness, therefore compulsory health insurance is a necessary measure to prevent workers from becoming objects of charity; or, upon the unwarranted hypothesis that health insurance is a desirable measure for the social welfare, consider the subject from the viewpoint of whether health insurance can be made safe for the medical profession. Confusing issues have been raised in the minds of those who have not given the subject much thought by aligning compulsory health insurance with compulsory education, whereas that question is properly confined to deciding whether state compulsory education should embrace compulsory physical education.

In a serious effort to reach a reconciliation of opposing opinions in an argument it is a prerequisite that both parties should be entirely free from bias, whether it is the bias of education, of class, of politics, or of altruism. For example: Those who have been reared or educated under foreign influences and traditions similar to those existing in Germany, assuming them to be paternalistic in character and socialistic in tendency, would be likely to absorb some of the inclinations thus engendered; even the bias of the particular class in which we happen to be numbered may well affect our opinions, thus prejudicing an attempt at disinterested judgment.

The trend of current political thought is not always of a rational character, or of a high degree of practicability, and the hope of achievement by administrative agencies leads to the false impression that every evil of society admits of a cure within the reach of law; whereas, we all know that legislative acts, even though prompted by benevolence, have often led to unfavorable results. The social insurance act itself, introduced in Germany, was favored by Bismarck to check the growth of socialism but its adoption was followed by a steady increase in the number of its adherents.

Before discussing the attitude of the medical profession, you will forgive the digression to what may seem the recital of some elemental and prosaic arguments founded on logic and dictated by plain common sense, to eliminate from our minds the purely personal point of view, and to avoid giving the impression of seeking selfinterest, and that alone. I realize that the medical profession has already expressed itself, in county and in State, in opposition to this measure, and I believe a referendum to the profession would leave no doubt as to the large majority against it; yet we appreciate that it is not the medical profession that possesses the power to decide whether or not a proposed

*Inaugural address of the president of the Medical Society of the County of New York, delivered January 26, 1920.

legislative measure shall be enacted into law. Moreover, it is not the single interest of this or any other group or profession, that in common justice should decide upon the merits of a proposition of public policy and determine whether it is as good as can be for all the parties concerned, or for society as a whole. This applies not solely to the immediate effect, but, what is of much greater import, to its ultimate result and far reaching influence. The recognition of the interests of society as a whole is an aim that must be acceptable to the proponents of any constructive measure.

Let us note, therefore, who may be the parties in this suit before the bar of common justice, or what may be the groups of society that are directly concerned in the discussion of this subject. Let us, if possible, observe what are the views expressed by these different groups; whether they are dictated by a few of their number or concurred in by a majority; wherein the views of one group differ from those of another; whether there can be established a common motive, prompted by consideration for the public welfare which all of the different groups cannot refuse to unite in approving.

We have the employing group, embracing all corporations, organizations or individuals, who hire workers of the various grades to conduct their business. There is the employee group, inclusive of that class of workers who are under the direction and supervision of a superior authority, who is, or who represents, in their person, or persons, ownership. Then there is the medical profession group, and finally we have the law making group, composed of legislators and executive, in whom rests full authority to enact or defeat proposed legislation.

Inasmuch as this last group is representative of the State as a whole, while the first, second, and third groups are integral parts of the State, it is reasonable to expect that the last group, in exercising its law making function, in matters affecting the three other groups, must, with strict neutrality, consider in its widest meaning, the welfare of the people of the State, without undue consideration for any special groups. Such being the accepted principle, it follows that no one of the different groups of society shall press its demands to the exclusion of the main consideration, the welfare of the State itself, and as the composition of an aggregate whole is determined by that of its integral parts, it follows that what is best for the character of the greatest number of the citizens of a State, must be best for the State as a whole. Thus we arrive at a basis upon which all of the parties to our discussion can meet. Here we have put aside all personal and irreconcilable opinions and have come to a concrete understanding, namely, that that which is right for each group as a whole must be proved as best for most of its individual units, and that which is best for the State as a whole must be good for each of its subdivisions or groups of citizens, and the measure of value to each such group can only be taken on the basis mentioned, of that which is best for the majority of its individual units.

Having specified the parties to the question under consideration; having set forth the principle which should govern their aim and actions, let us see if there is in any sense an expression of opinion on the part of one group with which each of the other groups have expressed an opinion in complete agreement; from such a point, it will be easier to note whence the different opinions diverge. On the one hand, it is contended that a high proportion of poverty is due to illness; on the other hand this is as stoutly denied. It is forcefully asserted that the larger part of the urban and rural population receive inadequate medical attention and that which they receive is deficient in quantity and quality; while in contradiction to this it is said that these statements are based upon insufficient and unconvincing evidence.

We read that European experience is a demonstration of the success of this method. We also read that European experience is a demonstration of its failure. German efficiency in the adoption of social insurance is pointed out as an indication of what can be accomplished thereby, which is promptly met by the rejoinder that this country cannot pattern its reforms on a German or any other foreign plan.

On the one hand, we hear that social insurance is wrong in principle with a tendency toward lowering the character of the wage earner and should be uncompromisingly opposed; on the other hand, we hear that some form of health insurance is certain to be enacted, therefore the proponents of such should be met on some basis even though the measure cannot be fully approved. Thus, one who is endeavoring to detect a unity of thought is prone to be bewildered by this glittering array of conflicting opinions and at a loss to find a common ground.

All compulsory health insurance measures which have been introduced up to the present have proved unacceptable to all parties concerned; unacceptable to the employer group as an economic measure, fraught with difficulties because the administrative machinery would be enormous and complicated; the cost unwarranted and indeterminate. It is unacceptable to the employee group, despite the fact that this measure was contemplated solely in its interest. It is doubly unacceptable to the medical profession, both for its effect upon the individual physician and upon the development and future standards of medicine and surgery. That it has been unacceptable to the law making group is evidenced by the fact that no bill has been passed.

Thus we stand with the unanswered question placed squarely before us: Is compulsory social health insurance a measure designed for the public good, individually and collectively? We will turn our attention to the attitude of the medical profession upon this question, and having set forth what groups of society are concerned, we will leave it to the other groups to present their case.

We will appeal to the employer group to formulate judgment on the basis of public policy involved, which decries the course of the easier and lazy impulse to yield to a demand, because the cost of such can be prorated and put upon the con-

sumer, or taxpayer. When such ill advised pressure is yielded to, the immediate cost may be assumed as a present charge, but a much greater moral and financial obligation is sure to be assessed as damages to be paid in the future.

We warn the labor group to decide this question for itself since it affects the development of its members, and they cannot depend upon the behest of their overbearing leaders, who are patterning their course upon European experience, which is of limited value. The self-respecting American wage earner is not seeking relief of this sort.

As has been stated by John Franklin Crowell (1) in a report upon social insurance: "Analysis of American conditions confronts the inquirer with a type of national character which differentiates European from American conditions by an almost impassable gulf. Compulsory insurance advocates underestimate this as a rule; their scheme would make for the perpetuation of class groups, and thus against national unity."

Finally we charge the fourth group, whose action must decide the issue, that they see to it that the assertions of the proponents of this bill are based upon reliable grounds; that this measure, supposedly intended to reach a cause, is not in reality attacking an effect; that from legislation so general in its relationship, the benefits do not accrue to one class only, namely, the wage earners.

It does not matter what the immediate effect is, no matter how good it may be. The remote and ultimate effect of socializing individuals and classes is bound to be pernicious and is sure to extend its evil over a far wider sphere than the original question leads one to believe.

We are told in the formal draft of the bill, introduced in the State legislature during the last session, that this is "an act to conserve the human resources of the State"

In view of agitation within and outside the profession, the Medical Society of the State of New York appointed a committee to study the question of compulsory health insurance with special reference to its relationship to the medical profession. The final report of this committee to the house of delegates showed a large majority to be against this health insurance measure. The minority report of one, in substance, favored the framing of a sound health insurance law, rather than merely opposing the enactment of unsatisfactory measures.

It is suggested that, inasmuch as compulsory health insurance is a measure of social advancement which is bound to come, the medical profession might as well advance to meet it. Another more specious but similar plea is that the medical profession get together with organizations of laymen, to determine whether compulsory health insurance cannot be made safe for the medical profession. There is no intention of being acrimonious or caustic in this argument, yet I am forced to the impression that those who have espoused the cause of the measure under consideration, are affected by a mental bias, namely, undue altruism.

It is stated that sickness is one of the principal causes of idleness, but we are not offered data of a more informative character, embracing the kinds

of diseases that are the cause of idleness, whether they are acute or chronic. (2) "The needs for the cure, financial relief and prevention of illness among wage earners" can be met "by a comprehensive system of compulsory health insurance." This proposition asserts positively what experience demonstrates to be in part extremely doubtful and in part—i. e., so far as it relates to prevention—almost certainly untrue (3).

In making a comparison of the numerical per capita inequality between the physicians in New York city and in the up-State districts, no account is taken of the amount of illness and types of diseases demanding medical attention. Without these essential statistics it is difficult to understand how the conclusion reached is warranted.

In quoting favorable comments of the representative of the British Trade Union Congress, who favors this measure, account should also be taken of a letter to the president of the New York Academy of Medicine, April 24, 1919, from E. W. Morris, governor of the London Hospital, which states, "My own personal opinion is (and this opinion is shared in by many others) that the act has proved a failure in most ways."

As admitted and called attention to by one of the investigators for a Labor Legislation Association, the years in which the National Insurance Act of England was in operation before the war, 1912, 1913 and part of 1914, were years of extraordinary prosperity, and therefore, the fact that there was a comparatively marked diminution of abject poverty was not necessarily due to conditions arising from health insurance and hence not a proper argument in its favor. Moreover, the period was too short to be the basis of a reliable deduction.

It has been predicted that this country may be approaching an era of prosperity, owing to the force of a natural law, that following violent action comes the unavoidable reaction; hence, as a result of the many radical movements which have gained sway in this country, we should expect to encounter the swing back to rational conservatism. Is it not likely that in the march of events to this hoped for era, should a compulsory insurance measure be enacted, entirely unwarranted credit would promptly be ascribed to it in this country, as has been the case in England?

Why yield to the impulse of the must do something policy and the supposed necessity for immediate action, when even in the minds of those with honest convictions, there exist well founded doubts, and in addition to the contradictions and differences of opinion that have been shown here, new doubts are likely to arise as to benefits to be derived, and fear that mischief may be worked. How often has this been demonstrated by innovations introduced in the science of medicine and it is as likely to be so in the science of sociology.

That the enactment of such a measure as the one under consideration will improve health conditions among wage earners has certainly not been proved. That it will lessen any of the numerous causes of sickness cannot be demonstrated. One might as well start to deodorize the upper stories of a house, when contaminating vapors arise from the cellar, as

to expect to diminish the number of cases of sickness by herding together a lot of doctors in a socializing scheme and tabulating the number of cases of sickness treated.

In refutation that compulsory health insurance would reduce the amount of time lost by wage earners in employments the same committee (5) already quoted states: "This is an assertion contradicted by experience. Under compulsory sickness insurance, between 1890 and 1913, the number sick at one time, out of every 100 insured, increased, in Germany, from 36.7 to 45.6, and in Austria from 45.7 to 51.8; the average number of days on the cash benefits for each insured member increased in Germany from 6.19 to 9.19, and in Austria from 7.98 to 9.45; and the average number of days compensated for each sick member increased in Germany from 16.2 to 20.2, and in Austria from 16.4 to 17.4 (4). Only German and Austrian experience is cited for the reason that the statistics of no other experiences are obtainable."

Health conditions in the German Empire were not any better before the war than they were in this country and health conditions here are better than at any other period, despite the fact that there exists much room for improvement in the municipal health departments, in the various cities in this country. Public health work is still in the developing stage; yet, under the inspiration of the American ideal and the advancement of scientific preventive medicine, marked decrease in the rate of illness may be expected in the future.

As a final argument in support of the plea for this radical departure from the existing order of things, the dispensary system of New York has been characterized as demoralizing, without stating in what particular feature the dispensary system is demoralizing. But for purposes of consideration, let us for the moment accept this statement, while at the same time, we accept the adoption of compulsory insurance: is this not in the nature of using two wrongs to make one right? Or, on the other hand, are we to believe that this indictment of the dispensary system as a whole, coupled with the approval of a compulsory health insurance, is intended to be a recommendation that the latter plan shall eventually and entirely supplant the present dispensary system which is the result of the evolution of generations?

Not alone has the present dispensary system failed because it presents difficulties of administration and has not been properly supervised, not alone because evils have crept into the system that have not been eliminated, but also because it is demoralizing. Demoralizing to whom, may we ask? Yes, demoralizing to the conscience of a public that avails itself of the extensive facilities offered, in utter disregard as to whether or not they may be able to contribute toward the large volume of expense involved. That the dispensary and hospital systems of our cities are not properly regulated, is true beyond question, but to say that the system which has become the present dispensary system, is entirely and absolutely wrong, can hardly be justified.

In a long personal observation and association

with hospital and dispensary practice, I recall the first appearance of many young doctors, some of them of the crudest, coarsest type, mentally and socially. Then after a number of years of professional experience and personal contacts, I have observed their development into acceptable members of the profession, both as to attainment and appearance; some of them evolved into finished and brilliant types. Acceptance of these facts alone nullifies the assertion that the dispensary system is demoralizing. But, on the contrary, it discloses that the dispensary system in some ways is designed to stimulate ambition and the development of the average medical worker. In place of this we are offered the socializing system of compulsory health insurance; lowering the standards of medical science; discouraging ambition and injurious to the dignity of the entire medical body of this country, which, it may be stated without fear of contradiction, is greater in its achievement and finer in its aims than any other medical body in the world.

"When the State interposes between master and workman, employer and employee, by undertaking to pay part of the premium upon insurance, such a course is truly socialistic. For the justification of ownership lies in the duties of ownership, and if the State takes upon itself most of these duties, why should it not take the property as well?"

"The workmen are the hard workers and probably work longer and get less out of life than any workmen in the world. The laws so much admired and made ostensibly for their protection, such as insurance against unemployment, sickness, injury, old age, etc., are in reality skilful measures which bind them to the soil as effectively as the serfs of the Middle Ages were bound to their masters' estates."

Compulsory health insurance accepted in Germany was expected to be a barrier against socialism, but in reality, opened the door to it.

I once more call to the attention of the legislative body the possibility of the lack of benefit from this contemplated measure and of the danger that unlooked for evils, whether they are for the encouragement of fraud, or perjury, of malingering or other indirect demoralization of character, may supplement the evil intended to be reached. It has been truthfully stated, that forms of government are valuable only where they are products of national character. No cunningly devised political arrangements will of themselves do anything.

Let us not suppose that all the illusions of ambitious altruism realized, that all the wealth of the thriving State can secure permanency of its institutions without this consideration for the development of the character and conscience of its membership. Troy thought so once, but her hundred gates have crumbled in the dust of her graves. So thought the land of the haughty patrician, whose system of communes built up one of the great despotic empires of history. These you say are the examples of past ages, but are they not repeated in the history of today?

What of the paradoxical combination of the communes of modern Russia coupled with the

cruel autocracy of feudalism; ravished and ransacked by the hordes of Lenin and Trotsky, frenzied by the extremes of empire and peasants' communes, or the village Mir, they now will stop at nothing save a community of all things.

And the *pentacost of calamity*, the paternalism of Germany, the military wolf in sheep's clothing of socialism, reared the gentle lamb in its infancy, to follow the will of the government even to the gates of hell, and they reached them.

Admitting the deficiencies of my argument, I render just tribute to those who take opposite views in this discussion, but so strong is the inner conviction against any system that savors of radicalism or socialism, so averse should we be to compromising with evil, with the certainty of sowing seeds for more and still more evil, I would much prefer to pass into oblivion against this question, than be exalted to the highest honors for a cause which, in its ultimate effect, is destined to react banefully upon the coming generation.

Then last and perhaps most important of all, let no human plague gain access to this land and no evil foreboding possess the minds of those we welcome here. Be it the returning soldier wounded in a foreign land while fighting for the right or yet the unhappy alien fleeing to find a new home from a country which would put mothers and sisters on the level of harlots; whose flag is stained red with blood or upon whose standards is stamped the ebony crouching bird of prey, watching furtively through the mists of the deep for that emblem they have come to believe stands for the light of reason, the liberty, not the license of mankind.

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4. Cf. Research Report No. 6, National Industrial Conference, 1918, p. 15.
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The Activity of Lung Tissue in Inducing Coagulation of the Blood.—C. A. Mills (*Journal of Biological Chemistry*, December, 1919) prepared tissue extracts of dogs and tested them for thromboplastic activity on the blood, both intravascularly and extravascularly. The lung tissue extracts were much more active than those of any other tissue, the activity being less marked in the kidney, heart, brain, spleen, thymus, testes, and skin. Mills suggests that the lung tissue would make a more efficient hemostat than the preparations of brain material which are sold for that purpose. He also states that the marked coagulative activity of lung and kidney tissues, and to a smaller extent of skin, suggests a possible protective mechanism against hemorrhage.

SHORTENING OF ROUND LIGAMENTS WHEN OPERATING FOR OTHER INTRAPELVIC CONDITIONS.*

BY SIGMUND GOLDBERG, M. D.,
Buffalo, N. Y.,

Gynecologist to Memorial Hospital; Consulting Gynecologist,
Memorial Hospital Dispensary.

It is axiomatic that all operations for retroversion of the uterus of varying degree are based on two propositions: First, that the round ligaments are overstretched; and for a cure of the condition they must of necessity be shortened by various methods under various names, so as to make them act as guy ropes or stays, or the uterus will revert to the former abnormal position; second, that this must be done to remedy the supposed symptoms alleged to be due to the retroversion or flexion.

Let us for a moment examine the first proposition. The round ligaments are composed, in the main, of unstriated muscular tissue. Physiology teaches that a distinguishing and important characteristic of plain muscle is its power to remain in tone, that is, to remain for long periods in a condition of greater or less contraction. This form of plain muscle also may exhibit the phenomenon of rhythmical activity, under proper conditions contracting and relaxing like heart tissue. Such movements have been observed and studied upon the plain muscle of the ureter, the bladder, the esophagus, the stomach, and other portions of the alimentary canal, spleen, blood vessels, uterus, etc. Therefore, we are quite justified in assuming that the round ligaments are erroneously described in the textbooks as guy ropes.

Guy ropes have not the inherent qualities of the muscular tissue of the round ligaments; they do not give and contract with all the various factors inherent in involuntary muscles. This idea of guy ropes, from the physiological viewpoint, is absolutely erroneous, because it is the basis of the underlying thought in all operations for retroversion by fastening the round ligaments in various ways as if they were really made of hemp instead of contractile enervated tissue. When we fasten tissues formed of plain muscle, such as the round ligaments, we give them insertions, as nature never does with this kind of tissue. Plain muscle never has a bone origin or bone insertion such as striated muscle always has. When round ligaments are fastened, as in the Gilliam operation or any of its modifications, we insert them, whereas by nature they have no insertion, being lost in the labia majora.

In the second place, we must shorten these ligaments to remedy the symptoms alleged to be due to retroversion or flexion. It is acknowledged at the present day that the mere abnormal position of the uterus is not the cause of the symptoms. I am reminded that I read a paper upon that subject before this academy in 1903, and I recall the healthy attitude of incredulity with which that communication was received; but in 1907 I returned to read an

*Read before the Buffalo Academy of Medicine, October 15, 1919.

other paper on the same subject, and quoted the newer textbooks and quotations from opinions of leading gynecologists in substantiation of the opinion I had expressed years before, wherein I asserted that retroposition of the uterus *per se* produced no symptoms, and also stated that there was no such thing as an uncomplicated retroposition.

In a large number of cases before those papers were published, and in hundreds of cases since then, I have proved, at the time of operation, that in this class of cases adnexial disease of greater or less degree existed. It is due to our diagnostic fallibility that noncomplicated retropositions are found; but I have never seen such a condition proved, if the patient came to operation.

In substantiation of this, I quote from an article by J. M. Baldy, of Philadelphia, who says: "Inflammations, adhesions, and other complications form a large group in which a cure of the inflammation, or adhesion or whatever other complications obtain, will end the case, whether or not the uterus is displaced. The mere displacement of the uterus will not continue the symptoms. They allow of a treatment of the complications which, in most instances, is a treatment of the displacement."

In the *Reference Handbook of Medical Sciences* (1) there is found the following: "Expert knowledge and skill are required to recognize and properly appreciate many of the conditions referred to, while even under an anesthetic, adhesions of the pelvic viscera, if in the form of long bands, will often escape detection inasmuch as the uterus has a tendency, when its position is altered by a force from without, to return to its original position." And so I could go on, quoting men and textbooks in evidence of the modern recognition of the fact that the mere position of the uterus produces no symptoms.

Then why this furor to discover more and various methods for fastening a uterus in a position where nature never intended it to be, namely, against the abdominal wall where it is likely to form adhesions along the line of incision. As an example of the most recent article, I quote from Adeodato (2). He criticizes the Gilliam technic and its modifications, because it offers the possibility of intestinal strangulation, and to avoid this, Adeodato now fastens the vertex of the loop of the round ligament to the side rather than to the median line in order to keep the fundus of the uterus away from the peritoneal incision and prevent the development of adhesions, but he evidently has seen no symptomatic cures, for at the end of his article, he inadvertently condemns his own operation by saying: "As the surgical operation alone does not suffice to free the patient from all the effects of the retrodeviation, local and general treatment should be given both before and after operation."

It is evident from the foregoing that we do not by these various methods of fixation of the uterus attain the object sought, namely, a complete cure of the patient. The uterus has been relieved from one pathological position, and by the art of surgery, fastened into another. Normally, the uterus is poised in the true pelvis. It is constantly in a state of movement of greater or less degree, and yet

maintaining under all conditions, a certain area of movability. Nature never intended that the uterus should be held immovable as we fasten it, by all the present day methods of intraligamentary shortening of the round ligaments.

In this connection it is a pleasure for me to quote from J. M. Kennedy, head of the Joseph Price Hospital, of Philadelphia, who says: "The failure for which these operations were intended has kept the operation alive. I condemn it in every particular. Its physiology was wrong. It aimed at holding a freely movable organ in bondage over an expanding organ, the bladder, a most incompatible relationship. In an attempt toward standardization of those procedures for which multiple operations are being done, such as twenty or more methods for shortening the round ligaments, their multiplicity has two possibilities of condemnation, and they are, that the operation is either not indicated at all or the operative procedures are of doubtful surgical foundation."

In retropositions of the uterus the round ligaments are not overstretched. The fundus of the uterus turning backward, and the lower portion of the body and the cervix coming forward and upward near to or between the ligaments during this process the uterus is rotating as if upon a double pivot, the ligaments not being stretched. Therefore, never having been overstretched, they have not lost that peculiar tonicity of plain muscle and they require no shortening or fastening for the purpose of holding the uterus when replaced. In view of this, it seems a reasonable deduction to assume that the uterus, being released from its enforced restraint in abnormal position by the necessary operative procedures upon the concomitant pathological conditions, will rise by virtue of the inherent tonicity of the round ligaments and other normal factors, and will so remain without being fastened by any of the modern operations into another abnormal position with added dangers of intestinal strangulation, adhesions to the incision, etc.

Acting upon these assumptions, we, in our practice deliberately in twenty cases left the uterus unsupported by any procedure, and we found in these cases that the uterus would maintain a normal poise notwithstanding the Trendelenberg position. Not only that, but we found and demonstrated to our assistants and to bystanders that when we attempted to retrovert the uterus we found that due to the resiliency of the nonstriated muscular tissue of the round ligaments, the uterus would immediately spring into place. In all these twenty cases the patients have been examined from one to several months subsequent to operation, and in every instance the uterus has been found in normal position and normally movable. We know how tedious is the detailing of cases to busy medical men, so I shall give the details of only one, which is typical and really constitutes a summary of all with some added special features.

CASE I.—Mrs. G., aged twenty-eight years, married nine years, with one child, born eight years ago; more or less complaining during all this time with various indefinite ailments. A little more

than a year ago her lower limbs became helpless and she was obliged to use crutches and in later months she was scarcely able to move without other help in addition to her crutches. About three months ago she spent a month in a hospital, and when leaving there was as helpless as when she entered. I was first asked to see her on September 10, 1919, and found her as described above. Upon examining the pelvis I found the uterus retroverted to the third degree and bound down. I could find no organic cause for her paraplegia and advised a pelvic operation which I believed would restore her to perfect health and that she would immediately walk. She entered the Memorial Hospital about September 20th. We found the uterus so bound down by adhesions that I was obliged to dig my way thereto. The tubes were resected, likewise the ovaries. I made sure that all the adhesions were severed, some of them between ligatures, they were so massive, until I could feel through the culdesac of Douglas the cervix free and movable.

This is one of the cases in which I demonstrated to my assistants and bystanders the resiliency of the ligaments after years of retroincarceration. I examined this patient at her home on October 11th, found her walking about the room without the aid of crutches, and with the uterus in normal position and fully movable.

In conclusion, I would formulate for your kind consideration and friendly criticism the following propositions: 1. That in retropositions of the uterus the round ligaments are never overstretched, and therefore require no shortening. 2. By virtue of the normal resiliency of the nonstriated muscular tissue of the round ligaments, when the uterus is released from its retroincarceration, it will maintain its normal position. 3. That all intraabdominal operations for the purpose of fastening the uterus when released only put it into another abnormal position and therefore oppose those natural forces which are always active.

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LONDON LETTER.

(From Our Own Correspondent.)

State Rewards for Medical Discoveries.—Registration of Nurses.—A National Union of Surgeons.—Deaths of Two Great Medical Men.

LONDON, January 15, 1920.

A report of a joint committee of the British Medical Association and the British Science Guild, which has been considering the question of awards for medical discovery, was issued recently. The joint committee was composed as follows: Representing the British Medical Association, Sir I. Clifford Allbutt, K. C. B., F. R. S., Dr. R. I. Leiper, Professor Benjamin Moore, F. R. S., Dr. W. E. B. Turner, F. R. C. S., Professor J. S. Haldane, F. R. S. Representing the British Science Guild, Lieutenant-General Sir Alfred Keogh, G. C. B., Colonel Sir Ronald Ross, K. C. B., K. C. M. G., F. R. S.,

Professor W. Bayliss, F. R. S., Dr. D. Sommerville, Sir Richard Gregory, Lieutenant-Colonel O'Meara, C. M. G., late R. E.

The committee defines medical discovery as follows: 1. The ascertainment of new facts or theorems bearing on the human body in health, and the nature, prevention, cure, or mitigation of injuries and diseases of human beings. 2. The invention of new methods or instruments for the improvement of sanitary, medical, and surgical practice, or of scientific and pathological work. The reasons given for rewarding medical discovery are the encouragement of medical investigation and the discharge of a moral obligation incurred by the public for its use of private effort. These are the various possible types of rewards cited: Titles and honors given by the state, by universities, and by other public bodies, prizes and medals, patents, promotions and appointments, pecuniary awards by the state. The committee has this to say concerning the general principles of assessment: "It will probably be agreed upon that, in the interests of the public, all medical discoveries should, if possible, receive some kind of acknowledgement or recompense. But in view of the very variable conditions, nature, and effects of particular investigations, it will often be difficult to assess the kind of recompense most suitable for each. In the first place a distinction should be drawn between compensation and reward. By compensation is meant an act of justice done for the purpose of reimbursing losses; by reward, an act of grace in appreciation of service rendered.

Special attention is directed by the committee to the following cases which occasionally occur. 1. Men who have refused lucrative posts in order to complete their researches. 2. Men who have refused to protect their work for fear of limiting its application. 3. Men who have carried out investigations for little or no payment on patriotic grounds.

In the public interests the committee insists on the following principles: 1. That no medical discovery should be allowed to entail financial loss upon him who has made it. 2. That the compensation or reward which he deserves should be assessed as being equal to the difference between the emoluments which he has actually received and those which a successful clinician might have received in the same time. The report goes on to say that this is obviously the principle which was accepted by the British Parliament in the case of Jenner in 1802 and 1807. Additional reasons for insisting upon this principle are stated to be that few medical discoveries are patentable, and that such discoveries seldom give good grounds for promotion or for administrative appointments in the public services. Whether a particular discovery should receive a large or small assessment will, the committee thinks, depend, in addition, on the following considerations: 1. Width of application.—For example, the work of many of the older anatomists, physiologists, and parasitologists of Pasteur and of investigators of immunity have affected most recent discovery. Discoveries on widespread diseases such as the work of Lister, of

Laveran, and of Koch are often, though not always, more important than those on more limited maladies. 2. Difficulty of the work done.—For example, the solution of a difficult problem requires more study and also more time and cost, and therefore deserves more recompense than a lucky chance observation. 3. Immediate Practical Utility.—A strong plea for state remuneration can be made for cases of this kind unless they come under the head of discoveries which have increased the professional emoluments of the investigator by enhanced practice or other means. 4. Scientific Importance.—Discoveries which are not of present practical utility may become so at any moment and should obviously be included in the scheme if they are sound and of wide application. With regard to the question of state awards for medical discovery the report says: "Honors, prizes and medals being bestowed by His Majesty the King, or by public bodies and learned societies, are acts of grace which are generally given after much consideration: and the committee does not propose to discuss them. The subject of pecuniary rewards, however, lies entirely within its province. During the past few years the British Government has disbursed an annual grant of about £60,000 (\$300,000), under the Medical Research Committee, for subsidizing investigations in progress, authorized by the committee and carried on by workers selected by it. This grant does not remunerate discoveries already made, but proceeds upon the principle of payment for prospective benefits. Another principle, that of payments for benefits already received, deserves close attention, and has been recognized in other countries. The committee thinks that both principles are sound, but they apply to different classes of research and are indeed complementary of each other. Payment for prospective benefits is good business only when some return is almost certain; and for the reason subsidized researches must frequently deal with simple and straightforward questions admitting of immediate experimental reply.

It is pointed out by the committee that as a matter of fact most of the greatest medical discoveries have been built upon a much more speculative and uncertain basis and were achieved by men who neither sought nor received subsidies for these investigations, as, for instance, Kuchenmeister, Jenner, Sims, Simpson, Lister, Koch, Laveran, Bancroft, Manson, Bruce Mackenzie, and a score of others who have so greatly improved medical practice. The committee is of the opinion that the state should encourage this class of investigation as well as clinical investigation, partly because it costs the state nothing in the doing, and partly because it seems to achieve the greatest results. And manifestly there is only one way to encourage it, by paying for discoveries when made. Payment for benefits received is always not only sound business but a moral obligation. There are at present in Great Britain, as there are in all countries, hundreds of medical men and others who possess the knowledge, the brains and the opportunity for private independent discovery without subsidies, but who do not attempt it because medi-

cal research work does not pay even when brilliantly successful.

The committee makes the following recommendations: 1. That parliament should resuscitate the precedent of Jenner by paying compensation when due for losses incurred in achieving medical discoveries. 2. That parliament should provide an annual sum, say, of not less than £20,000 (\$100,000) for life pensions to be given as rewards to such of his Majesty's subjects as have made worthy medical discoveries, such pensions amounting to between £500 (\$2,500) and £1000 (\$5,000) a year. The report adds that such pensions would be preferable to donations in capital, and the sums suggested would be sufficient, because men of science seek only such independence as will enable them to employ their talents in the manner they think best. The procedure of allotment should be similar to that used for the Nobel Prizes, and for the honors and medals of learned societies. Parliament grants large subsidies to soldiers and sailors, has appointed a commission to consider awards to inventors, and allows patents. It should not, therefore, complain if the medical profession, which has done so much for the nation during the war, now asks for similar consideration. This report has been quoted from and discussed at perhaps seemingly undue length on account of its obvious importance. In the first place, it points out and emphasizes the trend of medical practice in England. Practice is, or will be, no longer for the individual but for the masses. That is, it will be more in the nature of preventive than of curative or remedial medicine and it will become more and more so. The object will be to maintain in good health the general population, to have a good average standard of health, rather than a healthy upper and middle class and an undersized puny laboring class. To gain this end the practice of preventive medicine on a wide scale is indicated and in order to practice this form of medicine throughout the country, the state must take control, at any rate, to a great extent. The ministry of health is the logical outcome of these latest views and the state endowment of medical research is an absolutely obvious phase of the employment of preventive practice on an extended scale. Moreover, medical scientific men fully deserve every means of recognition and reward. For generations they have been starved and denied their just rights, while their discoveries have sometimes been exploited for the benefit of those less modest than themselves.

* * *

Doctor Addison, Minister of Health, attended a crowded meeting of the members of the Society for the State Registration of Trained Nurses, at the rooms of the Medical Society of London, the other day, and was accorded an enthusiastic vote of thanks for carrying through parliament the Government Nurses' Registration Bill in time to receive the royal assent on the day of the prorogation. In replying to the vote of thanks, Doctor Addison said it was the first he had ever received and the last thing a minister expected. Criticism was his daily bread. In the course of his speech

he pointed out that a great increase of nursing facilities was required throughout the whole country, and especially in the rural areas. It would be the duty of the Council on Medical and Allied Services, of course, including nursing, one of the consultative councils of the Ministry of Health, to get to work upon the important preliminary matters without delay. As to the appointment of the first council he asked them to trust to him to do his best to be fair. A working council was required, with a generous representation of people who had been through the mill. It was a serious disability that the medical profession in times past, and even now, had somehow or other not managed to evolve a body which the whole mass of the profession would regard as their trusted representatives. The time was coming when the learned professions that minister to the needs of the people would have to enter into partnership or cooperation with the state. The experience of the war and the greater education of the people had taught the lesson that great things could be achieved regarding health and the prevention of disease when properly conducted and organized steps were taken.

* * *

The registration of nurses was a measure urgently needed in England. Trained nurses are now placed on a proper basis, and a registered nurse is an efficient nurse, at least she will be when the measure has been in force sufficiently long to eliminate those who, owing to former service, were allowed to claim registration. In future, a nurse to be registered must give evidence that she is thoroughly trained. This is a long step forward, as good nursing is as essential to recovery to health as capable medical attendance; there are even some sceptics who think it is more so.

Doctor Addison has deserved well of the community by getting the nurses' registration bill through parliament.

* * *

An important new movement in the medical world was inaugurated on January 9th at the Royal College of Surgeons when a body of representatives of all the surgeons of Great Britain was brought into being. This body will be known as the Association of Surgeons of Great Britain and Ireland, and its first president is Sir John Bland Sutton, of the Middlesex Hospital. Sir Rickman Godlee presided at the inaugural meeting of the newly formed association and in an opening address said that in March, 1914, Sir Berkeley Moynihan in a letter to him suggested the idea. He pointed out that England was almost alone in providing no adequate occasion for a fully representative debate on surgical topics and he asked him to invite about a dozen representative men to discuss the proposal to form an association of surgeons in Great Britain and Ireland. The outcome was a meeting, at which about forty were present, held at the Royal College of Surgeons on May 26, 1914. A committee was appointed to draw up rules, to circularize the members of the surgical staffs of hospitals connected with teaching schools,

and to summon a meeting of all of those who agreed to join the Association. That was the meeting to which, after an interval of more than five years, they were summoned that day. From time to time during the past year the committee had resumed their discussion of the rules, and now submitted them. In framing their rules the committee, acting on instructions from the last meeting, had tried to keep two main principles in view. First, the active membership of the association should be limited both in respect of members and of age. After much inquiry it did not seem possible to reduce the maximum of membership below 250. A fair limitation of age was not easy to express in words, but an attempt had been made. Secondly, the discussions should be in every meaning of the word, free; and the expression of thought should be untrammelled by the dread, which even the least prudent must feel, lest what he might say confidentially to his friends should be repeated in a garbled form upon the housetop. It was therefore proposed that opening communications should be short and made *à la voce*. It was also proposed that no reporters should be present and no report sent to the journals or newspapers, though Fellows should be allowed to publish their communications when and where they choose. The admission of women was not mentioned in the rules but as they stood Sir Rickman Godlee thought women would be eligible.

* * *

The project for the establishment of a permanent memorial to the late Lord Lister, abandoned during the period of the war, has been revived. The University of Edinburgh, the Royal College of Physicians, and the Royal College of Surgeons, of Edinburgh, have decided that the most suitable form for such a memorial would be an institute for the scientific investigation of disease and for the teaching of the principal sciences concerned. The need for a centralized teaching and research institute in Edinburgh is said to be pressing. A committee has been formed to make an appeal for £250,000 to purchase a site, erect and equip the necessary buildings, and provide for maintenance, apart from remuneration to research workers. The proposed institute will be erected close to the Edinburgh Royal Infirmary.

* * *

Sir William Osler has passed away full of years and honors, for although he had only just left behind him the allotted span of man's years, he had crowded into his life the work of two men. He was a great physician and a great personality and charming withal. He did good work in Canada, the United States, and in this country and his career is as well known to the medical profession on your side as on this side of the Atlantic.

The other distinguished member of the medical profession recently deceased is the professor of materia medica and clinical medicine in the University of Edinburgh. Sir Thomas Fraser was one, and by no means the least, of the band of pharmacologists and toxicologists who assisted in making the Edinburgh School of Medicine renowned throughout the world.

Editorial Notes and Comments

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NOTICE TO OUR READERS.

The semiannual Index of Vol. CX. of the New York Medical Journal has been printed as a separate pamphlet and will be mailed to our subscribers who may desire it. If you care to have a copy of this index please write to the editorial department.

INFLUENZA.

The first pandemic, following on the heels of the world war like a giant shroud, took the medical world by surprise. They fought the disease to the best of their ability and for the want of a better name called it Spanish influenza. It must be admitted that as a general rule the battle was a losing one. After the pandemic and when the lull came, a vast literature made its appearance. This literature was written hurriedly as the men were so busy caring for the sick that their observations were hastily made; treatment was improvised according to the ingenuity of each man, and little time was left for careful scientific observation, writing, or research. In spite of all this there was a vast difference in the reported results of the men in various parts of the country; they varied greatly in the same districts according to the manner of handling.

It is to be regretted that little attempt has been made to utilize the findings of the last epidemic. Medical men were weary of their task, and they did not expect a recurrence of the disease. In ad-

dition to this, each one thought that his method of treatment was satisfactory, and if he found himself helpless in the face of the great odds against him, how could other men, working under the same conditions, report an almost negligible mortality? There was something wrong with the figures. They did not seek to find out if there was something right in the method of treatment. That meant work and reading, and they were too busy trying to catch up with their practice and straighten things out. This attitude is lamentable.

Of the most valuable studies made, we might mention those of Rosenow, whose findings had great prophylactic value. He determined that a person with a fair amount of resistance would not contract the disease even though directly exposed to the nasal secretions of patients in the acute stages. Warnings are being sent broadcast urging people to avoid contagion, but little is said regarding the necessity of building up the general health of the individuals of the community. A word might be added concerning the mental attitude with which the disease is encountered. It is not alone a state of physical wellbeing that is required but also a feeling of freedom from anxiety. Many persons will doubtless seek an escape from things they are unwilling to face and they too will suffer from the disease. The course of the disease will not be tempered to any extent by these complex factors. It seems as though the lesson of the first epidemic has not been heeded.

An excellent résumé of the literature and findings of the former pandemic, written by Louis T. de M. Sajous, appeared serially in the NEW YORK MEDICAL JOURNAL, in the department of Practical Therapeutics. This was an admirable and painstaking piece of work, and in view of the present situation it would be well for our readers to go over the back numbers of the Journal and read this series of papers.

We are planning a special influenza number of the JOURNAL in the near future. Papers have been contributed by many leading authorities and now that the dread disease has reappeared, with the added interest caused by its actual existence, considerable interest undoubtedly will be manifested by our readers. The advantage of this number, which will be entirely devoted to influenza, will be in the writers having had an opportunity of reviewing the literature of their colleagues, and in this way the subject will be more thoroughly and scientifically handled.

HOW MEN REVERT.

It is curiously interesting to note how, from time to time, men are prone to revert to opinions held long ago or again take up thoughts closely corresponding to certain teachings which were supposed to have been dropped because they contained some inherent impossibilities. This is particularly true as regards what may be called the mystic in human nature. Every now and then there recurs the idea that there is a vital force in man which may be transferred from him to other living or even material things in such a way as to modify them in varying degrees. Animal magnetism was a favorite thought among certain minds at the end of the eighteenth and the beginning of the nineteenth century. One who was especially gifted in *magnetic potency* could transfer some of this marvelous quality to others and thus cure disease and even prolong life by this transfer of so-called magnetic force. Magnets themselves were supposed to be affected by it, and various substances which were brought intimately into contact with an especially gifted individual took on something of this marvelous quality from him and might convey it to others even at long distances.

Mesmer was supposed to use some form of electrical or magnetic force, though when the committee in Paris (one of them being Franklin, who was in Paris at the time as Minister from the Colonies) deputed by the government to examine his apparatus investigated, they could find nothing electrical about it. There was no doubt at all that Mesmer was producing wonderful effects; he was curing all sorts of diseases which had made the rounds of physicians and had not been cured, and he was making money and creating such a sensation by the advertisement which these cures effected that the government felt compelled to investigate. Mesmer had to give up his work, though not without the protests of literally thousands of people who had been cured by him, though now we know that the committee and the government were both right and that Mesmer had no wonderful secret, but consciously or unconsciously to himself was just using the influence of mind over matter and curing diseases which people had created in themselves.

Once more, in connection with spiritualism, we are being treated to supposed emanations of human or spiritistic force which have many of the qualities of the animal magnetism of Mesmer's day. It is a saving grace to have a little knowledge of the history of medicine and to be able to realize how many of these curious manifestations are really only repetitions of old time experiences, even

though new names have to be invented for the old-fashioned ideas. In our time we hear a good deal about odic and odylic emanations or effluvia and the like, and how this wonderful force may pass over into material objects without life and give manifestations there.

The interruption of Mr. Maeterlinck's lectures has taken away from many the opportunity of hearing from his own lips his opinions on some of these very up to date subjects, but the *New York Times*, in editorial comment, gave a good idea of the sort of thing that the dear Belgian poet is willing to accept. We are evidently to go back to the old days of animal magnetism, only we shall not use that term, and keep an open mind for the new wonders which are founded on just the same sort of evidence as made Mesmer so popular and brought him so many intelligent, or rather, educated, people. The *Times* said:

"Especially significant, in M. Maeterlinck's opinion, are experiments reported from Austria. Reichenbach professes to have separated portions of the odic effluvia and lodged them in inanimate substances. A jar thus impregnated has been subjected to extremes of cold and of fire and has still retained the odic properties. In some obscure manner the effluvia is said to retain a relationship to the body from which it is detached. A pitcherful of impregnated water was thrown into the street in winter and the young woman from whom the effluvia was taken caught cold. Whether these results justify us in regarding the odic substance as a soul or spirit M. Maeterlinck does not say."

Maeterlinck's acceptance of the evidence in such cases would remind one of Lord Bacon's discussion of the famous *unguentum armarium*, or weapon ointment. This was a wonderfully complex ointment, but an infallible cure. For more than a generation some of the brightest minds in Europe accepted its power to heal. It worked by some sort of sympathetic magnetism or magnetic effluvia, but it never failed, provided, only, it was made right and applied right. Even Francis Bacon, the father of modern inductive science, as he is sometimes called, felt that he could not reject the evidence for this wonderful remedy and the fact that it had been known to cure children who were unconscious of what had been done for them, and whose minds therefore could not be the active agents in the cure, made him feel that there must be some great secret of nature underlying it.

The great weapon ointment was applied not to the wound, but to the weapon which caused it. If this could not be procured it might be mixed

with some of the blood of the patient and then the wonderful force would be evolved and a cure would take place. It was much better, however, to apply it to the blood stained weapon. There are literally volumes of evidence for the wonderful healing power that was thus evoked. Bacon himself was no fool and the generation that discussed these things seriously gave us some wonderful discoveries in science and particularly in medicine, including Harvey's circulation of the blood; and yet they were quite caught by this remedy. Nothing has been more alluring for men of science than this idea of emanations of some kind from the human body, and nothing has proved more full of delusions, but here we are in the midst of it once more and we shall probably hear a great deal about it. Study the historical background and then it will be easier to comprehend just what is happening at the present time.

TUBERCULOSIS.

In the hubbub which has been stirred of late over venereal diseases, we are in danger of forgetting that tuberculosis is still with us and in about as great force as ever before. Moreover, instead of this disease being known in detail it seems much more of a mystery than ever. Twenty years ago its origin and the method of stamping it out seemed solved, but not so today. We are not even certain as to how the disease finds entrance to the body, the relationship of the bovine to the human bacillus has not been cleared up, and the cure of the patient is as uncertain as ever. At this time the résumé of a study of the subject made by the Medical Research Committee for National Health Insurance in Great Britain should be of much interest. It is pointed out in the introduction of the report that, in a previous study of the registrar general's returns for tuberculosis, it was discovered that there is not one form of the disease but two, and perhaps three types. One form attacks chiefly those between twenty and twenty-five years, a second kills most commonly between forty-five and fifty, and a third proves fatal between the ages of fifty-five and sixty. The existence of these types must be kept in mind and the prevalence in a community of one or another form, when studying the effects of climate or of occupation.

A study of various districts of the United Kingdom shows that the death rate differs in them, and that it differs at the different age periods. Changes have taken place in the past fifty years in the proportion of deaths from the different types. These changes are especially marked in the northern

countries. The chief seats of early phthisis are the seaboard and agricultural counties, there being in the Shetland Island none but the early form. The death rates for males and females are absolutely distinctive, the death rate curves for females being more uniform and the maximum rate falling in the second period or around the ages from thirty to thirty-five. There is three times as much phthisis of old age among males. Seamen have a high tuberculosis rate and agricultural laborers a low rate. File cutters, tool manufacturers, stone quarrymen, masons, brick layers, and all miners except of iron and coal, show higher death rates than the occupied males at large. Tin miners have an especially high rate, but in all these occupations the type of disease follows the type of the locality and is not influenced by the occupation.

The report concludes that since tuberculosis is not a single disease but a group of diseases, like the typhoid paratyphoid group, this must be considered in attempts at serum treatment. Tuberculin made from the bacillus of one type would not be expected to influence another type of the disease. The predominant type differs in different regions. The young adult type, like scarlet fever, is not affected by environment. There is as much of this form in healthy as in unhealthy homes. In scarlet fever the amount of disease seems to depend on the amount of milk consumed, and we are left to infer that milk may have to do with this form of tuberculosis.

Viewing the subject historically the report concludes that a long drawn out epidemic of the young adult type of the disease has been going on which reached its climax about fifty years ago, while the middle age type reached a maximum figure a hundred years ago. The rise in the mean age of death from the disease does not seem to be due to an increase of immunity but to a decline of rate of the younger form. The fall of the death rate for both the early and the later types of the disease began so far back, and has been so steady, that "there is no doubt that a considerable part of the decline of phthisis in recent years is in line with the biological properties of diseases in general, and has little to do with hygienic conditions."

THE MAKING OF NEUROTICS.

There is a widespread belief among the lay public that if a physician has specialized on the removal of tonsils, all his patients become *ipso facto* candidates for a tonsillectomy; that he who calls a right quadrant abdominalist must perforce lose an appendix; that the oculist must inevitably order glasses; that just as the barber either shaves or

trims as many of his customers as he can, so does the physician or surgeon, according to his pet procedure.

A good many of the illnesses for which patients seek relief have a neurosis as their basis of origin, and the right abdominal pain, the visual disturbance, or the headache are merely pegs on which to hang unconscious malingerings. Too frequently the peg is supplied by the too zealous, but not over-careful, physician who, by his acts or utterances, implants the idea that a certain physical ailment exists, and immediately it is created mentally by the patient. The application of the treatment, which would be appropriate if the condition were real, often follows, too frequently on the principle that good may result, and certainly no harm. Harm has been done, however, in that the foundation of a neurosis has been laid; the patient begins to circulate from specialist to specialist, and by the time a neuropsychiatrist has been reached, the damage has been done.

The differentiation of the imaginary from the real is sometimes very difficult. Frequently the case is in a twilight zone between the true and the false, and will puzzle even the most expert mental analyst. As a rule, though, mistakes may be avoided with relative ease if the physician will realize that in addition to a number of organs, some of which are embraced in his pet specialty, the patient also has a mind. Conversely, it would be equally proper for the psychiatrist to remind himself that the sufferer possesses organs. A careful surgeon does not operate until an accurate physical examination has been made. Is not a mental examination equally important? A skillful physician does not employ harmful methods in making physical examinations. Is it not quite as harmful to plant erroneous mental suggestions in the making of an examination? If we are helping to swell the rapidly increasing number of neurotics, is it not our duty to observe a few of the simple precautions which will put a stop to this?

Obituary.

SIR THOMAS FRASER, M. D., F. R. S.,
of Edinburgh.

In the death of Sir Thomas Fraser, M. D., F. R. S., emeritus professor of materia medica in the University of Edinburgh, who died January 4th, in Edinburgh, medical science has lost one of its most distinguished investigators in the department of therapeutics. Sir Thomas Fraser, who would have been seventy-nine in February, had retired from the active work of his chair in the spring of 1918. He was born in Calcutta in 1841,

and obtained his medical education in the University of Edinburgh. Within a year of his graduation he was appointed by Sir Robert Christian as his university assistant, and in 1877, while still a young man, he succeeded Sir Robert Christian in the chair of materia medica, in Edinburgh. As the result of his investigations, more especially those concerned with the action of strophanthus upon the heart and of the effects of physostigmine he became rapidly known as one of the foremost investigators in the action of drugs in Europe. By his discovery of the myositic property in the calabar bean he put a new instrument in the hands of the ophthalmologist. He was eminently successful both as a teacher of materia medica and as a clinical physician in the Royal Infirmary. He was a voluminous contributor to the medical press and to the transactions of scientific bodies.

News Items.

Pharmacopœial Convention.—The tenth decennial pharmacopœial convention will be held beginning May 11th at the Willard Hotel, Washington, D. C.

Case of Leprosy in Boston.—A case of leprosy was discovered a few days since in Boston. The patient, who was a chocolate factory worker, has been sent to the State leper colony on Penikese Island.

Doctor Finney Declines Harvard Offer.—Dr. J. M. T. Finney, professor of clinical surgery at the Johns Hopkins University, is reported to have stated his decision to decline the professorship of surgery offered him by Harvard University.

Building for College of Surgeons.—The American College of Surgeons has acquired a permanent administrative home at 40 East Erie Street, Chicago. The building, a former residence, is said by the *Illinois Medical Journal* to be "one of the show places of the city."

American Congress on Internal Medicine.—The American Congress on Internal Medicine will be held February 23d to 28th, in Chicago, in conjunction with the American College of Physicians. Dr. Frank Smithies, of Chicago, is secretary-general of the congress.

Society of American Bacteriologists.—At the annual meeting of this society, held recently in Boston, the following officers were elected: President, Dr. Charles Krumwiede, Bronxville; vice-president, Dr. F. C. Harrison, Montreal; secretary, Dr. A. Parker Hitchens, Indianapolis (reelected).

State Subsidy Needed for Country Doctors.—The New York State Department of Health has appeals for doctors from fifty-eight small country towns, many of which are without competent medical attendance, and thus far only five doctors have expressed a willingness to go. In connection with this difficulty, Dr. William H. Park, professor of bacteriology and hygiene at New York University, is quoted in a published interview as saying that rural communities in need of a general medical practitioner can be supplied only if the State guarantees a definite income as a sort of subsidy.

To Feed Hungarian Children.—Efforts are being made by the American Relief Administration European Children's Fund to raise sufficient funds to feed 100,000 children daily in Hungary. Food and milk are being hurried to famine stricken districts in Hungary and relief kitchens are being established. The committee is endeavoring to raise \$1,000,000 for the fund.

Study Tropical Diseases.—The British Government has sent a group of medical men to the Ellice and Gilbert Islands, in the Central Pacific, to study tropical diseases, particularly filariasis and allied ailments, hookworm disease, and dysentery. The party is headed by Dr. F. W. O'Connor, who conducted investigations of disease in China and Africa, and who during the war was attached to the British forces on the Sinai peninsula.

Rochester General Hospital.—A new department of otology has been created at the Rochester, N. Y., General Hospital, headed by Dr. Edward S. Ingersoll. A new department of pediatrics will be under the charge of Dr. Albert D. Kaiser. Dr. J. L. Roseboom and Dr. J. M. Ingersoll have been added to the consulting staff of the institution. Dr. W. F. Plumley has been named head of the department of dermatology, and Dr. N. D. McDowell of the department of laryngology and rhinology.

Appropriation Made for Influenza Inquiry.—A joint resolution carrying an appropriation of \$500,000 to investigate the cause of influenza and to aid in preventive measures has been adopted by the Senate. The original resolution introduced last July called for \$5,000,000, but this amount was cut to \$1,000,000 and then further reduced to \$500,000. The war, navy, and treasury departments are to be utilized jointly through the personnel and facilities of the medical branches of the army and navy and the public health service.

Dr. Hugh Cumming Named Public Health Head.—Dr. Hugh S. Cumming, of Hampton, Va., has been nominated surgeon general of the U. S. Public Health Service to succeed Dr. Rupert Blue, whose term expired January 15th. Doctor Cumming, who for a number of years was quarantine officer at Hampton Roads, is at present making a study of typhus fever in Europe. It is stated that Doctor Blue will remain in the public health service, probably with the rank of an assistant surgeon general, engaging in research which he has under way.

Europe Fighting Typhus and Plague.—The Red Cross societies of Belgium and Sweden have joined with five other countries in an effort to prevent the threatened spread of typhus in Poland. The Swedish Red Cross has asked its government for a subsidy of 1,000,000 crowns to combat the disease, while Belgium is expected to send doctors and nurses to Poland. The Ukrainian government has asked the Supreme Council at Paris to lift the blockade, at least so far as it relates to drugs and sanitary material, to enable Ukraine to fight the epidemic of cholera and typhus now raging in that country. Epidemics of influenza, smallpox, and typhus are reported to have broken out in the Russian Caucasus, where the population has been near famine for months.

American Association for the Advancement of Science.—The seventy-second meeting of this association and the affiliated national scientific societies was held December 29th to January 3d, in St. Louis, under the presidency of Dr. Simon Flexner, of New York. Among the officers elected were: President, Dr. L. O. Howard, Bureau of Entomology, Washington; general secretary, Professor E. L. Nichols, Cornell University, Ithaca, N. Y.; vice-president, Section I, physiology, E. K. Strong, Jr., Carnegie Institute of Technology, Pittsburgh; vice-president, Section N, medicine, Dr. Joseph Erlanger, Washington University, St. Louis.

St. Bartholomew's Hospital.—The recent opening of St. Bartholomew's Hospital and Clinic, New York, provides an institution devoted to the diagnosis and treatment of diseases of the alimentary canal. The hospital, which is housed in a seven-story building at 215 East Forty-second Street, will accommodate fifty patients. There are thoroughly equipped x ray and clinical laboratories and two operating rooms; also a hydrotherapeutic and massage department where patients requiring this form of treatment will be cared for under proper direction. A new departure which characterizes the hospital is an attempt to abolish the ordinary hospital atmosphere without detracting in any way from efficiency.

Wood Alcohol Poisoning Reportable.—At a meeting of the New York City Board of Health on December 31st, a resolution was passed making wood alcohol poisoning a reportable disease. The text of the resolution follows:

Resolved, That Article 7 of the Sanitary Code be amended by adding thereto a new section, to be known as Section 106, to read as follows:

Sec. 106. Wood Alcohol Poisoning to Be Reported.—It shall be the duty of the manager or managers, superintendent, or person in charge of every hospital, institution, or dispensary in the city of New York to report immediately to the Department of Health the name, age, and address of every occupant or inmate thereof, or person treated therein, affected with wood alcohol or wood naphtha poisoning; and it shall also be the duty of every physician in said city to make immediately a similar report to the Department of Health relative to any person found by such physician to be affected with wood alcohol or wood naphtha poisoning.

Phi Delta Epsilon Medical Fraternity.—At the sixteenth annual convention of this fraternity, held January 2d and 3d, in Philadelphia, the following officers were elected for 1920: Grand consul, Dr. Nathan Blumberg, of Philadelphia; deputy grand consul, Dr. David W. Kramer, of Philadelphia; vice-grand consuls, Dr. Leo S. Schwartz, of New York, Dr. Frank Chesner, of Philadelphia, Dr. Samuel Nadel, of Boston, Dr. Jack Greenberg, of Baltimore, Dr. Louis Bothman, of Chicago; grand chancellor, Dr. B. E. Spiegel, of New York; grand scribe, Dr. M. E. Greenberger, of New York; grand historian, Dr. M. B. Gordon, of New York; grand marshal, Dr. A. C. Schwenk, of New York; editor in chief, Dr. A. Brown, of New York; committee chairmen, Dr. A. Gichner, of Baltimore, Dr. A. J. Rongy, of New York, Dr. I. Tumpyr, of Chicago, Dr. S. Barnett, of Detroit, Dr. C. Stamm, of Philadelphia, Dr. S. Kleinberg, of New York.

Personal.—Dr. Wickliffe Rose, general director of the International Health Board of the Rockefeller Foundation, and Dr. Richard M. Pearce, director of the new division of medical education, recently sailed for Europe to study methods of public health administration and medical education in England and on the Continent.

Dr. Walter C. Allen, of Rochester, has been appointed by the United States Employees Compensation Commission as physician for the treatment of government employees injured in line of duty in the Rochester district.

Dr. J. B. Denel has opened an office in Rochester, N. Y., for the practice of röntgenology.

Five Million Dollar Gift to Academy of Sciences.—The Carnegie Corporation has announced its intention of giving \$5,000,000 to the National Academy of Sciences and the National Research Council. Part of the money will be used to erect a building for the two organizations in Washington. The rest will be placed in the hands of the academy, which holds a federal charter, to be used as a permanent endowment for the National Research Council. The council is an organization based upon some forty of the great scientific and engineering societies of the country, which elect delegates to it. It is not supported or controlled by the government, differing in this respect from other similar organizations established since the beginning of the world in England, Italy, Japan, Canada, and Australia.

New York State Civil Service.—The Civil Service Commission of the State of New York announces examinations on February 28th for the following positions:

Assistant laboratory diagnostician, State Department of Health, salary, \$2,000; preferred ages thirty to forty years; a degree in medicine is required. Biologist and sanitarian, State Conservation Commission; salary, \$3,000; a general education and experience in chemistry and in sanitary engineering required. Application forms may be secured from the State Civil Service Commission, Albany.

United States Civil Service.—The United States Civil Service Commission announces an open competitive examination, to be held February 18th and March 17th, for physician in the Panama Canal Service. The entrance salary is \$200 a month; promotion may be made to \$225, \$250, \$275, \$300, and to higher rates for special positions. Both men and women are eligible. Applicants must be unmarried and must have graduated from a recognized medical school whose graduates are eligible for commission in the U. S. army. An examination for assistant director of educational work in the Public Health Service will be held February 24th. Vacancies will be filled in classes A and B of the service, which pay \$3000-\$4000 and \$2800-\$3600 respectively, men only being desired. The work is in the Public Health Service's program of venereal disease prevention and control. Further information as to all of these positions may be secured from the U. S. Civil Service Commission, Washington, D. C.

A Medical Patent Office.—The Section in Historical Medicine, of the New York Academy of Medicine, will meet on Wednesday evening, February 4th, at 8:30 o'clock, to discuss a subject that should be of interest to all the members of the medical profession. A committee appointed by the chairman of the section, composed of Dr. Robert T. Morris, Dr. Thomas L. Stedman, and Dr. A. L. Soresi, will present practical suggestions leading to the creation of a special medical board to establish and protect the priority of ideas relating to medical subjects; this board would correspond to the government patent office in Washington. Another important point presented for discussion will be the suggestion to have the board patent in its name all new surgical instruments, and pay a royalty to the inventors, as is done with writers of medical books, who are paid a royalty for their publications. All physicians are cordially invited to be present and the discussion will be open to all.

Influenza.—The spread of epidemic influenza and pneumonia has increased rapidly and at last reports these diseases were prevalent in twenty-three states. Figures for New York city for the first five days of the week beginning January 25th are as follows. In each case the number of cases and deaths are those reported for the twenty-four hour period ending at ten o'clock on the morning of the date named.

	Influenza		Pneumonia	
	Cases.	Deaths.	Cases.	Deaths.
January 25th.....	2,855	30	386	75
January 26th.....	1,712	43	238	88
January 27th.....	3,033	57	420	112
January 28th.....	5,598	67	686	118
January 29th.....	4,706	100	1,049	136
Total since January 1st.....	24,469	426	5,180	1,553

Reports from various parts of the country to the Public Health Service in Washington showed that for the week ending January 24th, there were 27,241 cases of influenza, that deaths from influenza in thirty cities during that week equaled 467, while deaths from pneumonia were 945. For the twenty-four hour period ending January 27th, Chicago had 1,378 cases of influenza with ninety-six deaths and 360 cases of pneumonia with ninety-one deaths. For the twenty-four hours ending January 28th there were 1,472 cases of influenza with eighty-seven deaths and 400 cases of pneumonia with seventy-seven deaths. Michigan had a total of 11,610 cases of influenza on January 29th. Massachusetts had 813 new cases of influenza for the twenty-four hour period ending January 28th. Influenza has made its appearance in the Auburn, N. Y., prison and in the State prison at Trenton, N. J.

Reports from Spain indicated that influenza had spread over the country, and in Madrid there were said to be about 110 deaths a day; there was also a great deal of typhoid and pneumonia, but fewer deaths than during last winter's epidemic. Returns to the English Ministry of Health have not shown any sudden increase in influenza, but a warning was issued that in view of the almost simultaneous epidemics in America, Japan, and Poland, there was considerable probability of another wave of influenza in England.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

(Continued from page 164)

In preceding issues some of the rheumatoid states met with among combatants during the late war were referred to, including the conditions designated at the time by such terms as trench back, myalgia or muscular rheumatism, trench rheumatism, fibrositis, etc. These conditions present some interest even in civil practice in showing the wide variety of clinical effects of a rheumatoid aspect that may result from different, or even the same, forms of exposure to cold, moisture, and traumatism. The so-called trench foot and trench hand are clinically too distinct from rheumatism to be confused with the latter, but there is one more disorder, not yet mentioned, which in some respects suggests a rheumatic state, viz., the so-called trench shin or trench leg.

In this affection the painful manifestations are almost always preceded by constitutional symptoms, such as malaise, headache, lassitude, chills, and fever. A jumping or stabbing form of headache has been described as an early symptom. The fever generally subsides in two or three days. The most characteristic symptom, however, is pain referred to the lower extremities of the shin bones and the tibiales antica muscles. This pain is absent during the day, but tends to recrudescence in the evening and during the night may be very severe, though most of the time it is of a dull aching character.

Accompanying the pain in the shins there may also be pains in other regions of the body, in particular in the back. Tenderness of the muscles of the calf and sole is elicited and certain especially tender points may be noted. Active use of the muscles is said sometimes to reduce their sensitiveness. Little or no disturbance of cutaneous sensibility occurs. In general, the pain in the shins—but not necessarily the tenderness—is increased by motion, particularly by walking.

Somewhat curious manifestations as regards the tone of the muscles in the limbs involved in this disorder have been reported. Upon passive motion the muscles are found to be tense, yet active motion is not interfered with. Indeed, it is stated that in certain cases or at certain times the muscles are hypotonic; the calf is then observed to be relaxed and flabby, and may even be so flaccid as to resemble a suspended bag. Hypertonicity of the muscles is noted especially in incipient cases, and, in some cases, after active movements carried out against resistance, swelling and hardness of the muscular tissues have been observed. Exaggeration of the patellar and plantar reflexes is present in almost every case.

An important differential point in these cases is that while the pains may be pronounced in bony eminences about the joints in the affected limbs or elsewhere in the body, the articulations themselves are not involved. Redness over the seat of pain is frequently noticed, and the blood shows a moderate degree of leucocytosis.

Concerning the causation of trench shin a wide variety of views have been expressed. According to some observers it is merely a neuritis due to exposure, while others deem it a mechanical condition resulting from the use of leg coverings, such as puttees, leggings, or gaiters. One author considered it a local manifestation of influenza, while another, struck by the constitutional effects of an apparent infection at the beginning of the disturbance, admittedly similar to those of the onset of typhus fever or dysentery, concluded that it was a special type of relapsing fever, with particular localization of the spirilla in the blood of the extremities. According to Siegert, an edematous condition of the limbs predisposes to it, while according to others, it is especially common in subjects with flat feet. On the whole, the most widely held view seems to be that it is a separate disease entity due to some obscure form of infection. Chambers termed it an abarticular rheumatism, but the marked resistance of the pain in these cases to salicylates would seem to show that it is less closely allied to true rheumatism than Chambers supposed.

In the treatment of trench shin an important point lay in remembering that warmth, locally applied, made the pain worse, while cold alleviated it. Chambers, 1917, emphasized particularly the preventive treatment, which consists in avoiding tight boots or puttees and rubbing the feet and legs thoroughly with animal fat or animal oil of a high boiling point. Massage of the limbs daily is also advised. To cure the condition when already established, rest in bed was found to be of marked value. Relief of pain was occasionally sufficient upon administration of acetylsalicylic acid or acetphenetidin, but in many instances these agents failed and morphine had to be resorted to. In some patients more radical treatment was instituted, an incision being made through the periosteum of the shin bone; definite benefit is said to have resulted from this measure.

In concluding this series of articles it may not seem inappropriate, having considered in some detail the various conditions which may be clinically confused with rheumatism, to mention some of the unusual manifestations of a true rheumatic nature, or allied to rheumatism, that may be mistaken for other disorders and concerning which contributions have recently appeared in medical literature. A few of the newer recommendations as to the treatment of rheumatism will also be discussed.

(To be continued.)

Preventive Treatment in Influenza.—T. Horder (*British Medical Journal*, November 29, 1919) discusses this subject under four heads, as follows: 1. Prevention of epidemics, which he says is impossible with our present knowledge of the etiology. 2. Prophylaxis in regard to the community by maintaining a high standard of health in the people. He does not believe, however, that this will insure against this particular infection because of its high virulence. 3. Prophylaxis in regard to the individual by means of inoculation. It is admitted that our knowledge regarding the causative agent and the immunity produced by the various vaccines used during the recent epidemic is too meagre to warrant fixed conclusions, yet the writer considers that vaccination with the Pfeiffer streptococcus, or the pneumococcus preparations should be carried out generally since it probably does give a certain degree of immunity in some catarrhal affections which predispose to influenza. He emphasizes the need for careful records of the results of such work in institutions so that valuable clinical data may be obtained for future use. 4. When the epidemic arrives, public control must be the rule. This should provide for the isolation of patients, for quarantine, and for early diagnosis and notification. Lastly, the author believes that a system of previously organized emergency hospitals, on the general plan of the military hospital, which could be called into action one after another as the need arose, would greatly advance the care of the afflicted and would enable us to obtain data of extreme importance regarding the epidemic. Doctor Horder points out that the efficacy of any campaign against the epidemic must be worked out ahead of time in order to obtain satisfactory results.

The Causation and Treatment of Rickets.—E. Pritchard (*British Medical Journal*, November 15, 1919) says that practically all varieties of malnutrition in infancy and early childhood, when sufficiently severe or of long enough duration, tend to terminate in rickets, with typical bone changes, since they all result in an acidosis which must be neutralized by calcium salts even though this may result in a want of calcification of the developing bone. Acidosis may result from incomplete oxidation processes due to excess of food, a deficient supply of oxygen, due to poor air or even to respiratory obstruction, as by adenoids, poisoning or degeneration of nerve cells causing subnormal exercise, warm rooms or excessive clothing interfering with heat dissipation, lack of surface stimulation by sunshine and currents of air, or chronic infections. He admits that a small proportion of cases may be due to a deficiency of lime in the food or to defective absorption of lime, but intestinal intoxication, defective endocrine action, and vitamin deficiency lead to rickets by way of acidosis. The theories that an acid condition of the blood or excessive production of lactic or carbonic acid is responsible are untenable and all other hypotheses are reconcilable with his theory, which is supported further by the fact that, although in most rachitic cases no diminution in the calcium content of the blood can be shown, in tetany, which is a severe form, it does exist. Moreover, he thinks it natu-

ral that in long standing cases of acidosis it is to be expected that iron will be used for neutralization and withheld from developing blood corpuscles, resulting in anemia and compensatory activities of the red marrow and other blood forming centres, which explains the beaded ribs and enlarged epiphyses of the long bones. The treatment indicated is as follows: 1, Remove the cause of the acidosis when possible; 2, restore the reduced alkali reserves of the blood by injecting isotonic salt solution intravenously or subcutaneously, or five per cent. solution of sodium bicarbonate and sodium citrate intravenously; 3, insure a free supply of oxygen, if necessary using Haldane's continuous method of inhalation; 4, raise the blood pressure; 5, promote the excretory functions of the kidneys with camphor, digitalis, strychnine, alcohol, caffeine, scoparium or turpentine; 6, suspend temporarily the intake of food; 7, restore muscular tone by massage and shower baths, and do not use splints that prevent exercise; 8, when nervous symptoms are prominent, phosphorated codliver oil (one in 10,000) affords excellent results.

Vaccine Therapy in Cerebrospinal Meningitis.—H. Méry and L. Girard (*Bulletin de l'Académie de médecine*, November 11, 1919) point out that serum treatment in meningitis may fail when an ear complication exists, when the affection is due to an atypical germ, when the serum is badly borne by the patient, and when the disease tends toward a chronic course, with or without the presence of meningococci in the blood stream. In the authors' case, a boy of twelve was suddenly seized with fever, severe collapse, and signs of meningitis. Blood culture showed the C type of meningococcus. Ordinary serum was given both intraspinally and intramuscularly, complete deafness of the left ear having supervened. Later, anti-C serum was used. By the seventeenth day, improvement seemed to have begun, but during the following twelve days an intermittent type of fever, with chills and sweats, developed. The cerebrospinal fluid being clear at the time, a septicemia was known to be present. Cautious intramuscular serum treatment was resumed, but delirium, fever and collapse necessitated immediate discontinuance. On the thirty-fifth day, in the presence of marked meningeal symptoms, a precarious general condition, and meningococci in the cerebrospinal fluid, treatment with an autogenous vaccine made from the germ obtained by blood culture, killed by exposure to 56° C., was begun. Doses of 250, 500, 1,000, 2,000, and 5,000 millions were administered in succession subcutaneously at intervals of two or three days. Fever descended by lysis, lumbar puncture revealed improvement of the spinal fluid, and convalescence set in. The vaccine treatment should not, of course, be taken as excluding serum therapy, as the latter can alone afford the necessary rapid immunity. To "prepare the soil" for resistance against the invading organism, however, and prevent a secondary onslaught by it, an autogenous vaccine should be prepared from the cerebrospinal fluid or blood and administered whenever possible. Systematic combination of serum and vaccine treatment should further improve the prognosis in this disease.

Small Doses of Pituitrin in Inducing Labor at Term in Combination with Nitrous Oxide Anesthesia to Alleviate the Labor Pains.—Arthur Stein (*American Journal of Obstetrics*, October, 1919) states that the used of pituitrin in very small doses, combined with nitrous oxide anesthesia, constitutes an ideal method of conducting labor at term. The response to pituitrin in suitable cases was very general. All the mothers did well under its use, and the infants were born in good condition. The drug can be advantageously employed for the induction of labor at term as well as for its safe acceleration. The best method of administration is intramuscular injection of an average dose of two or three minims. Repeated injections are given, true labor usually beginning after the second small dose, though sometimes after the first, or, again, not until after the third. At 7 a. m. the patient receives one ounce of castor oil, and two hours later, two minims of pituitrin, followed by another dose an hour later. If labor pains are elicited, the pituitrin is continued at intervals of a half hour; if no pains result, the treatment is stopped and another attempt made on the third following day. As soon as labor pains are actually started, a trained anesthetist holds himself in readiness to administer nitrous oxide at the beginning of each uterine contraction, grading the amount given according to the severity of the pain, and progressively increasing with the advance of labor. During the expulsive stage, which is materially shortened by the pituitrin—averaging slightly over one hour—enough nitrous oxide, with a variable admixture of oxygen, may be given to produce a brief surgical anesthesia. Patients have unanimously endorsed the combined procedure.

Can Labor Be Facilitated by a Specific Diet of the Mother during Pregnancy?—Hugo Ehrenfest (*American Journal of Obstetrics*, October, 1919), when recently asked by a patient for "that diet list which keeps the baby small and makes labor so much easier," gave an emphatically negative answer, implying that no effectual diet of this description existed. While his answer did not coincide with the opinion of the majority of American authors of textbooks on obstetrics, he feels, after a review of all clinical contributions in medical literature on the subject in the last twenty-nine years, that there is no valid basis for either the recommendation of such a dietary in textbooks or its extensive employment in practice. Prochownik in 1889 recommended for the last six months of pregnancy, in patients with minor pelvic contractions, a diet poor in liquids and carbohydrates and rich in proteins, in general resembling the usual diet for diabetics. This diet was stated to result in deficiency of fat in the fetus, with corresponding thinness and slackness of the skin covering the head, this condition, in turn, increasing the mobility of the skull bones against each other, facilitating moulding, and thus permitting unusual compression of the head during labor. Neither clinical evidence nor animal experiments furnish any satisfactory basis for the latter claim. Overeating by the pregnant mother is commonly found associated with physical inactivity; this undeniably tends to

cause overcarrying, and the latter, according to all investigators, is the most conspicuous factor in excessive size of the newborn. Again, the transition to the fetus of substances essential for its normal development is automatically regulated by the placenta, and cannot be interfered with unless the supply of such substances in the maternal organism is reduced below the level required for maintenance of the mother's health. The Prochownik diet, with proteins substituted for carbohydrates and the water intake greatly reduced, is not adapted to the special needs of the pregnant woman. Unless under most careful supervision, this diet may actually result in toxicemic conditions, which proper prenatal dietetic care assiduously attempts to avoid.

Radiotherapy in Surgical Tuberculosis of Children.—Rafael Espinola (*La Semana Medica*, October 30, 1919) is convinced that radiotherapy, in the perfected technic of the present day, is the treatment of election in surgical tuberculosis, more especially in the larger cities where the benefits of fresh air, sunshine, and proper food are often not available. The rapidity of resolution of glandular masses is in direct relation to the dose of the rays. Cold abscesses, the pus of caseous suppurating adenitis, should be evacuated by simple incision followed by intensive radiation. The dose and length of session of the x ray treatment can be adapted to the intensity of the bacillary infection; high virulence calling for large doses, low virulence for small doses. It is possible to give daily treatments for fifteen days without producing a dermatitis, providing the rays are filtered and of short wave length. There is no advantage in intensive radiation of cutaneous tuberculosis in the stage of reparation as this destroys the new cells which form the cicatricial tissue. It is advisable to employ, in conjunction, general hygiene, ample nourishment, heliotherapy, fresh air, and the proper climate to defend the system against the tubercle bacillus, and to prevent the formation of new foci. Surgery, in most cases of surgical tuberculosis in children, should be looked upon as a method of secondary importance; scientifically practised, röntgenotherapy either alone or associated with other phases of treatment is quite capable of curing the so-called surgical affections.

Radium in the Treatment of Tuberculous Adenitis.—E. S. Molyneux (*British Medical Journal*, November 29, 1919) reports a series of from twenty to thirty cases of tuberculous adenitis treated with radium with marked success. Nodes at all stages of the disease were in the series and in all of them the swelling disappeared leaving no scar unless a sinus had been present at the beginning of the treatment. Ulceration did not occur in any case. Fifteen milligrams of radium bromide spread over an applicator one and one fourth inches in diameter, screened by one millimeter of silver was strapped over the area to be treated for ten hours. Two applications a week were usually employed. After a week or ten days the swelling was seen to begin to grow smaller and at the end of a few weeks nothing but fibrous nodules were left to show the place of the old lesion. In some of the cases the cure has lasted for four or five years.

Treatment of Gonorrhea.—Janet (*Presse médicale*, October 25, 1919) states that the abortive treatment of gonorrhea with argyrol is giving him fifty per cent. of favorable results. Lack of success may be due to improper preparation of the solution, which must be effected in the cold, in four hours' time, and without addition of glycerin. Vaccination against the gonococcus is still in its infancy. The vaccines formerly in use are insufficient; the germs, when killed by chemical products, are thereby rendered almost inactive, and the resulting vaccine is ineffectual. The gonococci should instead be killed by exposure to a freezing temperature for twenty-four hours. The old vaccine, moreover, contains too few organisms. The modern vaccine prepared by Lemoignic, Cesary, and Demonchy contains fifty to 150 billions of gonococci. This new vaccine opens up a hopeful therapeutic prospect.

Thyroid Treatment in Alopecia Areata Maligna.—James Straudberg (*Acta Medica Scandinavica*, Vol. LII, Fasc. I-II) reports nine cases, three of them in women and six in men, in all of whom the alopecia areata had progressed to almost complete baldness. In none of these were endocrine disturbances demonstrated with certainty. Syphilis was shown to be present in only one case. Two had dementia præcox. In three of the cases there was a renewed growth of hair as a result of the thyroid treatment, which was given in tablets of 0.10 to 0.15 grams (two to three grains) three times a day. In two other cases the treatment was of too short duration to draw any conclusion. In one case that did not respond to thyroid medication, a new growth of hair appeared during a subsequent pregnancy, only to disappear again at the onset of menstruation. In one of the dementia præcox cases the patient was not benefited by organotherapy, but a hirsute development set in with the improvement of the psychic condition.

Treatment of Chancroidal Bubo by a Modified Fontan Method.—Hudelo and Rabut (*Presse médicale*, November 12, 1919) recommend the use of Bory's xyloliodoform solution in oil in the injection treatment of chancroidal bubo, because this solution is especially adapted for reaching all recesses of the bubo while at the same time permitting early closure of the cavity formed. The indication for the use of this method is failure of the abortive treatment of bubo, the surgeon being thus rendered aware that a suppurative type of adenitis exists. Complete softening of the gland, however, should not be awaited, but the injection treatment begun at the earliest indication of softening. In operating, an opening not less than seven to ten millimetres long should be made with the point of the knife; a trocar is insufficient. Pus already formed and all tissues then in process of breaking down, are now evacuated by expression—not by curettage. Considerable pressure is required to empty the lesion properly and secure good results; in sensitive patients, brief anesthesia with a few drops of ethyl chloride may be availed of. The xyloliodoform oil—iodoform one part, xylol ten parts, and olive oil forty parts—is then in-

jected through the opening with a five or ten mil syringe in such a manner as to reach all portions of the lesion. The xylol carries a considerable amount of iodoform into all recesses. A flat dressing is finally applied. On succeeding days the injection is repeated, without much pressure, until suppuration has ceased and the walls of the cavity come together—a result attained on the second or third day in favorable cases. The oil treatment is then discontinued and Mencièr's ointment substituted. The patient should remain at rest in bed for the first few days, but after the third or fourth day may rise and resume his ordinary occupation. Out of seventeen cases in which this method was used, only three were unsuccessful, persistent separation of the tissues necessitating operative measures before healing could occur. Among the remaining cases, seven healed within a week, including three on the fourth day; six healed in less than a fortnight, and one in three weeks.

Cépède's Vaccine in Pulmonary Tuberculosis.—Lacombe (*Presse médicale*, October 18, 1919) reports 105 cases treated with this vaccine since March, 1919. Nine patients discontinued treatment; three died; seven remained in a precarious state; twenty showed little or no change; forty-two were improved, and twenty-four were cured. Of the latter, fourteen had had tubercle bacilli in their sputum at the beginning of treatment. In addition to the vaccine, intratracheal injections of oil containing menthol, guaiacol, and oil of eucalyptus were administered, and arsenic and strychnine likewise given. The vaccine injections were given under the skin overlying the tuberculous focus, usually in the supraspinatus fossa. They were repeated every four days and proved quite harmless. Under this treatment the patient's strength rapidly returned, sweating ceased, the evening rise of temperature diminished, and the general condition was notably improved. The auscultatory signs seemed at first to be made worse—a result probably due to congestive phenomena accompanying the phagocytosis induced by the vaccine. These phenomena continued though with progressive diminution of intensity, until the pulmonary lesion had healed.

Antiscorbutic Value of the Banana.—Howard B. Lewis (*Journal of Biological Chemistry*, November, 1919) states that guineapigs are unable to maintain their body weight on an exclusive diet of bananas, dying in twenty to thirty days, with no lesions characteristic of scurvy, but showing a condition of marked inanition. When the animals were given a diet of rolled oats to which was added more than twenty-five grams of banana daily, scurvy did not occur, but this diet was not adequate for normal growth in young animals. Experimental scurvy was produced by a diet consisting of autoclaved rolled oats, bran, milk, casein and inorganic salts. Ten to fifteen grams of banana added to this diet protected against the production of scurvy and also promoted growth in young animals. The author believes that a lower content of the antiscorbutic substance than has formerly been thought necessary may protect against the disease if the diet is adequate in the amount of the other essential dietary substances.

Miscellany from Home and Foreign Journals

Consideration of Varicocele.—Philip J. Reel (*Military Surgeon*, December, 1919) gives three general classifications which were made in a series of varicocele cases: 1. The patient presenting a varicocele which produced no psychic or reflex disturbances and which annoyed him only because of the weight and size of the scrotum and traction upon the cord. This type of individual was easily handled. He complained of physical discomfort only and usually stated that he had tried scrotal suspension and had discarded it because of mechanical irritation. Rather pronounced elongation and dilatation of the veins were the rule and the subjective symptoms could readily be explained by the pathological condition. When advised that he could be relieved by operation and he submitted, he would convalesce to complete recovery without difficulty.

2. The patient with a small or medium sized varicocele in whom a neuroses had developed, the chief feature of which was fear of genital defect, associated with a variety of aches and pains out of proportion to the objective findings. It was certainly reasonable to suppose that the physical defect in itself could not account for the symptomatology in the otherwise normal person. Marked modesty was usually displayed by this type of patient when he was examined, and he complained of great tenderness of the testes and cord when manipulated by the examining fingers. In most instances the scrotum was not so relaxed as in the more marked type. Much anxiety was entertained as to the present condition of the testicle and what would happen to it if the varicocele was operated upon. Frequently he would request transfer back to duty, stating that the affected side had ceased to trouble him. If this request was granted, he would return in a few days with the same request as before. These men deserved serious consideration; they should not be allowed to become sexual neurotics. Careful questioning prior to physical examination as to how the varicocele bothered the patient, how long he had noticed its presence, whether he understood just what it was and how it was produced, would often reveal the fact that he believed the veins to be intimately connected with the testicle and capable of affecting his generative powers. At times he would state that he was afraid operation would cause damage to the organ. It was well to explain the nature of the varicocele and the mechanical factors entering into the operative procedure for its relief. The more important anatomical relation should be explained in order to emphasize the relief to be gained by operation. It was a great satisfaction for this type to learn that a general anesthetic was not needed and that the operation was not performed within the scrotum. Only when the patient fully understood his condition and the principle of its correction would he experience any benefit from the operation.

3. This patient would have at most a medium sized varicocele which had never produced any symptoms or inconvenience and probably never

would as long as it was not operated upon. The operation of choice was the inguinal. The control of hemorrhage was perfect, the connective tissue replacement was minimized, the chance of testicular trauma was absent, the danger of infection was no more than that of herniotomy, and injury to the vas was negligible because of its easy recognition within the canal. Local anesthesia was the method of choice and the nontoxic preparations made up in 0.25 per cent. solutions were satisfactory. The external ring was determined by palpation and the skin injection started a little below and extended upward over the canal parallel to Poupart's ligament for a distance of three inches. After incision of the skin and superficial fascia all small points which persisted in bleeding were caught and ligated. Retraction of the edges of the incision would reveal the external ring and aponeurosis of the external oblique. The size of the ring, its laxity, and the ease with which the cord could be delivered would determine whether the margins should be injected and cut or not. Gently grasping the sheath of the cord, a small amount of the solution was injected and the incision made longitudinally. The veins were next lifted out and the sheath stripped downward with a blunt instrument. Usually the vas and artery of the cord would remain with the sheath, but they should always be identified by sight and touch. The portion of the vein to be removed was crushed at both ends by a hemostat, ligated and excised. One of the ligatures was then threaded upon a needle and the stumps transfixed with one or two stitches, after which they were again tied and returned to the sheath. The external ring is repaired if cut and the fascia and skin closed in the usual manner.

Cardinal Principles in Cardiologic Practice.

—Thomas Lewis (*British Medical Journal*, November 15, 1919) points out the essentials in handling routine, unselected cases of common, chronic cardiac diseases. The modern practice of rigidly classifying cases as structural or functional and of paying undue attention to various murmurs is shown to be pernicious. Six cardinal points in the examination of chronic maladies of the heart are:

1. Symptoms and signs of cardiac failure; a, early evidences of impaired circulation, fatigue leading up to exhaustion, breathlessness and pain after moderate exercise, rise and fall of pulse rate and blood pressure being of secondary importance; b, signs of cardiac failure of the congestive type, cyanosis, engorgement of veins of neck and liver, these signs occurring only in advanced disease.

2. Signs of cardiac enlargement and its degree, without attempt to differentiate dilatation and hypertrophy. Palpation is better than inspection and percussion, and the chief sign is the position and extent of the maximal thrust and the structures it involves.

3. Signs of valvular disease: The only important ones are, a, signs of aortic regurgitation, which are obtained reliably as often at the pulse as at the base of the heart, and b, signs of mitral

stenosis, of which but two are valuable, namely, a diastolic thrill in the apical region and a diastolic rumble of low pitch, audible over the maximal thrust and often best heard only in the recumbent position after the action of the heart has been accelerated by exercise.

4. The presence or absence of fibrillation of the auricles: In irregular hearts, a, if there is constant quickening of the pulse during deep inspiration, fibrillation is not present; b, if the heart beats or can be made to beat at a rate of 120 or more, while the pulse remains irregular, fibrillation is almost certainly present.

5. The presence or absence of infection: This is shown by a, pallor, especially when accompanied by sallowness or duskeness, a very valuable sign of ill omen in aortic disease, and not due to the actual regurgitation; b, palpable enlargement of the spleen, usually a sign of active infection of the valves; c, petechial hemorrhages in the conjunctivæ, buccal mucous membranes, or in the skin at the base of the neck and shoulders; d, clubbing of the fingers, which when slight is more often accompanied by infective endocarditis than by venous engorgement; e, fever, constantly or occasionally; f, a pulse rate always over ninety or 120, while the patient rests and the pulse is regular, and g, gradual but steady loss of weight. Signs a to e are especially signs of infective endocarditis; f and g occur also in intoxications.

6. When evidence of disease is found, its etiology is to be considered in prognosis and treatment, i. e., whether of rheumatic, syphilitic or other infective origin, or a manifestation of senility.

The first three cardinal points command primary consideration, the others assume cardinal importance in cases in which disabling heart disease is already diagnosed. In considering exercise tolerance, the following rules are laid down: a, When there is definite enlargement, aortic disease, mitral stenosis, or fibrillation, it is safe to attribute undue distress on exercise to a cardiac lesion; b, in young subjects, if there is no such evidence, deficient exercise tolerance should rarely, if ever, be ascribed primarily to the heart; c, in elderly subjects, without signs of structural disease but with poor exercise tolerance, the heart should be regarded as the probable seat of the mischief.

In treating cardiac disease, exercise should be so regulated that the symptoms of distress are not provoked. There are three indications for bed treatment: distress caused by rising to the feet or walking leisurely, the presence of active infection, and the necessity for drastic digitalis therapy. The chief value of digitalis lies in its power to control the ventricular rate when auricular fibrillation has come, resting the heart by prolonging the diastoles. Digitalis is not a cardiac stimulant or tonic, but a powerful hypnotic, extending the heart's period of sleep. In cases of cardiac disease foci of infection should be cleared up and the patients guarded from contact with other patients suffering from infections of the respiratory tract. Syphilitic patients should receive appropriate treatment. It is important that every patient's capacity for work be tested before his discharge from the hospital.

Irritable Heart.—Louis M. Warfield and Fred M. Smith (*Journal of Laboratory and Clinical Medicine*, November, 1919) discuss the etiology of irritable heart. They consider Lewis's original name of effort syndrome to designate the group of symptoms known in the British Army as D. A. H., to be preferable to neurocirculatory asthenia or neurocirculatory myasthenia. The condition is not a disease, as the latter terms would suggest, but only a group of symptoms associated with a number of diseases. The authors observed 275 cases in 118 of which the patients were sent to the hospital for observation and graded exercises. An analysis of their histories shows that these symptoms are present in many diseases and in convalescence from many others, but the true cases of irritable heart may be singled out from other cases showing a similar syndrome by the fact that these patients have a history dating back several years with no definite cause. These patients also in some instances seem to be born with a constitutional inferiority. In examining recruits for the army, such subjects should be unconditionally rejected.

The value of exercise in the diagnosis of irritable heart and the determination of the fitness of subjects for military service is discussed by the authors who studied the effect of graded exercise on 142 men. This group consisted of men who had had no military training and those who had broken down in service. The men were divided into three classes: 1, where no cause could be found for the irritable heart; 2, irritable heart with toxic or exophthalmic goitre as a basis, and 3, irritable heart associated with active pulmonary tuberculosis. The authors found graded exercise valuable in sorting the fit from the unfit but of no therapeutic value in cases of irritable heart where the subjects came from civil life to the army. Graded exercise proved helpful in bringing to light suspected cases of incipient tuberculosis, and in diagnosing between pulmonary tuberculosis and irritable heart.

General Prophylaxis of Tuberculosis.—J. Lignières (*Bulletin de l'Académie de médecine*, November 18, 1919) states that while dried tuberculous sputum undoubtedly constitutes a great source of danger to those who inhale the dust containing it, our knowledge of this fact has not yet been properly applied in antituberculous prophylaxis. Early isolation and prophylactic instruction of the consumptive is by no means a complete solution of the problem. Interdiction of expectoration on the ground or floor by consumptives fails to provide for the great amount of dangerous sputum discharged long before the existence of tuberculosis is suspected. The proper course to follow is to make spitting in any closed public place and on the sidewalks by any person a misdemeanor. Raising dust in closed premises while the public has access to these premises should likewise be held a misdemeanor. Denunciation of any violation of these rules to any agent representing the authorities should be followed by enforcement of a penalty prescribed by law. The public must also be informed as to where to expectorate, and how to sweep in a safe manner. In closed public places, offices, factories,

stores, schools, etc., there should be provided fixed receptacles for sputum, placed against the wall and with constant flow of water. In habitations, cuspidors are neither welcome nor entirely safe. The inmates should be told to expectorate either in a chamber containing water, in the bucket serving as a receptacle for wash water, or in the toilet or any other receptacle leading directly to the sewer. The important point is that the sputum should still be in a moist condition when it leaves the premises; the bacilli in it, once off the premises, will soon undergo spontaneous destruction. The patient's pocket handkerchief is sometimes indispensable and unavoidably contaminated; the essential feature is that it shall not be mixed with the rest of the soiled body clothing but shall be placed in a separate bag and thoroughly boiled before being laundered. In the streets, one may expectorate on the highway but not on the sidewalk. In coughing, a handkerchief should be placed before the mouth. Sweeping, where it cannot be supplanted by wiping with a damp cloth, should be done only after the floor has been well moistened and persons other than the sweeper have left the room. Cooperation of the general public is absolutely indispensable in anti-tuberculous prophylaxis; so far, this essential feature of the problem has received but scant notice.

The Risk to Human Beings from Open Forms of Tuberculosis Among Carnivorous Domestic Animals.—Gabriel Petit (*Bulletin de l'Académie de médecine*, November 18, 1919) emphasizes the identity of the tuberculous infection of dogs and cats with that of man and calls attention not only to the established frequency with which dogs acquire tuberculosis from man but also to the strong probability that man not infrequently contracts the infection from dogs and cats. Landouzy showed strikingly how fragments of food in taverns and restaurants became mixed with the sputum of persons frequenting these establishments and how often dogs became infected by eating the resulting bacillus laden mixture. The least common type of tuberculous infection attended with danger of transmission to human subjects from dogs and cats is tuberculous pyelonephritis with continuous discharge of tubercle bacilli in the urine. More frequently there is an ulcerative tuberculosis of the intestine, started through ingestion of infected material, and propagating the disease through the feces. Again, pulmonary tuberculosis in dogs and cats, both grossly and minutely identical in its different forms with the corresponding forms seen in man, very often results—without hemoptysis, however—in the formation of cavities opening into the bronchi. The animals do not spit, but they do cough, and in doing so disseminate bacilli widely over the carpet, chairs, clothes, and the hands of their masters. A dangerous and little known source of infection from dogs and especially cats is the tuberculous ulcers—doubtless started by scratching with claws soiled with tuberculous sputum—met with in these animals on the neck, lips, snout, forehead, eyelids or ears. These ulcers wholly fail to heal, becoming deeper and more mutilating, and sometimes reaching a large size. The

pus continuously discharged from these dangerous lesions teems with tubercle bacilli. Children playing with these animals, petting and kissing them and taking them to bed, are undoubtedly much exposed. All cats and dogs in a seriously depreciated state of health, with loss of weight, cough, and diarrhea, or harboring inveterate ulcerations on the face or neck, should be considered at least as tuberculosis suspects and due prophylactic measures should be taken.

Pfeiffer's Bacillus and Influenza.—Martha Wollstein (*Journal of Experimental Medicine*, December, 1919) reports that unsatisfactory and irregular results were obtained in regard to the serological reactions of Pfeiffer's bacillus with the sera of recovered patients, as well as with monovalent immune rabbit sera, although the positive results obtained from the epidemic and sporadic strains were similar. Complement fixation reactions showed that the blood of recovered patients gave a positive reaction for the Pfeiffer bacillus with some regularity in dilutions of one in five to one in twenty, and with some immune rabbit sera binding was obtained in dilutions of one in one hundred. Precipitins were also found in the sera of recovered patients and immunized rabbits, the precipitin reaction being strongly marked with heterologous and homologous strains of Pfeiffer's bacillus. Wollstein says that Pfeiffer's bacillus is a common secondary invader in influenza and its presence influences the course of the disease.

Pathology of Influenza Pneumonia.—Orville J. Walker (*Journal of Laboratory and Clinical Medicine*, December, 1919) has written a very comprehensive paper on influenza pneumonia, adding the experience gained in the influenza epidemic at Camp Sherman to the bulk of influenza literature, and he has also attempted to make an orderly classification of the conditions met with. The following topics are discussed in order: Influenza pneumonia; pulmonary edema, bronchopneumonia type; interstitial bronchopneumonia; lobular bronchopneumonia, and the lobar type of pneumonia. In each instance a careful gross and microscopical description is given of the lesions. The conditions other than pneumonia which were found in 100 autopsies are described. Empyema and pericarditis were the most frequent complications. Influenza pneumonia is defined as "primarily an acute hemorrhagic lesion, interstitial, nodular, or massive in extent, rising from a pulmonary capillary phlebitis with disseminated capillary necrosis due to some toxic agent and resulting in a secondary purulent pneumonia with healing by organization." The organisms recovered from the lungs at autopsy most frequently were the pneumococcus and the streptococcus hemolyticus. The bacillus of influenza was found in only four per cent. of the cases. The author does not believe that interstitial and lobular pneumonia can be considered as typical lesions resulting from the invasion of the hemolytic streptococcus, as in these types of pneumonia the pneumococcus was frequently found as the sole organism. He also thinks it is doubtful whether the type of organism isolated from pulmonary tissue has much to do with the lesion produced.

The Weil-Felix Reaction in a Mild Epidemic of Typhus.—L. E. Napier (*Lancet*, November 15, 1919) reports the results, in a small series of cases of typhus, of the Weil-Felix reaction, i. e., the agglutination of a proteus like organism X19 by the serum of typhus cases. Wright's capillary pipette method was used for the agglutinations. Several control experiments were made. Of fifty supposedly normal cases, the serum of only one gave agglutination in a dilution of one in 100, and of only four, in dilutions of one in fifty. Of twenty-four febrile cases not typhus, the serum gave positive reactions in dilutions of one in 100 in two cases and of one in fifty in eight cases. Some of the rest agglutinated in lower dilutions. Of all the fevers save typhus, typhoid serum agglutinated in the highest dilutions, but not all typhoid sera agglutinated X19. The serum in fifty-one cases definitely diagnosed as typhus gave the reaction in high dilutions, four fifths of the sera agglutinating in dilutions of over one in 1000. Seven cases of undiagnosed fever gave the reaction in serum dilutions of over one in 400. Of these cases five were ultimately considered as typhus. Tests were not made before the fifth day of the disease but subsequent to that day there seems to be a gradual rise in the dilutions which agglutinate. The maximum of agglutinins seems to be present on or about the seventeenth day of the disease. After this there seems to be a gradual decrease in the power of agglutination though no prolonged observations were made. It is concluded that the reaction is of definite value for diagnosis of typhus but it is not entirely specific or infallible. Agglutinations under one in fifty should not be considered significant; in fact, in this series none of the typhus cases failed, at some time in their course, to give the reaction in dilutions of one in 640 or more, while in the nontyphus cases, none gave the reaction in dilutions of over one in 400.

Blood Regeneration.—Mary V. Buell (*Journal of Biological Chemistry*, November, 1919) used pigs as the experimental animals in a study of the effect of hemorrhage on alkaline reserve, collecting blood from the tail without anesthesia. This blood was allowed to spurt from an artery into a paraffin vessel containing potassium oxalate, and after standing from one half to two hours before centrifuging, the alkaline reserve values of the plasma were determined by the Van Slyke apparatus. The animals showed a considerable degree of variation in their reaction to hemorrhage of about the same quantity of blood, and the same animals at different times also showed a varying reaction. The factor of struggle made a great deal of difference in the results, as the drop in alkaline reserve was usually small when the blood was obtained while the animal was quiet, but it was much greater when obtained during struggling and restlessness. Hemorrhages of about 1.3 per cent. of the body weight of the pig showed a somewhat lowered alkaline reserve during the first few hours following bleeding, the maximum drop being reached thirty minutes after the bleeding stopped. The alkaline reserve returned to its original value at the end of five hours and some-

times before. Immediately following hemorrhage the total nitrogen of the blood fell, while the urea nitrogen and nonprotein nitrogen rose. One animal on a corn and water diet was bled seven times, but the percentage of chlorides in the blood remained normal. On an inadequate diet of corn and water, while repeated bleedings were being carried out, a distinct tendency toward regeneration of blood proteins was noted. These experiments support the belief that diet is an important factor in the rate of regeneration of blood. Concerning the effect of hemorrhage on nitrogen metabolism, Buell found that the creatine excretion of two pigs on a diet of corn and water was increased while the animal was being submitted to frequent bleedings. These experiments brought out the facts that after hemorrhage the drops in alkaline reserve were slight and short in duration, that the ammonia nitrogen excretion was not much increased, and that the hydrogen ion concentration of the urine was not definitely influenced by the procedure. These findings support the theory that losses of blood amounting to six c.c. to a pound of body weight are not necessarily accompanied by a severe grade of acidosis.

Clotting Efficiency of Thromboplastic Agents.

—P. J. Hanzlik and C. M. Weidenthal (*Journal of Pharmacology and Experimental Therapeutics*, October, 1919) note that most of the commercial thromboplastic preparations are not secret or patented remedies, although the chemical composition of some, particularly as to active constituents, is vague or unknown. In extensive tests of these agents, the kephalin and thromboplastin type proved capable of rather markedly accelerating the coagulation time of blood and oxalate plasma *in vitro*, while coagulen, hemostatic serum, and coagulose were practically inactive. The thromboplastins were found to possess three to seven times the accelerator clotting efficiency of kephalin and to shorten the coagulation time to one twentieth or one tenth as compared with normal saline solution. The kephalins—0.1 per cent.—possessed about one seventh of one third the activity of the thromboplastins, but as compared with saline solution shortened the coagulation time to one third to one half. Fresh coagulose, hemostatic serum, and coagulen failed to accelerate clotting. Both the kephalins and thromboplastins were found to lose their thromboplastic activity on standing. This appeared to be more variable with kephalin, some specimens nine to twenty-two months old proving as active as the freshest. Deterioration of kephalin was sometimes demonstrable after two months. Thromboplastin from different sources nine and twenty-two months old was about one eighth to one third as active as when fresh, and of the same activity as fresh kephalin. The range of optimal concentrations of kephalin for hastening the coagulation time of plasma found to range from 0.06 to one per cent.; outside of these limits coagulation was retarded. Activity of the thromboplastins proved directly proportional to the concentration, indicating a difference in mechanism of action from kephalin. Coagulen, coagulose, and hemostatic serum in both high and low concentrations gave variable results.

Proceedings of National and Local Societies

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held November 20, 1919.

The President, Dr. GEORGE DAVID STEWART, in the Chair.

Chronic Arthritis in the Army.—Dr. RALPH PEMBERTON, of Philadelphia, presented a study on chronic arthritis which was based on 400 cases of the disease observed in United States General Hospital No. 9, at Lakewood, N. J. The decision of the surgeon general to make special provision for the care and study of chronic arthritis in the army had made activities in this connection possible on a scale larger than any opportunity in this country since the Civil War, or than would be likely to occur again. This report considered the following: 1. The incidence of chronic arthritis in the army as a whole, a statistical analysis of the factors governing this incidence, the types of cases resulting, and such clinical matters as had been suggested in the course of this study; 2, laboratory and clinical studies along a variety of lines as to the nature of arthritis, based upon a large proportion of the four hundred cases; 3, experience with certain types of treatment and brief analysis of some other forms of therapy with their indications; 4, recommendations directed towards lowering the incidence of arthritis in the army, towards the provision of personnel, equipment and other facilities suggested as important, toward reduction of hospital days and the early return to duty of soldiers the subject of this disease.

Chronic arthritis, under average conditions, had its highest incidence around the fourth and fifth decades, though it might occur at any age. The average age of all these patients was 28.26 years, while in the worst cases the average age of the patients showing the least improvement was 29.38 years. The statistics were compiled with the assistance of Lieutenant John W. Robertson and showed that of the 400 patients 256, or sixty-four per cent., had arthritis only; 112 patients, or twenty-eight per cent., had a combination of arthritis and myositis; twenty-two patients, or 5.5 per cent., had myositis only; seven patients had nerve involvement only, and three cases were listed as doubtful. The precipitating factors in order of frequency were as follows: Exposure in 252 cases, or fifty-eight per cent.; dysentery in thirty-three, or 8.25 per cent.; injury in thirty, or 7.5 per cent.; influenza in twenty-eight, or seven per cent.; gas in twenty-three, or 5.75 per cent.; drilling and hiking in fifteen, or 3.75 per cent.; tonsillitis in thirteen, or 3.25 per cent.; pneumonia in six, or 1.5 per cent.; Neisserian infection in four, or one per cent. The remaining cases were due to miscellaneous factors. In forty-eight cases there was more than one precipitating factor.

Although the etiological importance of focal infection was not to be minimized, especially in civil life, the present group showed a considerable independence of it, there being apparent foci of infection in seventy-two per cent. of the cases. One hundred and eighty-four patients, or forty-six per

cent., recovered in the presence of demonstrable surgical foci. This was nearly three times the number that improved after the removal of foci. The tonsils were the most frequent site of infection, fifty-two per cent.; the teeth were next, being the seat of infection in 33.5 per cent. of the cases; the genitourinary tract was the seat of infection in only 12.5 per cent. of the cases, and clearly played a most negligible rôle in the causation of arthritis. The sites of most frequent involvement were the knee in sixty-two per cent. of the cases, the ankle in 35.25 per cent., the hip in 33.75 per cent., and the shoulder in 31.25 per cent. It was not at all clear that trauma to weightbearing parts, caused by hiking, drilling, etc., played a more important rôle than it did in civil life in determining the site involved. The basal metabolism was studied in twenty-nine cases and was found to be normal in eighty per cent. of these, while in twenty per cent. it was slightly below normal limits.

In a series of cases the patients were studied with reference to the carbon dioxide combining power of the blood, the total fat, the cholesterol, and the calcium of the fasting blood. These were found to fall within the accepted normal limits. In about one half of forty cases of arthritis studied the patients showed an abnormally high value for blood creatine. Certain of these showed a decline in blood creatine coincident with clinical improvement. In seventeen cases the urea of the fasting blood also fell within normal limits. The nitrogen of the fasting blood in sixty-seven observations in fifty-seven cases fell within normal limits, with two exceptions.

Thirty cases of arthritis of widely different types were studied with reference to renal function by means of the so-called nephritis test meal. These gave results which fell within the accepted ranges for normals. When compared with nine normals under similar conditions there was a slight lag in the elimination of water, nitrogen, and particularly of salt. In view of the fact that the blood nitrogen and urea values were practically normal, it seemed fair to conclude that there was no important dislocation of renal function in chronic arthritis.

Studies of arthritides representing all degrees and stages of the disease showed that there was a lowered sugar tolerance in a large proportion of cases. This lowered tolerance accompanied the great majority of severe cases and was roughly proportional to the activity of the arthritis process *per se*. It returned or tended to return to normal with convalescence or recovery. The return to normal was apparently independent of the type of therapy employed, but was most abrupt after the removal of causative foci of infection. In certain severe chronic cases from which all demonstrable foci had been removed, a lowered sugar tolerance seemed to persist. Apparent foci of infection, unproductive of systemic effects, were not necessarily accompanied by a lowered sugar tolerance. A lowered sugar tolerance from focal infection apparently accompanied the failure of the organism successfully

to maintain its wall of defence. In this light the lowered tolerance became an intermediary step in the pathology of arthritis and possibly other conditions as well. A lowered sugar tolerance seemed to stand in relation to a great many of the infectious or inflammatory processes, and to depend upon more fundamental pathology than had been appreciated. It was also of more common occurrence than had been recognized. In certain diseases the lowered tolerance observed might have been due to focal infection rather than to the disease under consideration. It was important that foci of infection be eliminated from consideration when miscellaneous conditions were studied in this respect.

If army recruits were examined critically for a history of previous attacks of arthritis, those in whom the disease was most likely to develop could be singled out. It was reasonable to believe that rejection of this group or at least the worst cases in it would reduce to a considerable extent the incidence of arthritis in the army. A more conservative policy would segregate such patients, examine them for foci of infection, and remove such foci when found. This would be of importance from the standpoint of prophylaxis toward the civil community. One or the other of these methods might be applied or they might be appropriately combined.

In considering the subject of treatment, the group of patients here discussed presented one outstanding departure from the group of arthritics encountered in civil life, namely, in respect to the greater tendency of the soldier to improve or recover in the majority of instances if given a fair chance. A large number were recovering upon admission or had recovered following nothing more fundamental than rest and external measures, notwithstanding severe and protracted invalidism. This fact forced consideration of the results obtained by the expectant plan of treatment when based upon such measures as baking, massage, hydrotherapy, electricity and the like. These had consequences much more encouraging than were encountered in civil life, and led to the postponement of certain more radical forms of treatment until they were clearly indicated. It became obvious that for the group as a whole the importance of the external measures outlined above, as adjuvants at least, would have to be recognized; this conclusion, however, did not apply to the most severe and oldest cases in the same degree.

The kinds of treatment which received greatest emphasis were, first, those based upon attempts to discover and remove foci of infection when present and, second, those based upon local and external measures. Other forms of therapy figured less conspicuously. In practically every case in which the disease was stationary, growing worse, or improving unsatisfactorily, operative removal was carried out. It was generally agreed that nonspecific protein injections, as applied to arthritis, achieved their best results in the acute forms; subacute and chronic arthritis responded less readily, in the order indicated. The cases in the present series to which this treatment was applied belonged for the most part in the category of chronic cases, and opportunity to use it where benefit was likely to result was

infrequent. The army typhoid vaccine was used in an initial dose of twenty-five million, followed by a second dose of fifty million, and a third of seventy-five million. Nineteen patients received the non-specific protein injection. Of these seven were definitely improved, two were apparently cured, and of those unimproved one was apparently made worse.

Restricted diet seemed to have a definitely beneficial result in a considerable number of cases. Experience with treatment by restricted diet, in the present group, corroborated the conclusions previously published regarding it. Such therapy found additional support in the studies on blood sugar, revealing a difficulty in the utilization of carbohydrate. It seemed clear that successes following this measure depended upon catering to a weakened function of which the lowered sugar tolerance was one evidence. Treatment along this line had undoubtedly application in appropriate cases of chronic arthritis. The several measures of value in the treatment of arthritis should be combined in their application to the group under consideration more frequently than obtained in the treatment of cases in civil life. The tendency to focus upon one measure often resulted in failure where the subsequent coincident use of several measures resulted in benefit.

Dr. JOHN H. RICHARDS, in discussing the subject, stated that Doctor Pemberton had sent him his records and he had gone over them in detail. He had been greatly impressed by the vast attention to detail and felt that all future workers along this line could advantageously use Doctor Pemberton's achievement as a basis. The obscurity of this subject and the irregular findings one constantly observed in these cases made the study of arthritis most interesting. He was very glad to hear that Doctor Pemberton's new plan of restricted diet was not applicable in all cases, because one was very likely to become too enthusiastic over a method of treatment which seemed to possess merit. In some cases the removal of foci of infection was followed by complete recovery; in others, in which the foci were removed in the same manner, the disease continued to progress, and in still others no improvement was obtained no matter how treated. Doctor Richards said he preferred to speak on the bacteriological aspects of the disease since he was not prepared to speak on its chemical phase. He had made complement fixation tests with all kinds of bacterial antigens and considered this procedure an adjuvant in the study of the disease though it was still in the experimental stage. In a very large proportion of the cases studied a positive complement fixation test, with streptococcus viridans antigen, was found. On account of the frequency of foci it was difficult to interpret the fixation test. In one group of 114 cases fourteen patients gave positive blood cultures for streptococcus viridans. A special technic was used in these cultures. The question arose whether this organism was common in the blood of those not suffering from arthritis, and whether its presence in the blood was coincident to the arthritis. Excellent work had been done by Rosenau and others

that would seem to have established a relationship between streptococcus viridans and arthritis. However, streptococcal infection did not represent the entire etiology of this type of arthritis.

Doctor Pemberton had demonstrated a metabolic factor; he had found that starvation was beneficial in certain selected cases. This brought to mind the fact that frequently the streptococcus viridans was found in the stool in these cases, and it seemed possible that the benefit following starvation in these cases was the result of limiting the growth of these organisms. This statement was supported by the fact that streptococcus viridans grew best on sugar media of just the right degree of acidity. Owing to the fact that arthritis was a disease prone to changes without apparent cause, and subject to frequent remissions and relapses, the tendency was to credit improvement to the treatment used just before remission. The demonstration of lowered sugar tolerance in arthritis was most interesting and might lead to a better understanding of the disease.

Dr. WILLIAM C. THRO referred to the fact brought out by Doctor Pemberton that exposure was one of the predisposing causes of arthritis. It was of interest in this connection to recall some investigations published in the *Journal of Medical Research* which demonstrated that chilling of the body caused ischemia and that this lowered the resistance of the surface of the mucous membranes so that bacteria more easily entered. This was contrary to the generally accepted view that chilling of the body caused congestion internally. Doctor Pemberton had shown that even in spite of unavoidable neglect many patients recovered and that forty-six per cent of the patients recovered in the presence of demonstrable surgical foci. These figures could always be quoted to those who boasted of the cures due to vaccine therapy. One point that Doctor Pemberton had not referred to was that the intestines were a portal of entry or a focus of infection. It was conceivable, if one considered the great length of the intestines, that possibly some toxins might be absorbed through the walls of the intestines. Doctor Pemberton omitted the subject of the bacteriology of arthritis, saying that this phase of the subject had been pretty thoroughly studied. Doctor Pemberton had had a great opportunity to make a bacteriological study of arthritis, for, to the speaker's mind, this question was far from settled; in fact, he practically admitted that such a study would have been of value. Doctor Richards said he had found fourteen positive blood cultures out of 114 taken in arthritis. Moon and Edwards found that in twenty-five out of eighty-three cases there were various organisms present, such as nonhemolytic streptococcus, the bacillus capsulatus mucosus, bacillus Welchii, bacillus catarrhalis, and the gonococcus. The work thus far published seemed to show that the non-hemolytic streptococcus was the organism most often concerned. In regard to treatment much had been done with nonspecific proteins and Sollmann looked upon these injections as causing more of a pharmacological than an immunological reaction. Doctor Thro said he had employed vaccines for a

considerable time and had applied the rule used in the immunization of animals, using saline suspensions at regular intervals and in small doses at the beginning. Very severe reactions were often obtained when foreign proteins were injected into the venous system, as was well known. Some parts of this investigation were so complete that it would be unnecessary to do further research upon them.

Dr. LEWIS A. CONNER stated that he had been privileged to follow the work of Doctor Pemberton and his associates at General Hospital No. 9. Those in the surgeon general's office thought they were fortunate in being able to accumulate all these cases of arthritis in one hospital and to get Major Pemberton and his associates together to carry out these fundamental studies on the nature of this disease. So far as he knew there had been no such accumulation of cases since the Civil War. In view of the great number of cases of arthritis collected this was an especially valuable opportunity, by reason of the fact that these cases occurred in young people and were for the most part early cases representing the active, living disease rather than merely its dry bones, as was so often the case in patients seen in civil practice. It was hardly necessary to point out the importance to the army of a serious study of this disease when it was known that there was an estimated incidence of 40,000 cases of arthritis a year for the American Army of 4,000,000 men. Not only was there a great number of cases but the disability in each was likely to be very long, usually for many months. It was because they were dealing with early cases in young subjects that Doctor Pemberton had been able to get such results as were obtained at Lakewood, where over seventy-seven per cent. of the patients were discharged recovered. Among older people in civil life such results could not be expected. One of the striking features was the large proportion of men who recovered in the presence of demonstrable foci of infection. That Doctor Pemberton should have found in his study early cases in young subjects in which infection seemed to play a more important rôle than in the chronic cases of early life, was of immense interest. It seemed to him that any one following his own cases critically must have reached the same conclusion, namely, that some patients in whom the foci had been removed did well and some patients showed no response whatever to the removal of such foci. Doctor Pemberton had been forced to conclude that in many cases some other factor must play an important part in the causation of the disease. As for the work in Lakewood, it was well to emphasize that the metabolic studies had been carried out by a staff of exceptionally well qualified workers and that no study had ever been undertaken under more favorable conditions and where the results were likely to be more accurate. The whole subject had been approached in a most openminded way without any attempt to work out a pet theory or to establish a particular mode of treatment. By reason of its thorough and comprehensive character it seemed that this work must furnish the starting point for all subsequent work of this sort.

Doctor Pemberton, in closing, emphasized the point that the interpretation of results had been most dispassionate and that there was no field in which it was easier to come to incomplete conclusions. The experience with the lines of treatment carried out was considered by no means infallible, and if in speaking he had appeared too enthusiastic he wished to assure his hearers that the published manuscript would contain many qualifying clauses.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Regular Meeting Held Friday Evening, December 12, 1919.

DR. HENRY MORRIS IN THE CHAIR.

THE MÜTTER LECTURE ON SURGICAL PATHOLOGY OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA, FOR 1919, DELIVERED BY DR. ALEXIS V. MOSCHCOWITZ, OF NEW YORK, PROFESSOR OF CLINICAL SURGERY, COLUMBIA UNIVERSITY.

Newer Conceptions of the Pathogenesis and Treatment of Empyema.—Doctor Moschcowitz said that empyema was one of the earliest diseases diagnosed, having been known even to Hippocrates. It could not be said, however, that it had been studied with the precision and refinement one might expect from its antiquity.

As a result of his military experience as a member of the empyema commission at the base hospital, at Camp Lee, General Hospital No. 12, at Biltmore, N. C., and other military service, Doctor Moschcowitz said that his views on the pathogenesis and treatment of empyema had been profoundly altered from those held while practising civil surgery. The common belief held hitherto that in the pathogenesis the pleura became infected by contiguity with the inflamed lung did not appeal to him, for two reasons: 1. That this mode of infection did not occur in any of the other closed serous cavities of the body; 2, that infection of the pleura by contiguity would presuppose a direction of lymph current opposed to that demonstrated and accepted by physiologists and anatomists. It seemed to him probable that gross contaminations of the pleura would occur from a focus in the lung, just as similar infections of the peritoneum occurred. With this thought in mind he was not surprised many years ago to find at autopsy an empyema that had resulted from a rupture of a small subpleural pulmonary abscess, and he then wondered whether this was not the common rather than the exceptional cause. In perhaps three dozen autopsies at Camp Lee they were able to demonstrate in a great many instances one or more subdural abscesses, some of which had perforated into the pleura. Additional corroboration was observed by Doctor Moschcowitz during the influenza epidemic and by Lieutenant Colonel E. K. Dunham who was associated with him on the Empyema Commission. An additional proof that ruptured subpleural pulmonary abscesses occurred in empyema was the frequent experience that irrigation of empyema cavities with irrigating solutions resulted in cough-

ing and choking. Doctor Moschcowitz's conclusions from the study he had made were as follows:

1. Empyema in most instances resulted from the rupture of a small subpleural pulmonary abscess.

2. An empyema was the final stage of a process in which the first stage was a serous pleurisy and the second a seropurulent pleurisy, the latter the so-called formative stage of an empyema.

3. The formative stage was unaccompanied by pleural adhesions; the stage of final empyema was always accompanied by adhesions.

4. The vast majority of empyemata were of the encapsulated variety; very few occupied the entire pleural space.

5. Metastatic suppurations accompanying empyema were found, rather as complications of the causative pneumonia than of the empyema.

6. The treatment of an empyema should be begun in the formative stage, before the exudate had been converted into frank pus.

7. It was unwise to perform an operation in the formative stage. The mortality was terrific, because the accompanying pneumonia was still in full bloom, and furthermore, because of the absence of adhesions, there occurred a pneumothorax with "fluttering of the mediastinum" and consequent embarrassment of the heart action.

8. The best surgical procedure in the formative stage was repeated aspirations, done every twelve or twenty-four hours, in order to relieve the respiratory embarrassment, due to the mechanical pressure of the rapidly accumulating fluid. In a few cases this measure was curative.

9. Feeding with a diet rich in calories was an important adjuvant in the treatment at the formative stage.

10. The treatment in the acute stage of an empyema consisted of a single intercostal thoracotomy, but this operation need not be performed when the patient's condition was otherwise perfectly satisfactory. This was the so-called late operation.

11. Urgent thoracotomy was indicated only in acute pyopneumothorax.

12. The Carrel-Dakin treatment, properly carried out, had proved of superlative value in the postoperative treatment of empyema and should be used in every case. There were no contraindications to its use.

13. The mortality of acute empyema by these methods was lower than that reported by other methods of treatment.

14. Empyema cavities healed by three methods: a, by the formation and absorption of a sterile exudate; b, by the formation and absorption of a closed pneumothorax; c, by the classical method, i. e., the expansion of the lung and obliteration of the pleural cavity by adhesions.

15. Chronic empyema should not occur, or at least should become very rare, if the methods of treatment of acute empyema as formulated above were practised.

16. Chronic cases of empyema might be defined as those which were not amenable to treatment by the Carrel-Dakin method.

17. Recurrences in empyema were usually the result of undue haste. The percentage of recurrences was less after the Carrel-Dakin method of treatment than after any other.

18. The vast majority of operations that had been devised for chronic empyema would have a limited field of usefulness if the methods of treatment advocated above were carried out.

Letters to the Editors.

THE ETIOLOGY OF GLAUCOMA.

276 MADISON AVE., NEW YORK,
January 30, 1920.

To the Editors:

The subscriber puts forward for consideration the thesis: First, that glaucoma is not a disease but is a symptom of some systemic disorder. Second, that this symptom is due to an imbalance between the crystalloids and colloids in the intraocular fluids which results in a disturbance of the osmotic pressure and which regulates their inflow and outflow. Third, that this disturbance is due to toxic, chemical or biochemical changes in the lymph or the blood streams. Fourth, that the causes usually given for glaucoma—viz., arteriosclerosis, microcornea, macrolentis fibrosis of the pectinate ligament, and others, are not prime causal factors but are only predisposing or contributory. Fifth, that the foregoing applies to all types of the disorder excepting traumatic or postoperative cases—juvenile glaucoma is purely an anatomical anomaly. The writer is aware that much of this is not new but it is an approach to the problem from a new angle, and upon the foregoing assumptions he proposes to analyze the physical conditions of many cases of glaucoma, not with the expectation of finding a single cause common to them all but to segregate cases of different causation under their respective headings. He will welcome with appreciation and gratitude any suggestions or observations from other men along these lines. More than this, he will have complete blood and urine analyses made, without fee, for those who will send patients to him with a brief history of the case attached.

HOMER E. SMITH, M. D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Traité d'Endoscopie Rectocolic. By Dr. R. BENSAUDE. One Volume. With Thirty-three Illustrations and Fifty-five Plates, Mostly Colored. Paris: Masson et Cie, 1919. Pp. 48.

This very timely textbook on proctoscopy and sigmoidoscopy should, perhaps, be more properly called an atlas. Written by a physician of the St. Antoine Hospital, of Paris, whose experience in this much neglected branch of diagnosis is very considerable, the book cannot fail to appeal to the profession—both specialists and general practitioners.

The work is essentially a clinical exposé and contains only matter of direct practical interest, based on the writer's wide personal experience. We wish to call particular attention to the beautiful colored plates, fifty-five in all, faithfully portraying the normal and pathological aspects of the rectum as seen by rectoscopic inspection. The text is concise, to the point, and the essentials of technic are given clearly, so that the general practitioner may easily acquire skill in this important branch of medicosurgical diagnosis. Both the author and publishers are to be congratulated on the production of this fine bit of medical literature, which we cannot too highly commend.

Ido: Exhaustive Textbook of the International Language of the Declaration and Fundamentals of an Artificial International Language. By Dr. MAX TALMEY. New York: Ido Press, 1919. Pp. iii-113.

Ido is the language adopted by the permanent commission of the international delegation for the adoption of an international auxiliary language, which set out to find a language which would avoid the defects of Esperanto while preserving its good features. Doctor Talmev, a former adherent of Esperanto, is an expert linguist as well as a writer of compact textbooks, and he has aimed here to provide both the beginner with a good working knowledge of Ido and the accomplished student with aid in the solving of his stylistic difficulties. The book is short but clear and answers without any circumlocutions the questions which the average reader most wants to know. Ido should be of aid in the establishing of that international solidarity which is so much needed in the world today.

Births, Marriages, and Deaths.

Died.

BRODIE.—In San Francisco, Cal., on Friday, January 23rd, Dr. B. P. Brodie, of Santa Barbara, aged sixty-one years.

CABELL.—In Hampton, Va., on Tuesday, January 13th, Dr. Benjamin W. Cabell, aged fifty-six years.

CALLAN.—In New York, N. Y., on Wednesday, January 21st, Dr. Lewis White Callan, aged forty-two years.

HOPKINS.—In Havre de Grace, Md., on Saturday, January 17th, Dr. Daniel W. Hopkins, aged sixty-five years.

HURST.—In Mariette, Pa., on Tuesday, January 13th, Dr. Michael Washington Hurst, of Talmage, Pa., aged eighty-one years.

KANE.—In Brooklyn, N. Y., on Friday, January 23rd, Dr. John Austin Kane, aged forty-one years.

McSWEENEY.—In Dorchester, Mass., on Sunday, January 18th, Dr. Daniel Justin McSweeney, aged fifty-two years.

OLSEN.—In Pasadena, Cal., on Wednesday, January 14th, Dr. Charlotta Yhlen Olsen, of Philadelphia, aged seventy years.

PRICE.—In Brooklyn, N. Y., on Tuesday, January 13th, Dr. Edward Morros Price, aged sixty-three years.

RIVETT.—In Albany, N. Y., on Sunday, January 18th, Dr. Francis A. W. Rivett, of Green Island, aged seventy-six years.

YOUNG.—In Lynchburg, Va., on Tuesday, January 13th, Dr. Charles B. Young, aged sixty-nine years.

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Original Communications

AN INTRODUCTION TO THE STUDY OF THE ENDOCRINES IN GYNECOLOGY.*

BY SAMUEL W. BANDLER, A. B., M. D.,
New York.

Let me say in beginning that I am not an endocrinologist. I have directed my attention to the endocrines in so far as they are related to gynecology. In this discussion we will mention no laboratory tests, no studies in metabolism, no examination of the blood; we will make no reference to vagotonia or sympathicotonia. We will take into consideration chiefly the premenstrual and menstrual phenomena; let us devote attention to simple, straightforward, clinical facts. This, with the observation of the patient as a human being (that is, with just a touch of psychology or the study of behavior) plus the element of heredity, completes our scheme of procedure.

First, let me say a few words about the physiology of the normal functions. Menstruation is dependent upon the normal development of the genitalia and the normal trophic control of these structures. The glands of greatest importance are the ovary, the thyroid, the pituitary and the adrenals. Every menstruation is a crisis in which the ovary, thyroid and pituitary especially participate. Menstruation is preceded by premenstrual phenomena varying in duration and degree according to the actions and interactions of these glands. Excessive activity of the pituitary is characterized by the same uterine contractions and cervical changes as occur in labor. Menstruation is a miniature labor, labor is a magnified menstruation.

Physiological amenorrhea occurs during pregnancy and at the climacterium, and during lactation. The amenorrhea of pregnancy is due to the inhibiting influence of the trophoblast, chorion and subsequent placenta. The amenorrhea of lactation is due to the inhibiting influence of mammary secretion acting on uterus, ovaries and related glands.

The inhibiting influence of the mammary secretion is by no means absolute, for many patients either menstruate during lactation or after the first few months of lactation or conception may take place during the amenorrhea. The amenorrhea of pregnancy is generally absolute. But during this whole period there is a contest between the glands producing menstruation and the inhibiting secretion

from the ovum. Many patients have menstrual molimina during some or all the months of gestation; some have varying degrees of spotting or staining at what would have been menstrual periods; others menstruate or bleed profusely, the uterus contracts and the ovum is expelled. In other words, the secretion of the ovum was unable to inhibit the combined activity of the ovary, thyroid and pituitary for the normal period of two hundred and sixty odd days. This then is the explanation in the greatest proportion of cases of habitual miscarriage.

The thymus gland is supposed to regress and by its regression and the removal of its inhibitory influence, development of the sex organs is allowed to proceed. Therefore an early or late regression or a failure to regress is supposed to influence the period when menstruation develops and the character of the menstruation.

Tumors of the hypophysis, the pineal gland and the suprarenal gland have resulted in many instances in an exceedingly early and notable development of the genital structures. This precocious sex development, however, is not associated with a correspondingly early and precocious development of the brain and mental maturity.

With this preliminary sketch it may be readily recognized how the activities of the sex organs of the female are influenced in the way of stimulation and inhibition by the other endocrine structures and it must be apparent that primary activities of these sex organs may correspondingly affect the associated endocrines.

Many points of interest are elucidated in history taking; the age at which menstruation was first established, its regularity, duration and other important data. Severe premenstrual phenomena consisting of physical and psychic deviations point to an exaggerated susceptibility on the part of the patient and to an instability in the endocrine chain. Early appearance of the menopause, especially when it is a familial tendency, speaks for a lessened energy of the endocrine chain in its relation to menstruation. Women whose menstruation occurs say at thirty-five day intervals are in need of endocrine stimulation. They are more likely to begin labor at a date later than estimated. Women with hypoplasia of the uterus and those who become pregnant after endocrine therapy often have a long and tedious labor. Women who have repeated mis-

*Presented at a meeting of the Post Graduate Medical Society, New York, January 23, 1920.

carriages are probably hyperpituitary and when they finally do carry a viable child may not go to full term. Some women are delivered in successive pregnancies say three weeks before the expected date each time. The longer the period of amenorrhea during lactation the less assertive are the endocrines of that individual in regard to menstruation. It must be stated that, because the endocrines are normal in their cooperation in relation to menstruation, it does not necessarily prove their stability as related to other physical and mental functions, but it certainly points in that direction.

Endocrine abnormality may focus its effect on a definite point or function. An affection of a gland causing either a plus or a minus reaction may therefore evidence itself by totally different symptoms. For instance, diminution of hypophysis activity may result in a typical dystrophia adiposogenitalis. In another patient there may be diabetes insipidus, in another amenorrhea without adiposity. The hypophysis, when hyperactive, may produce acromegaly, dysmenorrhea, metrorrhagia, fibromyomatous growths, fibrosis uteri, an exaggerated metabolism resulting in a glycosuria, or the symptoms may be of a general nature associated with excitability or irritability of the type called hysterical.

Varying degrees in the intensity of the gland changes, as well as in the location and extent, furnish gradations in symptoms. Consider, for example, hyperthyroidism. We may have a typical Graves's or Basedow's disease with exophthalmos, goitre, tachycardia, tremor and associated gastric and nervous annoyances. There may be varying degrees of severity and toxicity; there may be marked involvement of associated glands. We may, on the other hand, have simply a paroxysmal or continuous tachycardia, or only the nervous manifestations, or menstrual anomalies may first dominate the picture in the latent cases. Therefore, as regards changes in the endocrines, we may have innumerable variations in the location, intensity and extent of the symptoms. Just as we have varying degrees of pulmonary tuberculosis, we may have, I believe, variations in the involvement of the suprarenal glands, for instance, and it would be only following this analogy to say that early and unrecognized involvement of the suprarenals may go on to healing, and the associated asthenia, with or without slight skin manifestations, and the cause may be unrecognized.

The uterus may develop subnormally with a resulting hypoplasia and subnormal menstruation. The uterus may have developed normally and only subsequently may its size and the degree of menstruation diminish. Here is a distinction between hypoplasia and atrophy. Development may be delayed and uterine hypoplasia may be only an intermediary stage leading to subsequent normality. Body growth may be backward and yet subsequent endocrine autostimulation may produce a normal individual. Hypophysis overactivity may develop a normal giant or a real giant. Late overactivity of the hypophysis produces the acromegalic individual. Late hypothyroidism is a different picture from the infantile or childhood type.

With a given etiology we may have several of the endocrine glands injuriously affected. These may result in asthenia after labor, after prolonged lactation, after infections, after influenza and these should be diagnosed as cases of pluriglandular endocrine exhaustion. We may in other cases have one gland singled out for marked injury, as for instance the adrenals or the thyroid. On the other hand, the test to which any one or more of the glands have been subjected by physiological or pathological conditions may result in an increased secretory activity of one or more members of the chain, as in thyroiditis. The best instance of this is to be found during pregnancy and after labor when many patients give evidence of improved health, bony growth and general systemic exhilaration. This is merely a continuation of the increased glandular activity aroused in the endocrine chain by the growing ovum.

Based on the belief that the ductless glands preside over the development of the inherited body and mind, controlling and regulating many of their functions through all the years of life, the theory of treatment by endocrines follows two plans: 1, Give those extracts of which the body is producing too little; 2, if the body is producing too much of any one extract, attempt to counteract this overactivity by giving other hormones which diminish, oppose or inhibit this oversecretion.

To go about this procedure rationally we must have a knowledge of the physiological action of the various glands and their probable hormones; second, we must note the changes produced by overactivity or underactivity of the glands as evidenced by definite physical and other signs essential to diagnosis; third, by the administration of gland extracts in a therapeutic manner we have the opportunity of verifying these physiological and pathological facts and by the results obtained we may prove the correctness or fallacy of either theory or diagnosis.

It must be stated that there are limits to the postulate of substitution. No one yet lays claim to curing well defined cases of Addison's disease by any method or form of administration of any part or of the whole of the adrenal gland substance. If the ovaries are removed and the uterus is left behind, no amount of ovarian or other extract, no matter how given, can succeed in keeping up normal, regular menstruation.

The limitations to the postulate of control or inhibition are furnished by the fact that our knowledge is as yet only fragmentary; besides we must take this into consideration—if we give glandular material to oppose the activity of another gland, we may either succeed or we may rouse that or other glands to renewed activity getting what might be expressed by the slang phrase "a kick, or come-back."

Another theory has been advanced in cases of overactivity of a gland, namely, that by giving some of its own extract we relieve the gland in question of the necessity of overwork. This technic has been followed by some workers by the administration of thyroid extract in hyperthyroidism and by the administration of pituitary extract

for persistent headache in hyperplasia of the pituitary gland. For the present it is better to leave further discussion of this point in abeyance. This idea recalls to mind the much more rational plan of giving a gland extract when the corresponding gland is overactive and proving the correctness of our diagnosis by looking for and finding an accentuation of the annoyances. Therefore the giving of thyroid in latent hyperthyroidism often accentuates the nervousness, brings on a tachycardia, tremor and other symptoms. False labor pains may be differentiated from real ones by the action noted after the injection of pituitrin.

When the study of endocrines was a question of pathology and physiology, it was not an easy problem to interest the profession, but now that therapy has proved to be so valuable, we are finally on the road to further investigations. The most important fields for its application are pediatrics, mental diseases and gynecology. I believe the time will come when the majority of the physical and mental deficiencies of childhood and of the adolescent stage will be treated intelligently from the viewpoint of endocrine secretions.

I hold the same belief concerning the field of mental diseases (not syphilis). Here, however, progress is naturally bound to be slow, for the changes are gradual, often escaping observation by any but the neurologist in their early periods. Exact knowledge concerning the effects of endocrines on the various cerebral areas has not yet been revealed.

The greatest advance has been made in the application in gynecology. First, because the endocrines dominate the physiology of the special sex functions and phenomena; secondly, because therapy is often prompt and exact and convincing, when prescribed on the basis of physiology.

Due to the fact that many states are now recognized as due to endocrine abnormalities, gland extracts viewed simply from the viewpoint of therapeutics, have replaced many of the oldtime drugs because of their better and more specific action. For instance, we no longer use iron and arsenic alone in the treatment of amenorrhea; the preparations of ergot and hydrastis have been replaced by gland extracts in the treatment of menorrhagia and metrorrhagia; strychnine and allied stimulants are no longer relied upon exclusively for the treatment of various forms of physical asthenia. Restriction of a harmful diet or the imposing of a definite diet are not the sole factors in the forms of malnutrition of children, in altered metabolism of adults, and in the treatment of obesity.

Among the cases best treated by endocrines are to be included the patients with actual and relative amenorrhea as well as lactation atrophy, menorrhagia, metrorrhagia, dysmenorrhea, sterility, one child sterility, threatened and habitual miscarriage, disturbances of the climacterium, fibromyoma, patients suffering from hyperthyroidism and hypothyroidism, dispituitarism and similar conditions. Naturally in many of our patients several of the diagnostic spheres mentioned above will overlap. The readiness with which one may undertake therapeutic measures, if the physiology is understood, can be well instanced in the case of mammary ex-

tract. If nursing and suckling result in involution, then why not use mammary extract, not only for this purpose but for many of the forms of regular or irregular bleeding and for certain forms of fibromyomata and fibrosis.

It can be readily appreciated that this therapy does not give the same definite results in cases of apparently the same type, if we only consider that some women while nursing do not menstruate for periods of six months or a year, while others menstruate during the entire period of lactation. Placental extract, for instance, antagonizing as it necessarily does the glands whose function it is to produce menstruation, may on the same basis be used for certain forms of overactivity on the part of the thyroid, ovary and pituitary glands.

It is more than probable that this placental secretion plays its part in the causation of postpartum asthenia and if this is true, then postpartum asthenia is a gland exhaustion and since the glands most affected are the thyroid, pituitary and adrenals, the theory on which therapy is to be established becomes apparent. It is the whole supra-renal extract which is of value in the treatment of this type of patient. The anterior pituitary is a most important addition.

The treatment of the curable cases of sterility by endocrines depends solely on the trophic stimulation of the various structures concerned in ovulation, transmission of the ovum, and embedding of the ovum; or else in inhibiting those stimulations which expel the ovum; and our brief review of physiology makes the correct application of the appropriate endocrines perfectly clear. Let us remember that the interstitial ovary differs from the follicle apparatus and true corpus luteum; the anterior hypophysis from the posterior pituitary; the adrenal cortex from the medulla. Possibly within these grosser anatomical and physiological differences in secretion, are still finer undefined differences, especially in various periods and functions of life.

The practice of gynecology includes gynecological surgery, obstetrics, and conditions amenable to treatment by what are known as medical methods. But in addition to this there are types characterized not only by somatic signs, but by what are called nervous, neurasthenic and hysterical and psychic symptoms. Women are likely to refer the causation of their general nervous symptoms to the genital tract, and the older I grow the more true I find this to be. Gynecologists have believed this to be the case and have evidenced their belief by the attention paid to the operative correction of abnormalities and injuries; and by the added explanation that through reflex channels these deviations from the normal have produced their injurious effect on distant areas of the body.

Fifteen years ago in an article on "Associated Nervous Conditions in Gynecology," I expressed the opinion that hyperthyroidism, relative and actual, was the most frequent cause in my practice of the nervousness and excitability in patients called hysterical and neurasthenic. Continued observation taught me that we were often dealing with a plus or minus thyroidism and that in a general way the excitable patients were suffering from a

thyroid plus condition and the depressed, tired, asthenic patients were suffering from a thyroid minus condition. From this basis further experience showed that pluriglandular involvement was frequent.

Now I have added the element of hyperpituitarism, to the former thought of hyperthyroidism in explanation of many of the excitable states, for I find that many of the factors which have directed my attention in this channel, point to the pituitary body in explanation of physical and psychic phenomena. Among the points of importance are dysmenorrhea, menorrhagia, fibromyomata, general excitability, lack of obesity, vasomotor symptoms and symptoms resembling the hysterical. I might refer to *hysteria* from which Greek word is derived the word hysteria. The theory of Freud directed to the study of the sex sphere, physical and psychic, has done much to attract attention to the importance of sex questions and sex experiences as related to the subsequent behavior of the individual. Before passing for a moment to the question of onanism, let me state that I believe that sex phases and the psyche are not wholly matters of cause and effect in relation to the abnormalities of either, but that both are projected from stimulation partly of an endocrine type into the two fields of cognizance and sensation.

Undoubtedly the greatest difficulty in the proper interpretation of interglandular upset, depends upon the fact that so many of them are of minor degree, of a degree less than is typical of the well exemplified cases. If we have exophthalmic goitre on the one hand and myxedema on the other; gigantism or acromegaly on the one side, certain types of dwarfs or dystrophia adiposogenitalis on the other side; if we have tetany and paralysis agitans contrasting with myasthenia gravis; if we have excessive sexual and physical development due to tumors of the pineal, the hypophysis and the adrenals and testis on the one hand, and cases of undeveloped genitalia and infantile uterus on the other; if we have acromegaly on the one hand and osteomalacia on the other; if we have excessive function and menstruation through oyster ovaries, and diminished function and relative amenorrhea through ovarian hypoplasia and degeneratioadiposogenitalis; if we have the extreme adrenal disease known as Addison's disease, why may we not expect minor degrees of involvement in the glands or pluriglands responsible for these major cases, the resulting symptoms here often lacking the typical earmarks which define the standard types which we have mentioned?

We must distinguish between the somatic and the mental or psychic side of pathological states due to the endocrine relation. I have seen attacks of mental depression and blues in so many of my patients; so many cases of premenstrual excitement and states of exaltation of minor degree; so many cases where the states vary from slight exaltation to slight depression without apparent cause; cases after labor with depression of a mild melancholic type, that long ago I came to the conclusion that we must grant variations in intensity in mental diseases.

If we have the forms known as manic depressive insanity, dementia præcox, melancholia, and other mental deviations, why may we not have minor types of the same conditions confronting us in our gynecological and obstetrical work? We know of the excitability associated with the various grades of hyperthyroidism; we know of the mental apathy associated with the various degrees of myxedema; we know the mental peculiarities and the changes in character in patients with hypophysis alterations. All of these alterations noted from time to time in my experience have convinced me that mental diseases of extreme type may have the same relation to the milder forms and to the so-called neuroses and psychoses, and to the so-called neurasthenia and hysteria, that the major forms of exophthalmic goitre and myxedema, gigantism and dwarfism, bear to minor variations noted every day.

The librarian of a Scotch university once remarked that if all the textbooks ten years old were destroyed little, if anything, would be lost. Moynihan says: "The wealth of teaching in the textbooks represents rather a legacy flowing from one's ancestors than a fortune newly won by hard endeavor."

Endocrinology is making such vast and rapid strides that it promises to overthrow entirely many of the older notions of physiology and therapy in our textbooks. It is because our knowledge on many points is so indefinite and because our therapeutic endeavors are so groping that every medical man has it in his power to add to our common store of information. New things are always treated with skepticism, but each thinking physician may observe in his practice abundant material for research. By working together we may soon prove beyond doubt that while heredity shapes our ends there is an endocrinity that runs parallel.

A difficult question and one requiring the utmost delicacy in its management, is the question of onanism and abnormal sexual practices. The general idea is that onanism is a very harmful and injurious practice, reacting badly on the physical, mental and psychic sides of the affected individual. That it does harm, and grievous harm, is undoubtedly true. Is it however, a fact that degeneracy, feeble-mindedness, and weakness of character are the results of the extremes of these practices, or is it rather that in these types, these habits are more frequently observed because of a physical trend and a lack of mental control?

We are confronted with a like problem in the matter of alcoholism. It is certain that alcohol, if persistently used to excess, has an injurious effect on the physical and mental status of an individual. If tainted with a tendency to degeneracy or with a neuropathic habitus, it exaggerates the trend to alcoholism and increases its effects; but it is the consensus of medical opinion today that the degenerate and feeble-minded person, the hereditarily tainted, are those who exhibit the tendency to excessive alcoholism, and therefore many view alcoholism rather as a symptom of abnormality. If, however, the ovary, thyroid, pituitary and the adrenals, have to do with sex development and with a trophic control and support of the sex organs, it

would seem quite natural to expect a hypersensitiveness in this sphere, and a more easy attraction of the mental and psychic attention toward this region in one individual than in another not so stimulated.

A rather low stimulation of these organs, or a dominance in the chain on the part of these glands which inhibits this stimulation, would therefore give the opposite effect. Frigidity is as often caused by the endocrines as by the mental attitude.

Sexual inclination is increased or diminished at different periods of life. It may be stimulated by food, by alcohol, by drugs or through various senses. Through the mental sphere and the various senses an exaggerated stimulation may be developed. At the various periods intervening between menstruations sexual inclination varies, it is increased or diminished in different individuals by compatibility or incompatibility. If disease or tumors of the pineal gland, of the pituitary, or of the adrenals, produce precocious sex development, how much further need we go to come to a more rational conclusion concerning the points just discussed? This conclusion is based more on the theory of an unrecognized endocrine urge than we have heretofore believed possible.

We do not propose the idea that normal man is not responsible for his acts. I do not propose to put the responsibility upon the endocrines for all his reactions to external stimuli and to environment. Instincts, emotions, education, the study of high normal standards, the teaching of self-control in various ways, the element of duty in relation to one's family and as a protection to himself, are all factors which develop a higher psychic sense of control. These points, together with the element of judgment, distinguish the normal from the lower grades of human beings and from animals; but to say that control in any of those factors that dot the human line is as easy for one person as for another (even granted that they have the same parents and the same training) is to say that which is distinctly not true; for it is not true that all men are created equal in instinct and potentialities.

Some persons are born with instincts so good that nothing can make them bad; others are born with instincts so bad that nothing can make them good; but the vast majority of people are fairly normal, with a leaning toward one or the other side, according to their endocrine stimulation, their emotions, their education, training, environment and accidents of experience. Change the words good and bad to any other adjectives implying opposite meanings, and a like statement holds good. We may say of people, bright or dull, energetic or lazy, conservative or radical, excitable or placid, irritable or phlegmatic, thin or fat, sweet tempered or sour tempered, or any of the other adjectives used.

Some people are born with so stable an endocrine relation that nothing will alter the normal interaction of the endocrine glands; others inherit or acquire endocrines so unstable or deficient that nothing can elevate them to the threshold of the normal. The vast majority of people are born with a fairly stable endocrine system and with instincts capable of being affected for better or for

worse by the influences and accidents of life.

The relation between the various endocrine structures is less stable in woman than in man. There are many disturbances during the period of development and the establishment of menstruation. Menstruation itself is a constitutional phenomenon, associated with loss of blood, often with dysmenorrhea, often with severe premenstrual phenomena. Pregnancy, while it acts as a tonic in most cases, in many instances puts too great a strain on the endocrine chain. Miscarriage, while well borne even when repeated in many instances, is in other instances productive of lasting harm to the ovaries. Inflammation affecting the uterus and the ovaries may have an important bearing on an endocrine upset. The same holds true of uterine displacements because of the involvement of the ovaries. The hypophysis changes in pregnancy are latent possibilities of future troubles.

Tumors of the genitalia, whether they are the result of endocrine aberrations or not, are certainly associated with inharmonious action of associated glands. The change of life phenomena, profound as they are in many instances, are an evidence of the inherent instability present in many women. In a goodly number of women there is a normal readaptation but it is at this period that previously latent weaknesses rise to the surface. The psychic effect of the various happy and unhappy complications of life are not to be underestimated. Because of these possibilities woman is called the weaker sex. It must be granted, however, that in the largest proportion of cases she does mighty well to hold her own. Whatever we may say about thyroid affections it is a fact that this gland is involved eight to ten times as often in women as in men. The influence and activity of the endocrine glands are evidenced by the stimuli and the changes produced on the body, the nervous system, the emotions and the psyche. In some instances abnormalities of gland activity are characterized by physical stigmata; in others, by changes in the activity of organs whose function is continually under the influence of the nervous system. In still other individuals, abnormalities of gland activity are evidenced by changes in the psyche; and in some, combinations of various forms are in evidence.

If we can fathom and understand what the ductless glands have done to an individual born with instincts and emotions, up to the stage of puberty, we may better appreciate why the individual develops as he does; if we can reason out what these ductless glands have done to that individual with instincts and emotions from puberty up, we may better understand why that individual is what he is and why so many changes have occurred in him; if we can eventually fathom what hereditary or accidental and intercurrent factors are responsible for his endocrine relations and for the consequent emotional, systemic, mental, and psychic factors, then medicine will have achieved a glorious work. And when we finally realize that the emotions act on the endocrines and that the endocrines influence and produce emotions much that is mysterious will seem simple.

134 WEST EIGHTY-SEVENTH STREET.

INDICATIONS FOR INTERNAL GLAND THERAPY.*

By WALTER TIMME, M. D.,

New York.

Neurological Institute.

To begin with, it is quite important to recognize that disturbances of the internal glandular system are accompanied by disturbances in all the tissues of the body. The tissue manifestations of such a disturbed system are manifold; to take a very common example, abnormal distribution of the hair. In certain disturbances of the thyroid gland, especially a deficiency of secretion, there is a deficiency of hair; in certain disturbances of the pituitary gland we find an increase in the growth of hair, so that patients suffering from a hyperpituitary state, instead of having an ordinary eyebrow will have eyebrows that meet over the nose, a nasal brow. Such individuals will be quite well covered with hair, abnormally or normally distributed. In gonadal disturbances we also have abnormal distribution of hair. In women with masculine characteristics menstruation begins very late in life, and often ceases for long periods; that type of woman has a distribution of hair very much like the male; instead of having a horizontal demarcation the pubic hair distribution assumes a pyramidal character, in the midline reaching to the umbilicus. Such a woman will also have a certain number of hairs on her breast and a tendency to a beard and moustache. Certain disturbances of nutrition involving the thyroid and parathyroid glands show a disturbance in the teeth, which have a consistency differing from the normal, and also differing in relative growth, size and color, with occasional pigment deposits.

Accordingly we have come to regard the characteristics of some of these tissue changes as fairly pathognomonic of certain states. In a large proportion of cases in which the lateral incisors are very small as compared with the central incisors and the rest of the teeth, when they are almost rudimentary, we usually find a gonadal underdevelopment. A woman with such undeveloped incisors usually has an undeveloped uterus and ovaries. The disturbances and lack of balance evinced by these changes are manifold and defy enumeration.

Then comes the important question: Is every case that comes to us showing such manifestations a suitable case for glandular therapy? Most distinctly not. In the large proportion of cases, showing characteristic evidences of disturbance, there are also manifestations of compensation. Acromegalic manifestations of compensating glands, which are among the ones that we see, are not necessarily the hall mark of the disturbances themselves. For instance, we see cases of acromegaly that need no treatment; the acromegaly has ceased; it is part of a process which has existed some or many years before the patient is seen. Shall we treat a patient because he has acromegaly? Certainly not. We investigate the mechanics of the disturbance by which he became

acromegalic, and we may find that early in youth he had a status thymicolymphaticus, some of the other glands compensating for the condition; but in this attempt to compensate, on the part of the pituitary for example, acromegaly was produced. This acromegaly is the indicator of the compensation and not the disease itself, and it comes to a stop when compensation of the pituitary gland is finally completed. This is similar to the hypertrophied heart. When the compensation is complete the patient needs no treatment; though he still has the hypertrophied heart. It is the same with some types of acromegaly. If the condition is checked there is no indication for therapy.

This holds for some thyroid conditions. We frequently see a girl with pronounced thyroidal enlargement but no general hyperthyroid symptoms. She wants to get rid of the thyroid for the cosmetic effect. You must realize how such a condition has been produced. If you will go back in her history you will find that the gland became enlarged on account of a latent hyperthyroid state. Although the gland remains fairly large the patient does not suffer, but if the gland diminishes in size the patient will immediately suffer from hyperthyroidism. We frequently see this thyroid type, but it needs no treatment any more than does the acromegaly mentioned. Surgical intervention may be harmful. We see then that the manifestations of internal glandular disturbance are not necessarily indications for treatment.

What then are the disturbances which indicate treatment? Certain terminal types, such as, Addison's disease, exophthalmic goitre, Raynaud's disease, and many others that are pictured in the textbooks, are largely beyond the reach of treatment; we cannot deal with them successfully so far as therapy is concerned; they are only fit for textbooks or museums. Therefore we must look about for a symptomatology or group of symptoms which will in a more or less general way indicate when the beginnings of these processes are at hand. If we can understand the beginnings and modify them, then to a large extent we can prevent the further development of structural or physiological changes beyond which therapy will not be of avail.

The list of symptoms of such glandular disturbances is quite long. I will mention only a few of these. They may be included in four or five categories. The first is fatigability; second, headache; third, structural abnormality; fourth, gonadal and secondary sex changes; and the last is that which has to do with lack of tone and smooth muscle fibre, causing vasomotor and vegetative neurological disturbances.

The first of these, fatigability, is of prime importance, for it is for this symptom alone that we see one third of our cases of internal glandular disturbance. The patients simply recognize that they are weak, and that the work which they could previously accomplish without effort has become extremely irksome; going upstairs is an effort. This may come on at any time of life, is of most significance and most amenable to treatment between the ages of ten and twenty-five years. Of course you realize that there are numerous types of fatiga-

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bility, not all of them necessarily due to glandular disturbance. Some of them are due to toxic states that may or may not be due to endocrine conditions; some of them are cardiovascular; others gastrointestinal; but the type in which no organic disease can be found is the type to which I refer.

If we examine these patients carefully we see certain characteristics. They show a low blood pressure; on laboratory examination they usually show a diminished blood sugar content—eighty milligrams of sugar to the 100 c.c. of blood or even less. These are two prime concomitants. This fatigability arises largely between the tenth and twentieth years. Such a patient will come to you with a history of rapid exhaustion and on close examination you will find certain other complaints; he has grown rapidly or is beginning to grow rapidly, and he may show some tendency to intratemporal headaches; he has a weakness in his vasomotor system, and he may have a weak bladder. We cannot confine fatigability entirely to the blood sugar content and to the low blood pressure, but with it we usually find symptoms referable to the other structures—the smooth muscle fibre atonicity, the abnormal growth of skeleton, the vagotonic gastrointestinal symptoms, and so on, but the prime factor is the fatigability.

There is another type of muscle fatigability the characteristics of which also indicate endocrine disturbance. Such fatigability, if progressive to any great extent, may finally develop into a progressive muscular dystrophy. These cases show low blood sugar, low blood pressure, and also show pineal shadows in early life. These pineal shadows after the age of thirty are negligible, but too early involution of the pineal gland will result in a disturbed muscular system. Probably the fatigability is partially produced by the low blood sugar content. The muscular fibres need sugar for their activities. If you diminish the amount of sugar, you diminish the potential activity to the same degree, other things being equal. If you ask what glands are disturbed in such a condition, I can simply say that each individual has a series of glands of different potentiality from every other individual, so that in one the adrenals may be at fault, and in another the pituitary, but the greatest number of these cases arise from a status thymicolymphaticus. We are frequently asked: What becomes of the patients that don't die a status lymphaticus death; how do they develop? They emerge from the state of status thymicolymphaticus by a compensation of the glandular system. Among other things, a certain amount of fatigability may disappear. This may occur with or without treatment, or through the help of compensatory glands. So much for fatigability as an indication for glandular therapy.

The next prominent symptom and indication for treatment is headache. Every specialty has its type of headache, from the genitourinary to the psychiatric. There is a headache which may be produced by organic or functional changes in any of the organs of the body; but the headache *par excellence* which is due to a disturbance of the internal glandular system is caused by the mechanical

pressure of the hyperactive or hyperastatic pituitary body which endeavors to enlarge beyond the confines of the sella turcica that encloses it. Such headaches are described by the patients as being intratemporal. They will point directly to where the intersecting lines would meet approximately at the sella turcica. This type of headache is quite characteristic, and it almost invariably means a pituitary headache. What is the reason for this headache? A great deal of criticism has lately been aroused by various unqualified statements as to the conclusions that may be drawn from the radiograph of the sella turcica, and the criticism is just. There are certain sella turcica pictures from which we cannot draw any conclusions dependent on the appearance of the sella turcica itself; but there is a type from which one can draw a conclusion, this consisting of a sella turcica which is small, with the clinoids overlapping or impinging on one another, or invading the cavity itself, with erosion of any part of the bony capsule. The erosion is the important point. It is very difficult at times to determine whether or not the erosion exists, but in most cases it is clearcut and clearly defined. When you get such a sella which is eroded and small, you can rest assured that the headache is produced by the attempt of the pituitary body to enlarge. This headache is quite amenable to treatment.

The type of headache produced by thyroid dysfunction cannot be touched upon here. I am particularly interested in the pituitary type of headache. It is an extremely important indication for glandular therapy.

The next thing for the relief of which parents bring a child or adults come to us is disproportion in skeletal structure. These disproportions are very interesting. Usually they are acromegalic in type, compensatory in nature, and require no treatment. But if you find an underlying cause, this may be treated, and occasionally with satisfactory results. The abnormal structural condition in itself unless very gross is not of any great import either, outside of the chagrin of the bearer, but it means a former uncompensated internal glandular condition or one still in progress.

The types of disproportion which we see may be as follows:

1. That in which the thorax is quite short as compared with the legs. The ratio of thorax, compared with the length of the legs, by the standard used in my service is one half and is measured as follows: The numerator of the fraction is the length of the line from the sternoclavicular articulation to the anterior superior spine of the same side. The denominator is the distance from the anterior superior spine to the external malleolus. These abnormally constructed individuals may show a ratio of one to two and one half or one to three; long legs and short chest; or a long thorax and very short legs, with ratios of one to one and one half or one to one and three quarters. Then we have with thorax abnormalities and others, such as very small or very large hands and feet. These growth disturbances, especially those in which the thorax and legs are in disproportion, are usually due to two factors, one being that in

early youth there is a disturbed thymus, and in the other, a disturbed pituitary. A simple thymus gland disturbance, if such a thing were possible, would usually produce abnormal growth in the skeleton, no matter what the consistency of the bone might be. The increase in length is the remarkable feature, so that we have the so-called thymic giant, who may grow to six, seven, or seven and a half feet. The giant Turner, mentioned by Cushing, is a case in point; his hands and feet were large, but so was his body. In those cases in which there is a thymic subinvolution in addition to a pituitary disturbance accretions occur in the length of certain portions of the body and not in others, making the disproportion. If such a disturbance occurs after the epiphyses have been united to the shaft of the bone, then it makes a disturbing and deforming feature, for we have growth in every conceivable way excepting in length, and deformity results, acromegalic in character. If this growth occurs before the epiphyses are united it is usually in the length, and a disproportionate skeleton, though giant in size, is the result.

The next indication that we shall discuss is the gonadal with secondary sex characteristics. In these patients we find various anomalies; a boy of ten with the genital organs of a much older boy or of an adult man, or an implantation of the penis within the scrotal folds or we will find in an adult a gonadal growth of a boy of ten with or without a scrotal fold at the base of the penis and all combinations between these extremes. It is necessary to determine the underlying basis for the discrepancy; sometimes we can, but more often we cannot, and it would not in itself be important, except that these beings have almost invariably neurotic and psychotic states, and it is the psychotic state that is of importance, and not so much the direct glandular abnormality. These individuals usually have shut in characteristics, with periods of depression and occasionally periods of manic excitement; and they are usually shut in because they recognize that there is something about them different from their fellows. The condition later develops into a true psychosis, and from that point of view the recognition of these disturbances is important.

In the girl, likewise, similar abnormalities exist. An infantile uterus is present or undeveloped ovaries—and the clitoris is frequently large and protruding, resembling the male organ. In these cases also the distribution of the pubic hair is often that of the opposite sex—so that males have an upper horizontal line of demarcation while females have the pyramidal type usual in the male. These patients have difficulty in adjusting themselves to their surroundings and especially as regards companions of the same sex. They recognize their departure from type and a true psychosis frequently develops on this basis.

Finally comes the group of patients who complain of various vasomotor disturbances. Of course many of these disturbances are due to actual cardiovascular disease but there are certain individuals in whom you cannot find such a disease, and they are of all ages, they suffer from pares-

thesias, and tinglings, and sweating at various times, and they come to us for relief. They may reach the point of having trophic skin disturbances, and they are treated for various types of skin affection, whereas it is actually often a vasomotor condition based upon an endocrine disturbance. These patients usually have a deficient endocrine supply with a low blood pressure; though the blood pressure may not be noticed at the first examination. If you take the blood pressure of such individuals after you have asked a few questions bearing on their condition and they have become somewhat reassured, it may be practically normal; but if you let the cuff remain in place for a time and engage the patient in a conversation extraneous to his condition, and then take the blood pressure you will find that it is not normal, but may be as low as ninety-five or 100 systolic. This escaped observation because of the method of taking the blood pressure. These patients have dizziness, lightheadedness, head pressure, with occasional *digiti mortui*.

With these vasomotor disturbances we usually have a suprarenal deficiency, and it is accompanied by a condition which renders the patient subject to shock on slight provocation. We not only have clinical evidence of such disturbance, such as the white line of Sergeant, but we also have laboratory findings to support the diagnosis. We may have a low carbon dioxide combining power of the blood; we may have a white cell count with a moderate degree of eosinophiles; a moderate relative lymphocytosis with a small increase in the white cells. The white line of Sergeant is produced by stroking the surface of the body with the palmar aspect of a finger. The line varies, depending upon the portion of the body which is stroked. The upper thorax gives a pink line which gradually disappears; if you stroke the abdomen, the pink line is not so much in evidence, or there may be no line; if you stroke the thigh, you will get a faint pink line with a white line following; but if you find a marked white line with no pink, or if you find in the upper thorax a white line after stroking, it is probably due to a lack of adrenalin.

These patients also show other characteristics which are interesting. Such patients are prone to hernia, to varicocele, and to varicosities of the veins elsewhere, to visceroptosis and gastroptosis; they are subject to bed wetting. Many of the men in the army when examined on account of this condition showed a marked disturbance of the adrenals.

So we have a series of symptoms with which our patients meet us, none of them very bad, just beginning, except perhaps the headache, which they may say has persisted for a year or more. We may see them before there is much structural change. For the most part the symptoms are apparently isolated and we treat them as being due to one or another organ without much success. As soon as we realize, however, that these symptoms are referable to internal glandular disturbances, the conception of the matter changes, and therapy may be advantageously applied. It is surprising to see in most of these patients with structural abnormalities that

there are concomitant psychic states. It has always been a mooted question whether such a psychic state precedes the vegetative disturbance or whether the glandular disturbance precedes the psychic state. Possibly sometimes one and sometimes the other. Nevertheless, you make take it for granted that there are psychotic states that accompany these internal glandular disturbances, and it is of great importance to recognize them. If you realize the organic basis of some of these disturbances and treat that organic basis of the abnormal structural condition, the treatment will very frequently be accompanied or followed by a marked improvement in the psychic state, and that is of great importance. Every case of Addison's disease that you have seen has begun with fatigability; status thymicolymphaticus may have begun with bladder weakness, bed wetting. Many of the cases of acromegaly that you see in late life were originally status lymphaticus cases; hemophilia, the spasmophilia, the purpura, have often been traced to early status thymicolymphaticus; gigantism and acromegaly may be ushered in by intratemporal headaches; exophthalmic goitre by vasomotor instability; many psychoses develop parallel to gonadal deficiencies or inversions; in short, the extreme cases of endocrine disease which we see and which we can rarely help, can be frequently combated in their infancy if we can properly evaluate the seemingly simple initial symptoms.

2 WEST SIXTY-SEVENTH STREET.

ENDOCRINE NEUROSES AND THEIR TREATMENT.*

BY JOHN ROGERS, M. D.,
New York.

The term endocrine neurosis is used to call attention to the apparent close relationship between the endocrine organs and the involuntary nervous system. Within the last few years there have been published many experiments closely connecting the products of the adrenal, pituitary, parathyroid, and thyroid glands with the functions which are believed to be performed by the involuntary nerves. The latter consist of two groups of fibres, one of which seems in general to cause, according to electrical and chemical tests, vasodilatation and stimulation of secretory activity, and the other causes vasoconstriction and inhibition. The former has been designated by Langley as the autonomic part of the involuntary nervous system and might be more readily recognized if it were described by the name of its best known member or as the vagus group. The other is made up of the cervical, thoracic and abdominal sympathetic nerves. Knowledge of the terminal neurons of these two systems is as yet insufficient, but expressed in general terms one seems to drive and the other to check the functional activity of every organ in the body (except, so far as is known, the brain.)

This drive and check effect seems brought about not alone by the nerve impulse, but by the impulse

acting, at its point of discharge from the terminal neuron, in connection with the endocrine products and presumably also with the circulating nutriment or cell food. Extracts of the adrenal gland and possibly of the pituitary seem to activate or reinforce the generally inhibitory and vasoconstrictor or check powers of the sympathetic system while extracts of the thyroid, and some other organs, similarly activate or reinforce the generally stimulating and vasodilating or drive powers of the opposing or vagus system. That this apparent drive and check mechanism, which seems to be an automatic means for regulating the comparative activity of the viscera, is not wholly nervous, but more trophoneurotic, is suggested by experiments with voluntary nerves. Section and degeneration of the ulnar nerve, for example, is followed by a characteristic atrophy of the receiving muscles. This cannot be because of the lack of any mysterious vital principle. It must be because of the failure of the terminal neuron to perform some nutritive or trophic function. For, this terminal neuron by electrical stimulation, can be made to cease functioning either partially or completely. When partially fatigued, the receiving muscle shows a decreased power of contraction. If at this stage extracts of the thyroid, parathyroid or adrenal glands are injected into the animal's circulation, the muscle immediately resumes its former vigor. But if the fatigue of the nerve is continued until the muscle ceases to contract, that is, until the end plate is exhausted and unable to functionate, then the injection of the stimulant extracts produces no effect. These experiments can be visualized by imagining the nerve end plate to spray out like the fingers of a hand around the receiving cells. Between these cells and the nerve spray lies the circulating lymph and blood with all the nutritional matter and endocrine products. The impulse discharged from the spray can be imagined as pushing nutriment into the receiving cells. In this process the product of the thyroid, and probably other organs, seems to accelerate the cell chemistry, while that of the adrenal, and possibly the pituitary, seems to retard the cell's metabolism. The thyroid product, however, seems to act only through or upon the terminal sprays of the vagus system, while the adrenal is limited in its inhibition to the terminal sprays of the sympathetic. A circle drawn around the receiving cells and the terminal neuron or spray of the motor and vagus and sympathetic nervous systems seems now to indicate the point of action of at least the pituitary, thyroid, parathyroid and adrenal glands. The circle also necessarily includes the point at which nutriment gains access to the cells and the products of their metabolism are excreted.

Knowledge about these matters is as yet very limited and it is unsafe to generalize, but clinically it is a great help in the prevailing obscurity, to confine attention to only the thyroid and adrenal glands and their effects upon the involuntary nervous system and through these nerves upon symptoms. The autonomic, or as it will be described here, the more easily recognized vagus sprays of nerves, seems by vasodilatation and stimulation of functional activ-

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ity to drive all the organs, while the sympathetic seems to check them, and this drive influence is vastly reinforced by the thyroid. The adrenal, on the other hand, exhibits an equally strong influence upon the sympathetic check. These opposing effects are most clearly shown in the stomach and pancreas.

By means of a Pawlow or Janeway gastric fistula, the results of the injection of thyroid and adrenal products can be determined. An alcohol extract of the thyroid vigorously stimulates gastric peristalsis and increases the flow of secretion about tenfold. The injection of atropine, a drug which paralyzes the terminal filaments of the vagus, prevents this stimulation, or, if given after it is excited, stops it. If all branches of the vagus are cut just above the diaphragm and degeneration allowed to occur, then the injection of the stimulant thyroid extract is practically without effect. This indicates that the thyroid stimulates at least the stomach through the terminal filaments of the gastric vagus. All extracts or derivatives of the entire adrenal gland contain at least traces of epinephrine, but it is worth noting that extracts of the entire gland show a much more vigorous effect upon the stomach than a corresponding dose of adrenalin chloride. These effects, when the adrenal extracts are administered before or after the stimulant thyroid extract are like those of atropine but seem to be produced not through the vagus but through the sympathetic. That is, in the stomach the adrenal apparently checks functional activity and the effect seems limited to the sympathetic terminals because after their destruction the check is much impaired or lost. It is difficult to destroy these neurons but the operation can be more or less successfully performed by injecting ninety-five per cent. alcohol around the gastric and pyloric arteries and along the course of the vessels on the greater and lesser curvatures.

The nerve supply of the pancreas is not so well understood nor so easily demonstrated as that of the stomach. But by means of a pancreatic fistula it has been shown that a noncoagulable or alcohol extract of the thyroid is a vigorous stimulant of the pancreatic secretion and this secretion can be prevented or stopped by atropine or by extracts of the adrenal gland. Because of the well known effects of adrenalin upon the sympathetic, it is probable that extracts of the entire gland, all of which contain epinephrine, act in the same manner. The muscles of the intestine are believed to have a double nerve supply that is to receive filaments from both the vagus and sympathetic systems. If a preparation of these involuntary muscles is suspended in Locke's solution and treated with a noncoagulable thyroid extract, it will vigorously contract. The addition of adrenalin or of an adrenal extract will prevent or stop this stimulation. This result, in conjunction with those of the other experiments, seems to indicate that the vagus-thyroid drive of the intestinal muscle is opposed by the sympathetic adrenal check.

During the animal tests there were noted after the injection of stimulant thyroid extracts, salivation, very marked diuresis and often catharsis,

although the reactions in the salivary glands with the thyroid and adrenal extracts were not as constant as those in the other viscera. Nevertheless they did not seem to controvert the general conclusion that the thyroid apparently by stimulating all metabolism drives all the organs through the vagus system of terminals, while the adrenal by arresting or inhibiting this metabolism through the opposing sympathetic terminals, seems to check them. In experiments upon the heart action no material could be isolated either from the normal animal gland or from the pathological human gland of Graves's disease, which would produce any appreciable degree of tachycardia. It is well known, however, that tachycardia, as well as some of the other symptoms of hyperthyroidism, can be evoked by long continued thyroid feeding, but it cannot be produced within the usual experimental period of two or three hours. Hence, it is reasonable to conclude that the rapid pulse which is one of the most constant evidences of an overactive thyroid, is not an indication of the influence of the thyroid product upon the cardioaccelerator or sympathetic nerve supply of the heart. It is more probably an evidence of a generally increased metabolism and possibly of an increased metabolism in the cardiac muscle.

ENDOCRINE MEDICAMENTS.

Before proceeding to a discussion of symptoms and treatment, it is necessary to refer to certain peculiarities of the different thyroid and adrenal derivatives. It is now generally accepted that the active principles of several, if not all, of the endocrine organs are chemically less complex than the proteins. They may approach in character the amino acids. From a saline extract of the thyroid, there can be extracted with ammonium sulphate, a globulin. This, after purification, produces no immediate reactions when injected into the animals. An excess of ten per cent. acetic acid added to a saline extract, will precipitate a considerable amount of nucleoprotein material which, like the globulin, is inert. But clinically and therapeutically, when fed by mouth, either the globulins or the nucleoproteins are very active and useful in doses of one one hundredth to one tenth grain. After removal of the coarsely hashed particles of gland from a saline extract, a considerable amount of material can be recovered by evaporating the filtrate. This water soluble mass experimentally is more or less inert, and clinically not nearly as satisfactory as the globulins or nucleoproteins. The latter is generally a far better medicament and much less toxic than the commercial desiccated thyroid powder or tablet made from the whole gland.

After precipitating the nucleoproteins from a saline extract of the thyroid with acetic acid, the clear filtrate when neutralized and made slightly alkaline with sodium hydroxide and boiled to remove the coagulable albumins, both acid and alkali, is physiologically, and in contrast to the coagulable derivatives, very active. In our laboratory this noncoagulable and boiled extract which remains after removal of the nucleoprotein and coagulable material, is called for lack of a better name, the thyroid residue. Clinically it is useful in a dose of five to twenty drops every two hours in about the

same conditions as the other thyroid medicaments, but it acts quickly and seems to have much more vasodilating and diuretic properties than either the nucleoproteins or the globulins. The globulins, by the way, seem to have a peculiar power of exciting tachycardia. An alcohol extract of the thyroid prepared by extracting the gland with alcohol, and evaporating the alcohol nearly to dryness and then adding water, is clinically useful, but no better than the aqueous thyroid residue, except that it does not seem as easily to excite hyperchlorhydria as does the residue. Of adrenal materials, which can be obtained like the thyroid, from a saline extract, the adrenal nucleoproteins, and the dried substance of the saline extract, seem about equally useful clinically in doses of one tenth to one half grain. The liquid adrenal residue, made like the corresponding thyroid residue by boiling the neutralized and alkaline filtrate after making acetic acid precipitation of the nucleoproteins, is also useful in doses of from five to twenty drops every two hours. The indications for the uses of these thyroid and adrenal materials are best illustrated in the symptoms of functional thyroid disorders but as medicaments they are valuable in many disturbances which do not have a manifest thyroid origin.

HYPERTHYROIDISM

As the thyroid seems to intensify the functions believed to be performed by the autonomic or vagus group of nerves and not those ascribed to the sympathetic, the symptoms of exophthalmic goitre can be readily interpreted. The exophthalmos alone is of doubtful origin. The moist and flushed skin, the overacting and pounding heart, the abnormal appetite (vagus hunger contractions), the frequent bowel movements and the diuresis, all point to the excess of drive over check impulses, and hence, as the thyroid forms part of the drive, to excessive thyroid activity. Exophthalmos is not a constant symptom and usually appears after and not before the other signs, and the evidences of superabundance of drive throughout the driving portion of the involuntary nervous system should enable the diagnosis to be made earlier. For the presence of exophthalmos, whatever its cause, indicates a distinct increase in the gravity of the prognosis. This matter of early and late appearance of symptoms is important because most of these cases seem to begin with an initial hypothyroid disturbance. That is, if the history is carefully taken, there will generally be discovered a longer or shorter period in which the patient seems to have suffered from the symptoms of hypothyroidism; there were headaches, more or less insomnia, and noticeable weariness or actual weakness, with or without tremor, anorexia and constipation. The presence of at least a perceptible thyroid enlargement should complete the diagnosis. That is, the symptoms usually accepted as those of hypothyroidism are an enlargement of the thyroid gland, and with this, more or less headache and insomnia and pallor, and all those signs which indicate fatigue or a noticeable susceptibility to fatigue. This disturbance seems also and most commonly to originate in fatigue, for there is generally a preceding history of long sustained physical or mental effort or a combination of both

and then the hypothyroidism symptoms and they can only be differentiated from those of pure fatigue by the presence of a thyroid enlargement. Less frequently the early history is one of an acute infectious disease or of some traumatism, like a surgical operation. If there has been no sepsis, the trauma is superimposed upon a preceding fatigue.

These apparent discrepancies in the origin of the disturbance can be made to coincide through the involuntary nerve terminals which, experimentally at least, seem equally susceptible to sepsis or to fatigue. Either influence seems to interfere with or suspend their capacity to functionate and at first both the vagus and sympathetic systems appear equally affected. Both the drive and check forces fail and if there is present a perceptible enlargement of the thyroid, there is much justification for the diagnosis of hypothyroidism. The hypertrophy of the gland seems to be an enlargement to compensate for a deficiency in the driving forces. It is more probable, however, an evidence of some trophoneurotic disturbance connected with the innervation of the gland and its effect upon the metabolism of iodine.

A continuation of the fatigue (or sepsis) after the appearance of the initial signs of hypothyroidism is then followed by those of hyperthyroidism or of an excess of the drive over the check influences upon metabolism. The headache and languor disappear, the pallid, dry skin becomes flushed and moist, vasoconstriction is followed by vasodilatation, anorexia becomes hunger (vagus hunger contractions) and constipation becomes diarrhea. Many patients show an intermediate stage in this progress and it may persist indefinitely and in these cases it is often difficult to say whether they suffer from hypothyroidism or hyperthyroidism. The drive upon the metabolism in some organs is as manifest as the lack of drive in others and as yet the determination can only be made by the calorimeter. If this machine shows that the metabolism is above normal, it seems reasonably certain that at present there is excess of thyroid activity. The explanation of all these phenomena comes back to the functions and the functional activity of the different and opposing portions of the involuntary nervous system. Apparently both groups of nerves fail in the initial stage of these disorders. Then if the fatigue (or toxemia) continues the check upon metabolism becomes more deficient than the drive and the result is hyperthyroidism. If, on the other hand, the drive becomes more and more deficient, the primary hypothyroidism deepens into a myxedema. To say that there is an excess of drive or excess of check in any instance, is probably not strictly correct. For what appears as an excess of drive must really be a lack of check, and the excess of check, a lack of drive upon metabolism.

The treatment not only of these thyroid, but of all functional visceral disorders, especially those of the stomach or gastrointestinal tract, which presumably are dependent upon disturbances in the functioning of either the vagus or sympathetic terminals or upon alterations in the drive and check metabolism of one or more viscera, is or should be, primarily that of reinforcing the deficient drive or

the deficient check of the different thyroid products which seem best for stimulating the drive. The thyroid nucleoproteins, in doses of one fiftieth to one tenth grain frequently repeated, are most satisfactory. The liquid residue or noncoagulable part of an aqueous extract sometimes proves better. The commercial preparations made by desiccation of the entire gland are much more prone to be inert or toxic. The thyroid nucleoproteins or residue are useful or indispensable in all frankly hypothyroid or deficient drive conditions and in many so-called mixed hypothyroid and hyperthyroid disturbances in which there are evidences in some viscera of good or active functioning and in others of a deficiency. The residue is clinically better than the nucleoproteins in the hypothyroid or mixed thyroid disorders which are accompanied by a high blood pressure and also in cases with gastric hypofunctioning. Thyroid and other neuroses like those of the stomach and intestine, which show excess of the drive over the check upon metabolism, or more correctly a lack of check, can be benefited by almost any adrenal derivative, but adrenalin is the least satisfactory. The adrenal nucleoprotein in doses of one tenth to one half grain every two hours, or the adrenal residue (noncoagulable part of a saline extract of the entire gland) in doses of five to twenty minims every two hours, are perhaps the most useful of the adrenal derivatives for the medical treatment of hyperthyroidism.

Whenever this condition is demonstrable and not speedily changed to the preceding hypothyroid disturbance, surgery is indicated. Conservation of the thyroid by cutting off enough of its blood supply, is much safer and wiser than the present popular practice of ruthless and extensive thyroidectomy. In recovery, the patient always sooner or later passes again backwards in the order of the development of symptoms through the initial stage of hypothyroidism, and then should be fed thyroid to hasten and improve the evident deficient drive upon metabolism. In cases of hyperchlorhydria or excessive gastric functioning, the adrenal nucleoprotein material which contains only traces of epinephrine is far better than the adrenal residue which is rich in this substance. Adrenalin is practically useless. The desiccated and powdered entire adrenal gland has considerable value. Some functional diarrheas are benefited by adrenal and others by thyroid feeding and the distinction between the two medicaments can often be determined by the condition of the stomach. The patients with hyperchlorhydria require adrenal feeding, while those with the opposite condition require thyroid.

But the drive and check mechanism which seems so powerfully to affect the visceral metabolism and functioning, is apparently not controlled by only the products of the thyroid and adrenal glands. Alone of all the other endocrine organs, the pituitary, at least in the stomach and some parts of the intestine, seems to reinforce or support the adrenal check. The parathyroid apparently reinforces the thyroid drive but not exactly at the same anatomical point. Hence, in the present state of knowledge, it is legitimate when the drive or check symptoms cannot be helped by either thyroid or adrenal feed-

ing, to experiment with the associated derivatives. Fortunately all, if properly supervised, are harmless, and their effects, if any, almost immediate, at least upon subjective symptoms.

102 EAST THIRTIETH STREET.

ENDOCRINOLOGY IN DAILY PRACTICE.*

BY WILLIAM V. P. GARRETSON, M. D.,
New York,

Neurologist, Harlem Hospital, New York; Consulting Neurologist, Clinic for Functional Reeducation, New York; Consulting neurologist and Psychiatrist, Manhattan State Hospital, New York, etc.

There is no branch of medicine which can be intelligently practised without an understanding of endocrine function, therefore the general practitioner, as well as the specialist, without a working knowledge of this subject and its practical application is immeasurably handicapped in not possessing one of the greatest diagnostic and therapeutic assets to be acquired in the successful practice of medicine.

The medical profession is rather slow to accept and practise new ideas or theories, and such conservatism is commendable until facts are demonstrable by convincing proof. Sound judgment should always prevail. Skepticism, however, is frequently based upon ignorance. The products of the work of pioneer investigators in this field of research met with no recognition from the medical profession until Brown-Séquard's experiments with testicular substance in 1889, which attracted the attention of the medical world, but only for a brief period. Conservative medical men discarded his theories and methods, which were promptly adopted and promoted by quacks and charlatans.

The sudden impetus which the clinical aspect of ductless gland diseases has received in the past few years has swayed the pendulum now in the opposite direction and one must be guarded against extreme enthusiasm on the one hand and scoffing ridicule on the other and become reasonably poised midway between extremes. The researches of men who for years have been probing for evidence of glandular function have been tolerated as theories without practical application, but the teaching of these pioneers in research, fortunately has not been in vain, for today we are emerging from that dark abyss of ignorance, and light has at last penetrated and we are beginning to know more about the mysteries of human physiology than ever before.

Anatomically, since the days of early medicine, the internal secretory glands have been observed and grossly described as organs of unknown function. With the perfection of the microscope they were histologically studied and classified. The clinical status of these organs is now gradually being established, but before this will be satisfactorily accomplished pathology and physiological chemistry must make progress to clear up many of the weak points of our knowledge of internal secretions. However, what little knowledge we have at our disposal at present is a priceless asset and therapeutically enriches the primary function of the physician,

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namely, to be a healer of mental and physical ills.

Surgery at best is the art of destruction and mechanical repair. Medicine is or should be an aid toward construction, in which process we strive to stimulate the resistance of the body against invading disease. By the term resistance we vaguely imply the existence of something which chemically creates a mechanism of defense. Evidence now conclusively shows this to be the expression of endocrine function. Fortunately that sad chapter of surgical interference in promiscuously extirpating internal secretory glands as a panacea for all ills (ovariotomies, thyroidectomies, tonsillectomies, appendectomies, and other surgical procedures) is fast coming to a close.

The extirpation of a hyperactive thyroid gland is in most instances absolutely contraindicated and is a procedure based upon ignorance of glandular function. That gland is overactive in an effort to compensate for a deficiency of function elsewhere in the endocrine gland chain. The intimate interrelationship of glandular function teaches us that hyperactivity is a compensatory effort to offset lypoactivity elsewhere. In the case of the thyroid it usually indicates an ovarian or suprarenal gland exhaustion. Artificially supplying the deficiency under proper conditions will effect the desired results.

Histologically the pituitary gland and Lushka's tonsil are said to be similar. There is likewise a histological identity between the tonsils and the appendix, the latter having been very aptly called the abdominal tonsil, and also a functional relationship among all of these structures. Total extirpation of tonsils creates subsequently a compensatory hypertrophy of appendix tissue and a chronic appendicitis results. The large number of appendectomies following tonsillectomies is more than mere coincidence. The pituitary type of headache, top of head, behind the eyes, or radiating from glabella to occiput, invariably associated with tonsil or appendix inflammation, and following extirpation of one or both of these, is due to a compensatory enlargement of this cranial gland.

The interrelationship of the endocrine glands must at all times be considered in establishing the balance of glandular dysfunction. The best illustration of this may be observed during the normal periods of glandular adjustment, at the developmental epoch of both sexes, and during the menopause period of the female. There is an equivalent of this, so-called change of life period, in the male, which, as a rule, is less acutely expressed. Normally through this interrelation nature effects a proper adjustment, but when this fails to occur, the many disturbances of both mind and body are manifest and at such time the effect of proper endocrine therapy is most gratifying. In the ultimate analysis of internal secretions, we shall probably have to admit that all body tissue through individual and collective cellular activity, produces secretions specific to all tissue cells, and so we believe there are important secretions peculiar to all body organs.

For the purposes of this paper it is best to adhere to the consideration of those internal secre-

tory organs with which we are more familiar, and whose functions are quite clearly established, and which probably are the most important of the glandular chain e. g., thyroid (parathyroids), thymus, pituitary, suprarenals, ovaries, and testicles.

To present a superficial working basis it will be necessary to quote somewhat briefly from a previous communication of the writer: (1) "The life of every individual is dominated by his ductless gland chain. Certain of these glands assume a dominating influence on the morphology, physiology, and pathology of the individual and by reason of this, we are able to designate persons in terms of glandular types, recognizing thyroidal, adrenal, pituitary, and gonadal types, many of which are mixed types and designated thyro-adrenal, pituito-adrenal, and many other combinations. For example, studies clinically have proved that certain physiological and structural markings are constant to certain glandular types, and by the physical objective examination alone, without other information, we can make an accurate designation.

Noting whether an individual is tall or short, thin or stout, light or dark, observing the hair, its color, quality and distribution on the body, whether high or low implantation on the forehead; present or not in the axillæ and its pubic distribution, will give important information. In subthyroidal states the eyebrows are very scanty and especially so in the outer third. In the adrenal types they are usually thick and meet in the midline bridging the nose. From the teeth alone much may be learned. Thyroidal teeth are well formed, white, clean and show good enamel. Thymus teeth show pitting and poor enamel due to deficiency of calcium salts. In pituitary types, the teeth are separated or spaced and are also white and glistening. Adrenal teeth show dark markings or spots, similar to chromaffin deposits. Gonadal teeth exhibit torsion, disproportion and frequently absence or semilunarity of the lateral incisors.

The skin in adrenal types always shows pigmentation, either as freckles, moles, and large patches of pigmentosis. These are designated as skin adrenals. The thyroidal skin is usually blond and clear and smooth. In hypothyroidal states it is scaly and rough. Dark haired and dark eyed thyroidal types are also observed, but these are not without other glandular characteristics. The vasomotor reactions of the skin are also important. One observes various responses by lightly marking the skin of the chest or abdomen. The pure thyroidal line is the pink or red line appearing quickly or slowly and varying in duration. It may have an associated bilateral white line indicating adrenal complication or it may be a pure white line with no color response, being the true adrenal line of Sergeant. By the ears (satyr type, angel type, Lombroso and Morel types, etc.), the size, shape, symmetry, as well as the bony frame and ligamentous structures, one is guided in making an endocrine classification.

Physiological, psychological, and morphological changes are observed in all persons resulting from normal as well as pathological glandular influences. The thymus normally ceases to functionate at the

developmental epoch, when gonadal activity begins. The delay of gonadal function with persistent and overactive thymus influence expresses itself in the production of persistent and excessive juvenility. Overactivity of the thyroid before the developmental epoch creates the prematurely old appearing individual such as the little old man, the familiar Lilliputian type.

The results obtained by Gudernatsch in the experimental feeding of tadpoles are quite significant. The small amphibia that were fed on thyroid gland developed into tiny frogs, described as *petit vieux*, and those that were fed on thymus grew into enormous tadpoles or *grand enfants*. This experiment proves to some extent at least, why of two individuals of the same age, one may look like a premature old man, and the other have the appearance of unwarranted juvenility. Physiological and structural changes at developmental and menopause epochs in both sexes are familiar examples of glandular control. The remarkable influence of the pituitary gland upon structural conditions is demonstrated when hypersecretion of the anterior lobe occurs, creating gigantism before puberty, acromegaly during adult life and shrinking in old age. The extremes of thyroidal secretion create Basedowian characteristics, exophthalmic goitre, or cretinism and myxedema. Innumerable clinical types of great importance occur between these two extremes, due to dysfunction of the gland.

Further evidence of glandular control in type production is noted as follows: The domination of the pituitary gland produces feminism in the male; while the domination of the adrenals makes for masculinity in the female. The thyroidal individual has his marked personal characteristics, his bright intelligent eye, his good clean teeth, his temperamental attitude toward life, his freedom from infectious diseases except measles and typhoid, and his tendency toward intestinal and certain forms of cardiovascular and neurotic disturbances. The pituitary individual, easily recognized by his structural makeup, has his own peculiarities. He is musical, has an abnormally acute sense of rhythm and is prone to diseases attended by periodicity, e. g., malaria and syphilis.

The adrenal individual has his strong masculinity, his tendency to hypertrichosis, to hyperchlorhydria, to hypertension, to certain forms of pulmonary disease, and to pigmentosis, his tendency to diphtheria, to herina, and varicocele. These master types have their variants depending upon the influence of other glands, especially marked in the gonads. Right sided symptoms point to pituitary dysfunction, left sided to adrenal dysfunction. Bilateral symptoms point to the thyroid. When one becomes versed in the interpretation of glandular types, it is possible to state quite accurately what diseases a given person has had or is prone to have, or to render a type description of an unseen individual based upon that person's medical history.

The extremes of glandular dysfunction such as hyperthyroidism (Basedow's disease) and hypothyroidism, myxedema or congenital absence of the thyroid (cretinism), are familiar to all, but it is well to remember that more common are the interme-

diate phases of dysfunction which are most frequently unrecognized. Such dysfunction of all glands more commonly exists than is generally considered, and being ever on the alert to detect such conditions, enables one to frequently effect a cure of many patients of the types designated as neurasthenic, hypochondriac, and other neurotic types.

Personally, I have discarded such terms as neurasthenia, psychasthenia, hysteria and neuroses, as being meaningless expressions of ignorance, and in my opinion the multiplicity of symptoms grouped under such captions are all due to the dysfunction of one or more of the endocrine glands, as expressed subjectively and objectively through the nervous system, and particularly through that portion which we speak of as the vegetative nervous system. Without going into a detailed description such as is given in a previous paper by the writer (2) suffice it to say that recent studies in vegetative neurology have opened up undreamed sources of proof, showing that abnormal functions, such as are often grouped under the terms mentioned above may be traced to the imbalance of the autonomic and sympathetic components of the vegetative system, which in turn are under the direct influence of the ductless glands.

The clinical signs and symptoms of vegetative nervous system disturbances are dependent upon an imbalance of the normal antagonistic relation of its two portions. The suprarenal glands by their secretion, adrenalin, maintain the tonus of the sympathetic. The posterior lobe of the pituitary by its secretion, pituitrin, controls the autonomic or extended vagus. A suprarenal gland exhaustion (hypoadrenia) creates a vagotonia. A suprarenal hyperactivity produces a sympathicotonia, as will also be the result if a pituitary gland exhaustion occurs, which establishes a vagal depression. Hyperactivity of the pituitary gland will also cause a vagotonia. All infectious diseases through demands made upon the defense mechanism of the endocrines, produce thereby an endocrinasthenia; likewise mental and physical fatigue reactions are so expressed. The so-called shock states following trauma and surgical procedures plus the poisoning incident to all anesthesia become upon ultimate analysis an endocrinasthenia.

Attention has already been directed to the apparent susceptibility as well as immunity of certain endocrine types to disease. Glandular hormones, in their defense reactions, undoubtedly are the immunizing barriers of the body, and by so-called immunizing procedures with vaccines and sera, these glands are selectively stimulated to the further production of their protective secretions. It is not an unusual observation that anaphylactic or shock reactions occur when this method of prophylaxis is too actively employed, and frequently with undesirable results in patients already suffering from endocrine fatigue. The anaphylaxis of pollinosis and ingested proteins, causing rose colds, hay fever, and asthma, is familiar to all. This again is a shock reaction by poisoning more mildly expressed.

In all of these so-called shock states, no matter what the exciting cause, the existing condition is a vagotonia, due to a hypoadrenia. Relief is prompt-

ly attained by administering atropine, which is an autonomic or vagal depressant and thus allows the depressed sympathetic to functionate in its state of lowered tonus, or still better, by the giving of adrenalin prompt relief is acquired by stimulating the depressed sympathetic to meet its unopposed antagonist, the autonomic. The suprarenal glands, particularly, are the ones which bear the brunt of all toxic assaults upon the body, either of endogenous or exogenous origin. The familiar exhaustion states so frequently seen following infectious diseases, are classical demonstrations of a vagotonia due to hypoadrenia.

When proper glandular therapy is applied as a prophylactic measure, the basic physiological soundness of this procedure may readily be demonstrated and this is especially so in the so-called vasomotor neuroses of the respiratory tract, which may thus be cured without the artificial method of immunization by vaccine therapy. The supplying of endocrine substance to the exhausted gland chain supports body function, reduces the period of acute illness, and materially hastens convalescence. The writer witnessed many remarkable demonstrations of this during the recent epidemic of influenza. This same method of therapy will likewise hasten convalescence following all surgical procedures.

The endocrine and vegetative system dysfunctions are responsible for the transient states of psychical and physical reactions incident to health as well as disease. They are paramount in the production of all subjective and objective body symptoms. The innumerable symptoms of which many patients complain for which no organic cause may be elicited, can readily be grouped and classified if an analysis of endocrine and vegetative function is made. To make an accurate diagnosis requires a detailed history, a thorough physical and neurological examination. The endocrines by reason of their dominance of the nervous system are perhaps more allied to the field of neurology than any other specialty, and to make an accurate diagnosis of endocrine dysfunction, one must possess at least a superficial knowledge of neurology, and be especially familiar with the anatomy and known functions of the vegetative nervous system.

Knowing that the circular muscle fibres of the bowel are controlled by the extended vagus and that the longitudinal fibres are supplied by the sympathetic, will readily give an understanding of the mechanism of constipation and diarrhea.

Knowing that the constrictor action of the sphincter of the bladder is controlled by the pelvic autonomic, indicates that an enuresis is due to a sympatheticotonia. Stimulation of the autonomic by a few doses of pituitary, posterior lobe or whole gland, will generally cure bed wetting as if by magic.

Knowing that ovarian dysfunction is compensated for particularly by the pituitary and suprarenal glands or both, as well as the thyroid, will explain the transient subjective symptoms as reflected through either the autonomic or sympathetic, as vasoconstriction and dilatation, hot and cold flashes.

Knowing that the thyroid by its active principle, thyroxin, maintains the fluidity of the blood during the menstrual flow, enables us to understand why

that gland normally enlarges during menstruation due to increased function and when fatigued, a dysmenorrhea results.

Knowing that the mammary gland is antagonistic to the ovaries, and during lactation, ovarian function is in abeyance; when ovarian function is too active, as in prolonged and profuse menstruation, we administer mammary gland for its inhibitory effect.

Knowing that thyroid function is reduced during pregnancy because menstruation has ceased explains why subthyroidal types of women always feel better when pregnant. And so on indefinitely, symptoms may be accurately analyzed and classified and what is seemingly complex becomes a simple problem.

To touch in one paper upon all of the clinical phases of endocrine dysfunction is impossible. The object of this paper will have been attained if it has served to indicate the importance of this fascinating subject, not only as an aid to the understanding of many heretofore unsolved problems, but as an aid to therapeutic efficiency. The measure of gratification derived from the successful and at times startling and uncanny results from the intelligent use of organotherapy, makes it well worth the effort of study and practical application.

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11 EAST FORTY-EIGHTH STREET.

THE PINEAL BODY: ITS STRUCTURE, FUNCTION AND DISEASES.

By SMITH ELY JELLIFFE, M. D.,
New York.

Had one the industry to trace out all of the various observations and speculations relative to this comparatively small structure a surprisingly large monograph, even a five foot shelf of monographs, would hardly contain them.¹

The program here contemplated is much less ambitious. We purpose sketching only a skeleton of this edifice hoping to trace out the more salient points in the evolution of our knowledge of the structure and of the speculations concerning the functions of this organ and their pathological significance.

The evidence that has accumulated makes it fairly certain that: 1. The pineal body may be considered as an independent organ or rather a complex of organs; 2, that it is an organ certain parts of which have undergone a regressive evolution while other parts have persisted and are undergoing progressive evolution; 3, that its physiological functions are possibly of considerable importance, and 4, that alterations of its structures can induce characteristic disease syndromes both as, a, reactions due primarily to alterations of the pineal itself or b, as syndromes due in part to the former or

¹Tilney and Warren's 1919 study of the innervation alone contains a bibliography of 432 titles.

to interference of functions of contiguous structures from pressure, extension of new growths or other causes.

HISTORICAL NOTE.

The pineal body has been known to medicine for a long time. It was called the *σῆμα πωροδὲς* and *πρωριον* by the early Greeks. Its cone shape

neuropsychic biology. Thus in the epileptic attack during which the patient was insensible, the *psychic pneuma* was blocked within the ventricles and could not flow out with the body, hence the anesthesia; although Galen does not specifically mention the pineal as causing the obstruction. He speaks rather in the auto-intoxication jargon of his day of the *thick humors*.

In fact Galen, according to Duval (2) after he had discovered the two veins in the choroid plexus that now bear his name, assigned to the pineal another function, namely, one of regulating the blood supply (3). It remained for later writers to implicate the pineal in this blocking function. Notably Magendie, who in 1795 said that the pineal acted as a tampon to regulate the flow of the cerebro-spinal fluid. It is also stated that Galen spoke of the conarium, for it was so called by him, having a secretion. (Cited by Peytoureau but not substantiated by Kidd). He said in this connection "The pineal was devised for the same purpose as the other glands of the body. It is in substance glandular." It should be borne in mind that most historians hold that Galen's dissections rarely included human dissection and that his highest primates dissected were monkeys. The close relation to the dorsal veins led him to emphasize a vascular regulatory function. In some passages it would appear that Galen transferred the seat of the vital spirit's regulatory function to the vermiform appendix and was quite contemptuous of those who said it had anything to do with the *psychic pneuma*.

MORPHOLOGY OF PINEAL.

Tilney and Warren have given the most extensive study of the comparative anatomy, embryology and morphology of the pineal. Phyletically it develops as two bodies constituting what these authors have called the epiphyseal complex, comprising: 1, The pineal organ proper, made up of, a, an end stalk, b, a stalk, c, a proximal portion, and d, a peduncle; 2, the parapineal organ, made up of, a, an end vesicle, b, a stalk, c, a proximal portion.

Concerning the early morphological and comparative studies of the pineal the monograph of Tilney and Warren contains full references and need not be deformed by abridgment here, but in mammals and in man the full complement of parts of the entire complex has been somewhat altered.

"Thus," to quote this masterly study, "in cyclostomes there is present to a degree seen in no other vertebrates a development of the major constituents of the epiphyseal complex." Both the pineal organ and parapineal organ attain a degree of differentiation which at least justifies the supposition that one if not both of them have functional activities of a visual nature. The presence in these forms of a well marked retinal structure, seen in the pineal organ as well as in the parapineal organ, an end vesicle containing a synctial structure, comparable in many respects to the vitreous, a pigment free ectal wall enclosing the end vesicle and resembling a lens, together with a bundle of nerve fibres connected with the posterior commissure in the case of the pineal organ, and the superior commissure in the case of the parapineal organ, constitutes irre-



FIG. 1.—Adiposogenital dystrophy. Tumor of the pineal (Baily and Coffey).

caused it to be called the pineal body by Chaussier and Willis. Specific references are said to have been made concerning it by Galen (Peytoureau), Oribasius and other ancient writers. The presence of the concretions of brain sand attracted attention early and many interesting observations have been made concerning its presence and possible functions.

Early references are made to purely mechanical functions of the pineal body, for by its position it was thought to hold the portals to the entrance between the third and fourth ventricle and thus allow or interfere with the passage of the vital spirits within the ventricular spaces of the brain cavities.

The hippocratic, platonic, and pythagorean views of three soul substances were in part affirmed by Galen, and one of these, the *psychic pneuma*, circulated in the cerebral ventricles.

It was as a partial control of the flow of this *psychic pneuma* that the pineal functioned (1).² Hence it played a large part in the pre-Galenic

²A complete historical discussion of all of the early doctrines concerning the functions of the central nervous system was written by Soury.

futable evidence of morphological specialization adapting the organ to photoreceptive if not visual purpose.

As one rises in the vertebrate scale this photoreceptive structure group seems to undergo some regressive trends so far as its utilizations for external light stimuli are concerned, yet other parts of the complex have persisted so definitely as to force the belief that other functions were present in the complex. From selachians up this structural specialization seems to be manifest, while the specific photoreceptive portion does not seem to have become more highly differentiated, a specific glandular portion has. Certain mutually correlated variations in these two types of structure may be observed in certain species, the significance of which is not yet apparent. It would lead too far astray to trace in detail the gradual regressions in certain parts of the complex and the gradual rise in other parts throughout the phyletic series. This has been done by a group of observers and the interested student is referred specifically to the studies of Tilney and Warren, Studnicka, and the review by Kidd.

In mammals the only element of the epiphyseal complex which persists is the proximal portion of the pineal organ. This exists as a cone shaped organ varying from eight to twelve mm. longitudinally, four to eight mm. transversely, and two to five mm. anteroposteriorly. It weighs approximately 0.220 gram in man and persists of this general size even to the age of seventy years.

Location. In man the pineal lies just beneath the splenium of the corpus callosum, the increasing development of which in the phyletic series of mammals has pushed it so that it lies more or less directly above the anterior corpora quadrigemina. The velum interpositum separates it from the colliculi. It is surrounded by a capsule of connective tissue. It has a small pedicle or stalk through which it is connected with other midbrain structures, the minute anatomy of which will be discussed in detail later. Posteriorly it forms a part of the roof of the third ventricle. The free edge of the tentorium cerebelli lies below and behind. The deep cerebral veins run in the velum interpositum and just about the tip of the pineal unite to form the vena magna Galeni which passes out of the brain at the great transverse fissure, below the posterior extremity of the corpus callosum and the corpora quadrigemina, entering the straight sinus. Laterally the optic thalami are in close proximity. It thus lies close to the communications between the third and fourth ventricles to the cerebellar and pontine spaces and is in direct contact with the large venous channels that drain the central region of the brain.

This definite anatomical localization is of much importance in the study of the distribution of the cerebrospinal fluid and the factor of venous engorgement as well as determining specific pressure syndromes on contiguous structures thus bringing about definite neurological syndromes caused by physical changes in the pineal body, not necessarily true primary pineal disturbances. The separation of these from primary pineal disorders will occupy a portion of this discussion.

EMBRYOLOGY.

The embryological development need not be discussed here. Tilney and Warren's study has practically exhausted the subject for practically all of the various parts of the epiphyseal complex. In mammals, as has been stated, the only part of the complex that develops is the proximal part of the pineal organ proper; the parapineal element, which constituted chiefly the photoreceptive portion does not appear. This proximal portion of the pineal organ, as J. Warren's studies seem to show, is one that has undergone a progressive development. This begins as a moderate prominence in cyclostomes, is more prominent in selachians, steadily increasing in importance in the phyletic series.

The general series of problems illuminated by and in part answered through the study of the developmental history of the different derivatives of the roof plate of the primitive forebrain, out of some of which the pineal complex arises, these need not concern us too intensively here, interesting though they may be. They reach back into the tidewaters of our vertebrate ancestors, when Eurypteris and other crustaceans were trying to solve the problem of brain versus belly, the account of which is so entertainingly told by Gaskell, and couched in the more strict language of anatomical science by Tilney and Warren.

The study of these roof plate derivatives was narrowed down by Minot in 1901 into the scrutiny of the parietal region as he termed it. This parietal region consisted of a cephalic paraphyseal arch, the middle or postvelar arch, and the posterior or caudal epiphyseal arch, separated by the velum transversum and the commissura habenularis respectively. These structures all come to definite

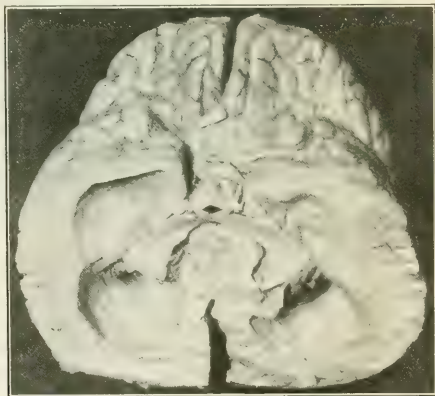


FIG. 2.—Teratoma of the pineal gland.

adult form. The paraphyseal arch and the postvelar arch developing vascular glandular structures, apparently of secretory nature, with as yet unanalyzed or unknown neuron connections with other parts of the vegetative or sensorimotor systems.

The epiphyseal arch develops the epiphyseal complex already described as to its constituent

parts and its phyletic modifications, the most constant of which has been the proximal part of the pineal organ and which is the most persistent structure in the human pineal. The histological components of this part of the complex as found in man, and as related to other phyletic types will receive attention later but from the history as just hastily sketched the glandular relationships come into prominence. But as no structure in the body leads an independent existence either from the viewpoints of lymphatic, vascular or neural integration, some light must come from the phyletic history as to the neural connections with the rest of the brain masses. This phase of the study has been a most intricate one and is far from being satisfactorily solved.

The superior commissure or commissura habenularis has been mentioned as containing axonal

pineal functioning, showing itself in muscle metabolism modification is barely possible in view of the observation which may be brought forward in the clinical paragraphs to follow, although it must be confessed that a study of Nicoll's observation on Reissner's fibre affords as yet little support to such adventurous speculations.

HISTOLOGY AND CONNECTIONS.

Histology.—A series of histological studies have almost exhausted the possibilities of the subject so far as the present day developed microscopical technical procedures have permitted. Speaking generally the human pineal body is more or less enveloped in a fold of the pia which seems to hold it vertically. (Cajal). It is adherent to the brain chiefly through and by means of the structures making up the interhabenular commissure. It is more intimately surrounded by a fibrovascular envelope which is in intimate relation to the pial covering, this fibrovascular covering dipping down into the structure dividing it up into a series of lobules of irregular size and contour. These lobules are more or less filled with pale polyhedral cells partaking of the general nature of ganglion cells.

Lymphatic spaces exist but have not been exhaustively studied. The capillary vascular distribution is extremely rich. Neuroglia, ganglion cells and axonal elements are also present. These will all be considered more in detail.

The fibrovascular envelope which dips down into the structure giving it its lobulated appearance contains an especially rich net work of vegetative nerve fibers which as Cajal (4) states is perhaps more abundant than in almost any other glandular structure. This vegetative network is probably a part of the sympathetic network of the blood vessels and of the choroid plexus and is essentially a part of the superior or inferior (Kidd) cervical ganglion of the sympathetic. This nerve network penetrates the gland throughout and surrounds the glomerular secreting cells.

The histological features including the lower forms, can be found in great detail in Tilney and Warren's monograph frequently quoted. Speaking of the histological evidence in mammals they say:

It is perhaps in mammals that the most extensive observations have been made with reference to the histology of the pineal body. Indeed, it is in these animals that the greatest variety of opinion has been expressed. It would seem advisable to take into account these different views concerning the histological character of the organ. A large group of investigators adhere to the belief that the pineal body is a blood vascular gland. This group includes, among others, Valentin, Faivre, Leydig, Bizzozero, Galeotti, Constantini, Cature, Galasescu, Urechia, Krabbe, Biondi, and Kidd. Jordan, although he does not advocate the improbability of glandular formation, believes that the organ is essentially neural in its structure. Several investigators maintain that the epiphysis in mammals consists exclusively of neuroglia. Among these are Cionini, Edinger, and Weigert. Mihalkovitz believed that the cellular consistency of the pineal body in mammals was exclusively of the ependymal type. Those of another group assert that the epiphysis resembles a lymph gland. Of this opinion are Schwalbe, Henle, Ellenberger, Mingazzini, and Lord.

Although it has been frequently claimed by many writers among both the early and recent workers in this field that the epiphysis is a vestige, it is interesting to note that no



FIG. 3.—Röntgenogram of skull of patient, showing the shadow produced by the pineal gland.

elements constituting a parapineal or parietal nerve, thought to be a neuron associative band with the old parapineal end vesicle and serving photoconduction purposes. Another embryological structure, the pars intercalaris anterior, is closely related to the superior commissure. It contains neural elements but for what purpose is still to be learned.

Posterior to the pineal is the posterior commissure and possibly Dendy and Nicoll's subcommissural body, which latter is possibly related to the pineal organ and in some manner possibly integrates through the fibres of Reissner the pineal structure with the general physiological complex of space adjustment: i. e., equilibration. That this may in some manner be associated with the proprioceptive handling of muscle gravity stimuli acting through vegetative arcs and in hypopineal or hyper-

suggestion of such a possibility is made by any of the authorities just cited. This is of particular significance because this list includes the names of those who have given the most extensive attention to the histological character of the epiphysis in mammals. Mihalkovic's conception of the histology of the pineal body seems hardly tenable, for it requires little study covering a number of different mammalian forms to become convinced that the cellular elements entering into the epiphysis have nothing in common with the ependymal cells. Even though it may be admitted that a certain number of the cellular constituents of the epiphysis are ependymal in type, it cannot, in the light of our present knowledge, be held that the organ is made up exclusively of this type of cells. On the other hand, it is not possible to accede to the contention of those who uphold the idea that the epiphysis is similar to lymphatic glands. Not only does the character of the chief cellular elements in the pineal body of mammals make this position seem untenable, but even more does the arrangement of these cells point away from the supposition that this is in any sense lymphoid in character. Few cells in the body are more conspicuous for their histological character than the chief or parenchymatous elements of the mammalian epiphysis. The large and centrally placed nucleus, the extensive and glandular cytoplasm mark these cells so definitely that they may be recognized without any difficulty even in those instances when they become ectopic because of such migration as not infrequently results from tumor formation in the pineal body. Our own work in this regard is illustrated in the figures which show the character of the pineal gland cells in *Macropus grayi*, *Zalophus*, *Camelus dromedarius*, *Capra hircus*, *Lepus*, *Simia satyrus*, and in man. Furthermore, our observations in the ontogenesis of the epiphysis in *Felis domestica* and in man, illustrations of which are given in Figures 91 and 92, show that in the early stages of differentiation the nuclei of the ependymal cells are so large and the cytoplasm so scanty that they give the impression of lymphoid tissue, but in the later stages the cytoplasm increases so considerably in amount that it is no longer possible to conceive of these cells as lymphoid in character. In fact, they have in the later periods of fetal and early postnatal life all the appearances usually associated with glandular cells. As compared to the cells in the glandular portion of the hypophysis, the size of the pineal cells is two or three times as great. This difference in size affords a striking point of differentiation in those pathological conditions in which the pineal cells in the course of tumor formation have migrated into and through the posterior lobe of the hypophysis and invaded the pituitary gland. The contrast is so marked as to present no difficulty in the identification of the two varieties of cells. That the epiphysis is made up of neuroglia cells in large part, if not entirely, has been the contention of several observers. The presence of short, branching fibres in close proximity to the pineal cells has seemed to be the basis for this. On the other hand, if the pineal cells in mammals are to be regarded as neuroglia, it must be granted that they are certainly unlike the neuroglia cells observed in other parts of the central nervous system. Dimitrova, who makes out such a strong case from her histological study in favor of the neuroglial character of the epiphysis, seems to base her conclusions upon criteria which are not wholly convincing, for the mere presence of demonstrable fibres in the neighborhood of the cells does not of itself indicate that these cells are neuroglial in character. Furthermore, this view neglects to take into account the highly specialized character of the pineal cells. If, on the other hand, it be granted that the cell constituency of the epiphysis is, in major part, neuroglial, this admission would not wholly invalidate the idea that the structure is glandular in nature, for, according to the most recent researches of Nageotte and Mawas, neuroglia cells contain mitochondria and hence, according to these investigators, should be considered as glandular elements. In this light, the neuroglia throughout [see Achúcarro] the entire nervous system is endowed with secretory function. In general, however, it does not seem necessary to invoke this interpretation of the neuroglia in order to place the pineal body in the class of glandular structures, for the character of the pineal cells is in itself sufficient argument in favor of a function different from that attributed to neu-

roglia in the ordinary sense and most in favor of a glandular activity.

The observations of Nicolas, later confirmed by Dimitrova, in which muscle cells were reported as histological elements of the epiphysis in several Ungulates, have not been confirmed by any other observers, and some authorities have been categorical in their affirmation concerning the absence of such elements. That the epiphysis may contain nerve cells and nerve fibres is probable, but there is no evidence in mammals of the existence of any neural mechanism in the pineal body.

To consider the epiphysis in mammalia as a vestige in the light of the histological evidence here summarized seems to be an attitude which is wholly untenable, all the more so when this histological evidence points to the fact that the structure is a gland. For in this respect not only is the character of the cells significant, but their arrangement in definite acini, the rich vascular network about these acini, and the trabeculation by means of connective tissue which gives this structure the appearance common to all glands, are also suggestive of this fact.

The final conclusion to be drawn from the histological evidence in the epiphyseal complex of vertebrates would seem clearly to indicate that this structure of the pineal region possesses a pluripotentiality whose fundamental, inherent tendency is in the interest of glandular differentiation and that in a few instances, as in cyclostomes, amphibia, and in primitive reptiles, the parapineal or pineal organ may become further differentiated in the interest of a highly specialized sensory mechanism which has, or has had, visual function.

In general this résumé may be accepted with the exception to the statement made that "there is no evidence in mammals of the existence of any neural mechanism in the pineal body." (5) Cajal, Achúcarro, Krabbe and others definitely describe nerve ganglion cells of very striking form with dilated terminal processes, which as Cajal states are similar to sympathetic secretory ganglion cells as demonstrated in the liver, pancreas and salivary glands (6). Whether these ganglion cells serve receptor or effector functions cannot yet be determined but as Krabbe states (7), that the researches of Achúcarro, Sacristan and Walter (8), Cajals Trabajo (9), Rostock Sitzungsbericht (10)³, make it not altogether possible to rule out the possibility that Cajal's *Wachsknospen*, described in detail by all four of these observers, are a type of sensory nerve ending. Whether these are receptor in function or effector is not yet known, but from what is as yet only imperfectly grasped of the function of chemical receptors and effectors, it is not impossible that they are both, some receptor and some effector.

Furthermore, axonal connections pass to or from, or both, to the habenular and possibly the sub-commissural body structures and thus really make a neutral integration mechanism which is, as quoted, ruled out by Tilney and Warren.

Thus it may be seen that at least two possibilities of a neural integration mechanism are possible, 1., through the rich sympathetic nerve network which accompanies the blood vessels and is connected with the vegetative system through the superior or inferior sympathetic ganglia and 2, a receptor effector mechanism of the ganglion cells with Cajal's dilatations, carrying stimuli to or from the pineal and making synapses with the main brain stem masses related with the habenular and the sub-commissural body.

³Tilney and Warren cite Achúcarro and Sacristan's study but state they had not seen it.

Pineal sand.—One feature of the pineal, noted from the earliest times, is the presence within it of collections of crystals of calcium carbonate and calcium phosphate. These often lie in discrete irregular collections or are grouped in mulberrylike concretions varying greatly in size. Similar concretions are found in the choroid plexus and in the posterior habenular commissure. Marburg assumed them to be associated with involutional changes within the glandular tissue and evolved his hypothesis of the early pubescent activity of the gland and its later diminishing importance. That the gland continued active however up into late years seems to be shown by the studies of Cutore, although it may be assumed with Marburg that possibly its chief functional relationships, so far as gonadal interrelational factors are concerned, come out more markedly if the glandular functions are interfered with in fetal or early life. This subject will be discussed under the paragraphs upon function. The x ray technic of recent years has so advanced as to offer clinical opportunity for study not heretofore available.

Secreting cells.—The character of the secreting cells has been made the object of several notable studies in recent years. Dimitrova summarized these to 1901 in her much noted study, but apparently overemphasized the neuroglia tissue components. Faivre apparently was among the first to recognize the granular character of the secreting cells. As the findings previous to 1913 are all well summarized by Kidd in his excellent review only a passing word may be said concerning the probable nature of these cells, the knowledge of the more exact histochemical nature of which Sarteschi's important research has served to place in the foreground. Here is shown the presence of acidophil [eosinophil] and basophil granules in man as are also the findings of Constantini, Krabbe, Jordan, Biondi, Warren, Tilney and Warren and others.

In view of the close morphological resemblances that these secreting cells bear to those of the pituitary the observations of Bell upon the secretory cells of the pituitary (pars anterior) are worth discussing pending such time when similar microchemical studies are made upon the secreting cells of the proximal organ of the pineal complex.

Bell brings forward observations which tend to show certain differentials within the granular elements of the pars anterior. Here the activity of the eosinophile cells seems to bear a certain definite relationship to the functional activities of the gland. It is, he thinks, the key to the interpretation of this functional activity. To him the different types of cells, close analogues of which are described as occurring in the pineal, are but indices of different stages in the functioning rather than as cells with differing functions. The secreting substance is found chiefly in the granules and is carried by them to the blood or cerebrospinal fluid channels. Whether this is the correct mechanism or not remains to be seen. Our own view is inclined to minimize the humoral activity of a substance thrown into the body fluids there to act and through the blood current there would be less need for a centralized depot if this were alone the case, and to

emphasize the importance of the local action of the secretion upon the locally disposed vegetative (sympathetic) Cajals receptors known to exist within the gland itself.

The storage secretion, Bell believes, usually stains with hematoxylin (basophil), rather than with eosin (acidophil), although an acidophil affinity is sometimes seen. The secretion has a granular appearance when acidophil or neutrophil, and resembles homogeneous colloid when distinctly basophil. The secretion accumulates, as it were, in the eosinophil granules of the eosinophil cells of the pituitary. This, as it becomes stored up, causes the basophil cell, with eccentric nuclei, which on delivery of the secretion is converted into small chromophobe cells after exhaustion of the basophil cell. The chromophobe cells regenerate after the discharge of the colloid and then become eosinophil cells which either discharge their granules into the blood stream or store it and thus make the basophil colloid. Under sudden emergency stress the small chromophobe and eosinophil cells increase in size, remain chromophobe, yielding the secretion as fast as manufactured even before it becomes eosinophilic and granular.

Whether similar cycles may be demonstrated for the pineal cells remains to be seen. Jordan (11) has made some observations relative to the changes found under different conditions. The recorded observations are still too fragmentary to follow this schema, or as yet any hypothetical schema, concerning the microchemical characters of the pineal cell contents.

As with the pituitary so also with the pineal, lipid or pigment material is found in abundance. The fuchsinophil cells of Sarteschi are very pronounced and it may be that lipid substances enter into the cycle of conversion products, not as waste pigment products as has been so often inferred concerning lipid substances, but as one of a series of conversion products in the elaboration and discharge of the definite chemical substances which serve as specific stimuli for the special receptors which entitles the pineal to be considered as an organ with a definite function or group (pluri potential) of functions. Certainly the lipid material related to the visual purple of higher photo receptors, also found in parts of the pineal complex in other forms, must be considered more in the light of an active transforming material for light energies, rather than the inert substance as is usually viewed.

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(To be concluded.)

ENDOCRINE TROPISMS.*

Adrenotropisms.

BY DAVID M. KAPLAN, M. D.,

New York,

Director, Brooklyn Diagnostic Institute, Departments of Neurology and Serology.

In elucidating morbid phenomena of the endocrine system we are brought in contact with problems that tax the efforts of the most ingenious and subtle clinical minds. Like all things new, the study of the workings of the ductless glands has become a medical fad, and whereas many made the attempt to fathom this subject, few remained to travel upon the rough road of this exceptionally difficult department of medicine. Writing articles on the subject of endocrinology does not make one proficient in this field of endeavor, just as building a piano does not make one an artist. The crucial test of competency, in so far as endocrinology is concerned, is applied at the bedside, and here the doctor's qualifications are determined. Proper therapy is the result of a deep knowledge of endocrinology, whether the patient simply suffers from a ductless gland disorder or any other trouble where the endocrine system requires proper analysis and therapeutic support. His opinion in a given instance must tally with the latest established endocrine facts and his conclusions must bear the stamp of convincing logic. Alas, we are as yet on the first rung of the ladder, and as all of us are anxious to climb, we often slip in our haste and give the everready critic and tyro an opportunity to laugh and poke fun at the student of this fascinating subject. We must hasten slowly and bear in mind the adage *Ars longa vita brevis* and with painstaking minuteness discriminate between the real and the apparent in elucidating endocrine phenomena.

Laignel-Lavastine prudently selected the clinical method of research instead of the laboratory in order to lead to that conception of endocrine phenomena that makes for a better understanding of this most intricate subject. One reads his communication with a great deal of satisfaction, and there is no denying the fact that the work of this great French clinician is of the highest order and singularly meritorious. My enthusiasm for his monograph, however, was somewhat dampened on account of the paucity of therapeutic detail as well as an entire disregard of the tonsil as a possible member of the endocrine family. If I may be permitted the same privilege as that assumed by the French investigator, assigning this or that disorder to a faulty function of this or that ductless gland, I certainly would not hesitate to ascribe certain thyrotoxic, thyroendocardial and pituitoapendicular syndromes to a tonsillopathy requiring endocrine interpretation and attention. No one will deny the possibility that the future will disclose the function and proper relationship of this gland to the human organism in health and disease. Nevertheless, there are a number of successful doctors who assert that the sole purpose of the tonsil is to secrete pus and make us sick. It is time to recognize the fallacy of such teaching and

the harmfulness of the unwarranted crusade against this friendless member of our body.

The cause of the survival of the pernicious practice of tonsillectomy lies in the comparative immediate harmlessness of total and radical operations, for no one believes that the subsequent more or less mild subjective inconveniences have even the remotest connection with the absence of the tonsils. The doctor as well as the layman should recognize the fact that the harm done by wholesale indiscriminate tonsillectomies is not immediate, and that an insidious *cacheria tonsillopriva* often assumes the clinical form of an unmanageable headache, a distressing cardiac phenomenon, osseous or articular manifestations, obscure leucocytoses, peculiar febrile rigors or a fulminating appendiceal infection. We must be warned not to select the tonsil as a primary and causal element of disturbance every time it presents a pathological appearance. This appearance is not infrequently the cored result of some deeper seated trouble, possibly of an endocrine importance, but of which we at present have only conjectural information. In general it is a good habit not to deviate from the teaching of *Ubi pus ibi evacua*, but to remove an organ totally because it contains pus, and because it can be easily accomplished and also because there are no immediate alarming consequences is, in my opinion, poor ground for the procedure.

One must bear in mind that the trend of natural events is utilitarian and not destructive. Is it not possible that the tonsils are appointed by nature to eliminate pus from certain accumulations elsewhere? Don't we recognize the spleen as a burial ground for useless red blood corpuscles, and if so, why may not the tonsil be the nozzle through which the system rids itself of useless white ones? This is offered as a pure conjecture, but it ought to act as an incentive to the investigator who will be fortunate to discover the real function of this gland and place this long abused member among the other endocrine glands. The infected tonsil should be treated surgically less frequently, unless real danger is present, but the doctor and patient should not forget that the removal of the tonsils and the pus in them by no means concludes the chapter of the patient's sufferings, for the real cause of the pus, frequently lies hidden elsewhere. The removal of the tonsillar index is no protection against the persistence of the factor that called forth the tonsillitis and the tonsils are no longer able to offer even a tentative natural outlet for the white blood corpuscles. As a result of the tonsillectomy the system is forced either to retain the dead white cells or cause purulent accumulations elsewhere. The future may disclose the functions of this organ, and for the present I offer the appendix as a possible vicarious structure assuming the function of the tonsil. (The appendix has been often referred to as the abdominal tonsil). The great stumbling block in the field of therapeutics lies in our lack of endeavor to adjust the functional discrepancy among organs, instead of removing them. It is my belief that endocrinology will ultimately point the way for accomplishing this meritorious therapeutic tendency.

*This is the second paper of a series.

As a clinician, the endocrinologist confines himself to the solution of *intra vitam* difficulties; he rarely bases his therapeutic advice upon facts based upon postmortem disclosure. I do not wish to convey the idea that autopsies have no value, but they do not furnish a measure whereby the incon-



FIG. 1.—Marked adrenopathy with gonadal influence, shown by the absence of the lateral incisors.

venience may be eradicated in the living. I do not speak for the surgeon for whom a thorough postmortem knowledge of disease is an invaluable asset.

When the clinical picture presents final endproducts of a longstanding malady, such as an acromegaly or an Addison's disease, it unquestionably contains many pathological points of interest, but for the therapist it has only regrets. Endocrinologists in the near future will treat cases of these diseases in their incipency, and will furnish information whereby the doctor will be able to detect such candidates before they are elected to drag to the end of their days in an incurable pathological condition. In this connection the guarded opinion of Laignel-Lavastine is of great significance when he says: "The idea of an attempt to discover the endocrinal disturbance before the neurosis is sufficiently marked to be morbid, allows one perhaps to restore the equilibrium to these nervous temperaments through an organotherapy, which is to a certain extent prophylactic."

The word perhaps, thanks to the advances made in this promising branch of medicine since 1914, can be dispensed with, for it is becoming daily more certain that the prophylactician is bound to be the medical hero of the future as a reward for his humanitarian efforts to prevent diseases with a definite pathology.

Now, let us return to our subject of adrenotropisms. That the skin is not an abnormal place for adrenallike cells to develop, has been demonstrated by Abel (1), who isolated from the pig-

ment deposits in the skin of the *buffo aqua* a blood pressure raising substance analogous to adrenalin.

There are individuals who are dominated by their adrenal apparatus. I wish to convey the impression that this domination does not necessarily denote a pathological state of these glands, but rather expresses an endocrine temperament, or as I would put it, the individual is adrenotropic. This is quite different from being an adrenopath in whom definite signs of abnormal adrenal function can be demonstrated. One of the signs of adrenotropism is a pigmented skin. The pigment is dark brown in color and at times shows a concentric arrangement of lighter hues toward the periphery. It somewhat resembles the medulla of the adrenals. In Addison's disease this pigment is of diagnostic significance, but when the course of the malady is very rapid the pigmentation, or bronzing, is often wanting. In my opinion red naevi are not adrenotropic, for they do not contain cells which I designate as melanoblastic. The bronzing or melanoblastic cells are functionally related to the adrenal system, as noted by Adami and others. I believe that these melanoblasts are Nature's method of assisting in the maintenance of those functions which are essential to health and life, and that they appear only when a qualitative or quantitative, permanent or transitory adrenal inadequacy is at hand. It is a well established fact that a blood pressure raising principle is found wherever chromaphil tissue is present.

An insight into the embryology of these cells will tend to shed some light on their interrelationship. Before the neural folds have united to form the future spinal cord, a wandering of neuroblastic cells takes place. This phenomenon is manifested at an early period of embryonic life. The neuroblastic cells accumulate in small cell deposits or conglomerate and arrange themselves on either side of the structure that is to become the future spinal cord. They are situated between each pair of vertebrae. These cell masses form the sympathetic ganglion chain. From the same embryonic area other cell accumulations travel to the various viscera and become their visceral ganglia; others, again, wander to hollow organs. Some of these cells in their itinerary instead of becoming nerve elements retain their identity as cells; they develop an affinity for chromic acid and its salts and are found in abundance in the adrenal medulla.

Chromaffin cells are found ubiquitously all along blood vessels, and tend to throw a light on the remote and unconnected occurrence of a hypernephroma. The melanoblasts in the skin of adrenotropes are in my opinion these same chromaffin cells, compensatorily increased in number, in response to a call from the main depot in the adrenal medulla. It is probable that the melanin in the melanoblastic cells in the skin of adrenotropes is chemically related to the blood pressure raising product of the suprarenal apparatus. It may be well to remember that chromatophic cells no matter where they are located, all yield epinephrin and are all closely related to the sympathetic nervous system.

Epinephrine or adrenalin is chemically an amino

acid derivative, possibly elaborated in the organism by a process of decarboxylation from a precursor whose identity has not been as yet definitely settled. Adrenalin is orthodioxiphenyl ethanohmethyl amine, a substance related to tyrosin, which in turn is the precursor of all melanins. The chemical pressor nucleus of other substances of a biological nature capable of influencing plain muscle fibre is most likely a compound, whose pharmacological action is discernible in the almost unbelievable dilution of 1:250,000,000. This nucleus is betamin-azolyethylamine, and is obtained by a decarboxylating process from the innocuous amines, such as phenylalanine, histidine, tryptophane and tyrosine. It is a fact that certain intestinal inhabitants are capable of bringing about this decarboxylating feature in the above mentioned amino acids, and if produced in sufficient amount, will cause arteriosclerosis and high blood pressure independent of adrenotropism or adrenopathy. This will also bring about a stimulation of the myoneural and adenoneural points of the sympathetic nervous system causing peristaltic lethargy, pupillary dilatation and other phenomena.

We may consider an individual in whom a certain physiological necessity sounds the alarm which urges the adrenal apparatus to increased activity and also as a response to the same demand the variously scattered melanoblasts multiply and become visible as so many blackish or brownish spots. The appearance of this melanoblastic deposit need not spell destruction or even poor health, but as pointed out previously it furnishes information to the endocrinologist from which he is capable of deducting important conclusions.

A child sick with diphtheria demands extremely cautious management, because of the adrenal inadequacy that often accompanies the indirect smooth muscle poison which is present. In such a child not infrequently the danger becomes apparent after bacilli are no longer demonstrable, and the patient is discharged as cured. The endocrinologist with foresight will never subscribe to this, but will continue to watch over his charge with unabated vigilance, and so he will occasionally prevent the sudden death that is known to befall those victims who have been considered as beyond danger when the bacilli disappeared.

In my opinion therapeutics is worth more than pathology and bacteriology, of course both are useful, but therapy, in so far as utility is concerned has the upper hand. I would advise, in connection with the therapy of a diphtheria patient, a most rigid rest even after the bacilli have disappeared, enforcing this particularly in dark complexioned children who display here and there discrete melanoblasts, in other words, children who are adrenotropic. Additional indices for strict rest are, a distinct white Sergeant line together with a variable low blood pressure. But rest alone is not enough, as it only helps to conserve the stock of dynamic force. We must cautiously add to it by administering by mouth small doses of the entire suprarenal gland once a day or every other day. Such therapy with daily tests of the blood pressure and the Sergeant line will frequently prevent, what

under less cautious management, is at times, the inevitable outcome. Not until the Sergeant line shows a distinct rapidly appearing red or pink line, which lasts at least three minutes, is it safe to discontinue the daily observations. When the pink line becomes lasting (ten to fifteen minutes) one will note a concomitant and permanent increase of the lowered blood pressure. These suggestions are for the management of adrenotropic children or adults, as they are more likely to offer the difficulties encountered in adrenopathies.

I purposely omitted a consideration of Addison's disease in this communication as it represents a final condition in adrenopathy for which therapy is of no avail. This final picture in its full fledged form is of pathological interest only, and no therapist will be able to alter the course of this adenosympathicosplanchnic abnormality to a degree compatible with comfort and long life. It is possible, however, to recognize an individual who is on the border line, but who as yet is in the class where proper treatment is still able to exercise a beneficial influence, if not entirely change the dangerous trend of the sufferer's disease.

It is compatible with comparative comfort to be an adrenotrop. One also does not have to suffer from Addison's disease on account of their adrenopathy. It is also a well known fact that one may have Addison's disease without presenting adrenal lesions. It is best to compromise with clinical experience and not suspect every one who is dark skinned or possesses melanotic moles of traveling the road that leads to Addison's disease. I wish to describe the features that will direct the clinician's attention to other adrenopathies which will help to complete an endocrine opinion in the given case, as well as supply a clue to the required therapy. Adrenopathic patients suffer from many



FIG. 2.—Hands of woman with adrenal manifestations. Caused by pituitary misbehavior.

inconveniences and still survive. They besiege the doctor in the hope of securing relief which they could not obtain from an overgenerous use of aspirin, cathartics and potassium iodide. The first, being well advertised, is sold without a doctor's

prescription, the second is a heritage from antiquity, and the third was prescribed when the other two gave no results.

In my opinion aspirin is a dangerous drug for some people and productive of adrenopathic conditions which greatly enhance therapeutic difficulties.



FIG. 3. Back view of patient with adrenopathic hyperchlorhydria, showing marked hirsutes and melanoblasts.

I am inclined to believe that many fatalities during the influenza epidemic of 1918 were due to the indiscriminate use of aspirin and other coal tar depressants given to unrecognized adrenopathic individuals.

Grippe in itself is a powerful adrenal poison and is only second to diphtheria in its ability to cripple the adrenal gland. To add coal tar depressants to an adrenopathic condition is to add insult to injury; frequently turning the tide against the patient's chances of recovery. If endocrine principles will be more extensively used in the event of another epidemic, I am sure their correct interpretation and following rational therapy will save many lives. Heretofore patients were given a coal tar product which proved to be the straw which broke the camel's back. This brings me to a consideration of an indirect proof of the depressant action of aspirin upon the adrenal functions. Those who are accustomed to take aspirin for their various inconveniences, such as colds, hay fever, head-

aches, joint and muscular pains, will doubtless recall the occasional heartburn experienced after the use of that drug. That heartburn, in my opinion, was not due so much to the acetic acid radicle of aspirin as to a depression of the adrenal functions. A therapeutic communication on adrenopathic hyperchlorhydria published by Doctor Greeffe and myself in 1918 shows the gradual improvement and cure of a number of patients suffering from this condition. The name was applied on account of the many adrenotropic stigmata presented by the patients, and further supported by the clinical course of the cases studied. The small doses of suprarenal extract promptly removed the hyperchlorhydria and the accompanying subjective distress. In the light of these findings, we argued that the administration of suprarenal extract in these cases supplied a deficiency which was successfully overcome by the therapy. That the adrenals are involved and are responsible for such gastroenterological findings has since been substantiated. To come back to the heartburn of those who have taken aspirin, I would say that the adrenal work has been interfered with causing a transient adrenopenia followed by an adrenopathic hyperchlorhydria. Of course in many cases aspirin will remove a headache without giving rise to heartburn; usually women with poor gonads, or oophorectomized females with hair on their lips and other adrenotropic signs which point to an unchecked overworking suprarenal system, and therefore they can tolerate huge doses of coal tar products.

In a future communication the relationship between the gonads and the adrenals will be shown more fully: at this juncture it is sufficient to know that the administration of sperminum poehl as well as ovarian extract is a potent remedy for reducing high blood pressure which has been caused by the gonadopause whether timely or premature. In other words, the gonadal curb on the adrenals having been relaxed, they functionate less restrainedly, causing the higher blood pressure and other adrenotropic manifestations.

In addition to the objective signs of adrenotropism, we find in taking the history of a patient many subjective clues as to the patient's endocrine makeup. For instance they will often state that during childhood or later they had an attack of diphtheria. Generally speaking, one who has an attack of diphtheria cannot have a suprarenal equipment equal to one who was not so infected. This brings me to the consideration of the biotropic tendency or direction of certain infections, or rather their preferential selection of certain endocrines for their attack. It is clinically known that mumps are capable of crippling the gonads, i. e., mumps are gonadopathic; similarly diphtheria, influenza and tuberculosis are adrenopathic, syphilis is pituitopathic and measles and typhoid are thyro-pathic.

These observations are analogous to the biotropism that exists between the tetanus bacillus and the motor tracts; between the anterior horn cells and the virus of poliomyelitis and also the preference of strychnine for the spinal motor cells. An in-

dividual who is phylogenetically an adrenotrop although still in perfect comfort subjectively is more likely to be influenced pathologically by the adrenopathic diseases than the gonadotrop or the thyrotrop. Of course anyone unduly exposed will contract an infection when it is almost engrafted upon them.

However, on rare occasions an individual will be observed whose endocrine constitution is so contrary or lacks receptivity to such an extent for a certain infection, that it has not the slightest effect upon his subjective comfort, regardless of epidemics or undue exposure. Among them I class the typhoid carriers as well as the meningococcus carriers. In these peculiarly constituted individuals the *noxi* have been brought in contact with constitutions preeminently adverse to the infectious agent, and in my opinion they are analogous to people who are color blind or have no ear for music.

In discussing adrenotropisms and adrenopathies mention was made of three infectious diseases, i. e., diphtheria, influenza and tuberculosis. Aside from these there are many noninfectious disorders that must be considered as adrenopathic. They are: Asthma, although Laignel-Lavastine considers this condition as thyropathic (I will later state my reasons for considering it otherwise); adrenal diabetes, adrenal Basedow's disease, epinephroma, anencephalia, hyperchlorhydria adrenopathica, masculinism, vascular hypertension and hypotension, pulmonary edema, acroparesis, erythromelalgia, dementia præcox, psychasthenia, polychromatophilia, blood states designated as pernicious anemia, certain hernias, carcinoma and many other conditions. All of these clinical states lend themselves to an analysis from the endocrine viewpoint.

In the endocrine interpretation of asthma, which I believe to be an adrenopathic state instead of a thyropathic one, I offer the following points in support of my contention as against the opinion of Laignel-Lavastine: We must bear in mind that aside from their blood pressure raising powers the suprarenal glands also supply an enzyme to the red blood corpuscles which enables them to attach and abstract from the air in the pulmonary alveoli the oxygen necessary for existence. This oxydase, described by Sajous, is very important for respiration, and unless the adrenals furnish this enzyme in a quality and quantity compatible with the needs of the body, oxygenating difficulties will result. Asthmatic seizures can be frequently ascribed to this error in some adrenopathic individuals. Secondly, the deposit of pigment (melanoblasts) in the skin of asthmatics, similar to the deposit in the skin of adrenopathic consumptives or in Addison's disease, strengthens its adrenal tropism. The readiness with which an injection of adrenalin modifies an attack is a third argument in support of my view. The fourth feature is the fact that among eight cases of hyperchlorhydria adrenopathica six showed objective and subjective signs of asthma, these latter symptoms disappearing with the hyperchlorhydria after treatment with small doses of suprarenal extract by mouth. Two of these patients

also had hernias. It has been demonstrated experimentally that an adrenopenia will produce humororeflexly an increase in the amount of hydrochloric acid in the gastric secretions; rage and fright were conducive to an increased output of adrenal secretion as an endocrine defence mechanism, which at the same time caused an inhibition of the flow of gastric juice. The close relationship between the cerebral and adrenal cortex has not been explained, nevertheless, when the cerebral cortex or its precursor is wanting in the anencephalic monster it is also known that the adrenal cortex is similarly absent. Somehow, the cerebral and adrenal cortices are related in a functional copartnership. Here we have a plausible explanation for the better digestion of those who follow their meals with a cigar. Tobacco has a vasodilator effect and a mild soothing and sedative action on the cerebral cortex, i. e., it works in a harmless depressing manner. The same relationship of



FIG. 4.—Front view of adrenopathic patient, showing definite *hirsuties* and *melanoblasts*.

cause and effect also exists between tobacco and the adrenals, which are for a short time slightly inhibited in their adrenal output, and as pointed out before, permit in this connection of a greater flow of gastric juice when in that state, and hence enable the smoker to better digest his food.

In view of the phylogenetic relationship existing between anencephaly and adrenal abnormality, it is fair to conclude that proper cerebral work and normal adrenal function go hand in hand. Brain fog is as much a result of cortical dysfunction as it is of adrenal fatigue. One must, however, constantly bear in mind the relationship and functional copartnership between all of the glands with internal secretion, as each of them has a voting power, in the endocrine administration of the individual. When one gland is working improperly the others come to its aid in sympathy, and they either help, antagonize or suffer with it. This must be remembered when dementia præcox is offered as an adrenopathic entity. The chief display of symptoms is naturally, cerebral, but a closer analysis of the constitution of the patient discloses adrenotropic features as well as gonadotropic ones. The condition in my estimation consists of a discord in the adrenocerebral relationship with a gonadal echo.

Vigor, energy and persistence are the results of adrenal function, and those who are endowed with an abundance of these qualities are either physically or mentally aggressive. Such individuals show also other signs of their adrenotropism such as great hirsuteness, long and pointed canines, a dark complexion and melanoblastic deposits. They are the fighters of the world, and are as a rule forever forging ahead. If the possessor of such an adrenal equipment happens to be a female, and if the rest of her endocrine constitution is not crippled sufficiently to make her sick, she will command a responsible position in her endeavors, will be a leader, not only among women, but also men. During this age of wholesale reform such women are to be encountered in every walk of life. But if a part of their endowment is deficient, and they begin to follow an endocrinopathic road, then the story is a very different one.

They are no longer the useful members of society, but become the cranks in the schools, the prudes of the parlor, the old maiden aunts of the household; they want to be officious, but somehow everybody takes their activities as a joke. They display masculine traits, and try to mimic men in attire and mode of procedure. They are suffering from masculinism, but their equipment lacks the sound backing of those qualities that only a sound endocrine system guarantees.

An extreme case of this type is that of an Italian woman whose photograph is offered for study. She was forty-six years old, never menestrated, married, but was never pregnant. Gynecologists could not palpate her adnexa and her uterus was extremely rudimentary. She had distinct masculine features and aside from her secondary sexual markings could have passed as a male. The chief interest in her physical appearance is the absence of her lateral incisors, which she stated had never erupted. These are the gonadal teeth, which I formerly described (2). The canines were spoken of as the adrenal teeth, for their undue development as a rule accompanied an aggressive constitution. The Italian woman is shown in connection with adrenopathies, in order to demonstrate what the adrenals could do when the

gonads are not interposing their effect upon the function of the suprarenals. For fuller study of her constitutional makeup will be spoken of again at a future date in connection with gonadotropisms. In her case the adrenopathy was secondary.

A case which I observed will help shed some light upon adrenopathic diabetes. The patient, aged forty-four was informed some ten years before that he had sugar in his urine. He then began to consult doctors for his malady. Although feeling perfectly well subjectively, he nevertheless was anxious to become rid of the glycosuria. While striving to this end he had an attack of diabetic coma which he survived, after treatment by heroic alkaline methods. The patient was extremely energetic and could go without sleep for two nights while doing strenuous mental and physical work. His urine on the first analysis quantitatively showed 115 grams of glucose and 1.89 grams of acetone in twenty-four hours. The patient was on a partial carbohydrate free diet and used saccharin in his coffee. He was given small doses of suprarenal extract by mouth, and a rich carbohydrate diet including chocolate candy. A week later his glucose output dropped to sixty grams and his acetone to 1.14 in twenty-four hours. During his illness the patient retained weight consistent with his work, and rarely felt that he was sick. He was subject to a few attacks of carbuncles, but never had them opened. I consider carbuncles an adrenotropic manifestation. They were caused less by the rubbing of a soiled collar than by an overworked adrenal system, and it is vastly more prevalent among men than among women. I mention this for the adrenals are the appanage of all things masculine as the pituitary is the dominating gland of all things feminine. This is corroborated by viewing the hands of the woman in the photograph. This condition was due to a poor pituitary equipment and the hands appeared almost acromegalic. This again brings out the intimate interrelationship that exists between all the endocrines. One does not functionate faultily without the others adding their peculiarities.

The most disastrous form of Basedow's disease is the adrenal variety. It is characterized by a great fall in all the dynamic functions of the body: hot and cold flushes, loss of strength, exhaustion and finally a bed ridden state from which the patient rarely recovers *pari passu*, with this goes an increasing melanoblastic skin condition, the patient noticing additional brown or black spots from time to time. These are not the black and blue blotches that gonadopathic women display. At the end of such a clinical state the woman presents a general glistening brown skin; the former is due to the thyroid, the latter to the adrenal abnormality. The patient suddenly succumbs to an attack of asthenia and vasomotor inadequacy. Such was the case of a woman of forty-six who lost her husband and two months later a severe influenza developed. Here the shock necessary for the Basedowic syndrome was present, as well as the adrenopathic infection. As the adrenals stopped functioning the pigment spots increased in number. Therapy with endocrine products was of no avail. In addition to complementing

inefficiencies the endocrines also display antagonistic tendencies. It is clinically known that a poorly functioning thyroid is usually found in an individual with an overfunctioning pancreas, and vice versa. The overefficient pancreas gives the patient an increased ability to metabolize carbohydrate substances and therefore we see the desire for sweets manifested by these individuals. Given a healthy gonadal system, the latter will show an increased activity in an intensely adrenal person. This applies equally to man and woman, with the proviso that the gonads must be normal. The adrenotropism in the patient shown in Fig. 1 is due to the abnormality in the gonads. It has been mentioned before that the adrenals, by an oversecretion of the medullary portion, bring about an inhibitory effect on the gastric secretion. The relationship between the adrenals and the gonads may be deduced from a study of the embryology of these two organs. The adrenal medulla is the chief secreting organ of adrenalin; this part has nothing in common phylogenetically with the gonads. When the primitive ovaries and testes descend from their original subrenal location they carry with them cellular inclosures from the adrenal cortex. In postembryonic life these become elaborated and are recognized as the interstitial cells in the testes and as the luteal cells in the ovaries. I was able (unpublished observations) to demonstrate the antagonism between the cortex and the medulla of the adrenals upon the peristalsis of the intestines in the guineapig. The cortical extract caused violent peristaltic movements while the application of the medullary adrenalin extract promptly produced the reverse.

To return to adrenal tropisms, the condition of the hair must be considered. Such hair is unusually and characteristically coarse. It has the feel of oakum, lacks elasticity and has a tendency to become somewhat matted together when gathered into a ball. Such hair kinks easily, and its complement of natural oil is deficient. The color is frequently unnatural; a Spaniard will be blonde while a Swede will have jet black hair. They are to be considered as adrenotrops for their pigment is unnatural for their nationality. The majority of red haired persons are adrenotrops.

The appearance of hair on the chin or upper lip of a woman denotes in her case a beginning abnormality in her gonads, in fact though she may not have reached the age of forty she may be approaching her gonadopause. In a younger woman, particularly when her years still border on the period which I have designated as the first endocrine crisis, such precocious appearance of hirsutal abnormality is to be considered with great concern, for the young person is heading for a possible dementia præcox. This is particularly the case where undue brilliance of mind is the index of great cerebral sensitiveness. The other extreme in age, where the woman enters her second endocrine crisis or gonadopause, is well known to be attended with various psychic upheavals. The adrenotropisms of such patients are often marked years before the crisis is at hand. Their tantrums, however, can be easily influenced by small doses of ovarian extract. They also do well when given an occasional

dose of thyroid say one half or three quarters of a grain two or three times a week.

In considering the second endocrine crisis we must not forget the male, who, although not displaying the phenomena of the female gonadopause, nevertheless suffers many inconveniences, requires skilful therapeutic and diagnostic handling. If a male adrenotrope is entering this place of his life's cycle it will be found that he is as a rule a confirmed smoker, his blood pressure will be higher than the scientifically established normal, though subjectively he may not complain. When a doctor encounters such an individual, whatever his physical condition may be, he is ordered peremptorily to give up smoking.

I do not believe that smoking is a necessity, nor are coffee and tea drinking, but for the adrenopath tobacco has a definite soothing effect, it relaxes his mental or physical tension, as he himself admits, and at his age it is the one rare comfort for which he is often willing to suffer the consequences of his overindulgence. Of course, if the doctor has uncontrovertible proof that the tobacco is the real cause of all of his patient's complaints, well and good, stop his smoking, but very often such is not the case, and the little comfort that the sufferer may have derived from his cigar is denied him, whereas his complaints are not in the least influenced by the restriction. In my opinion the moderate indulgence of tobacco for men of adrenopathic constitution and during the second endocrine crisis is by no means harmful, on the contrary, it is preeminently beneficial. The vasomotor relaxation that follows the smoking of a cigar is a definite boon for the mental and physical status of a man of the above described type, and especially so when the adrenotrope suffers from occasional cardiac spasms without a definite objective symptomatology. His pseudoangina is rendered worse as a result of the restriction, which evidently supplied the means whereby the spasms were neutralized. The desire for smoking in such a patient is not to be considered as a morbid craving, but rather as an expression of a physiological hunger for something capable of relaxing his vasomotor apparatus. In my opinion such a man ought to be allowed to smoke moderately and in addition given one fourth of a grain of thyroid extract every other day for a short period of time only.

My remarks may appear iconoclastic were it not for the fact that every statement made in this communication is supported by actual observation, whether in regard to the harmful effects of promiscuous tonsillectomies or the lack of logic in the prohibition of tobacco. I do not preach unbridled indulgence, but I do assert that it has beneficial effects in that it most likely curbs the adrenals and thereby offers a temporary relief from the high blood pressure phenomena which cause the patient's discomfort. It is much safer to permit the patient to go on with the slowly acting tobacco poison than to substitute more rapid ones in the form of vasodilators or potassium iodide. A sudden stroke can not infrequently be traced to such therapeutic tactics. It is just as important to know when not to

prescribe and leave well enough alone as it is when to operate or exhibit drugs.

One must learn how to make use of the mass of experimental and experiential evidence which have accumulated since Hippocrates in order to be able to judge with benefit to the patient before prescribing one drug and proscribing another. Even the coal tar products are useful in well selected cases and the good that aspirin has accomplished in these cannot be denied. But, should the aspirin given for a cold or a headache produce heartburn, then we are dealing with a situation requiring a closer study of the case from a therapeutic as well as from a constitutional viewpoint. A thorough endocrine analysis will disclose an adrenotropic or even an adenopathic constitution in whom, particularly the latter, coal tar products should be exhibited with greatest caution.

The latter should be used with greatest caution in an infection which, like diphtheria, influenza and tuberculosis are adenopathic. The depressor effect may be obtained at a crucial period of the malady when the adrenals have been exhausted in their efforts to maintain the tone of the unstriped muscular system of the patient, and the additional inhibition may prove fatal in these cases. It is my belief that the use of the vasodepressants during the last influenza epidemic was the "thumbs down" sign that dispatched many patients.

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A CASE OF ACROMEGALY.

BY MARTIN W. BARR, M. D.,

Elwyn, Pa.,

Chief Physician, Pennsylvania Training School for Feeble-minded Children.

In the whole realm of medical science there is no disease more curious than acromegaly; and the case presented is, I think, one of unusual interest:

CASE.—S. B., imbecile, of middle grade, aged thirty-six years, of American parentage. Father, a lamplighter, feeble-minded and extremely deaf; was twenty-four and the mother twenty years old at time of patient's birth. Mother died at the age of twenty-five of malaria; paternal grandmother of pulmonary tuberculosis, and maternal grandfather of carcinoma of stomach.

He began to walk at the age of sixteen months. He had the ordinary diseases of childhood, including scarlatina at four years of age, with purulent chronic otitis media as a sequel—the discharge being both copious and offensive—resulting in deafness of left ear; and it is said that his mental defect was first noticed at that time.

The patient was ten years old when admitted to the Training School for Feeble-minded Children, at Elwyn, Pa., and was classed as an imbecile of middle grade. His head was normal in size and shape; eyes blue-gray; hair light brown, teeth white and regular; mouth open; and while there was a slight hesitancy in speech, his voice was pleasant and well modulated. Carriage was imperfect, bent forward

in walking and cervicodorsal kyphosis and scoliosis were marked. With a poor memory, and powers of attention and imitation limited, he recognized the primary colors, but neither alphabet nor figures. The patient was capable of selfhelp in a very limited degree; he could not wash or dress without assistance.

In character he was obedient, affectionate, nervous and indolent; but on occasion he would exhibit sudden activity; and at all times he was heedless of danger. He had homosexual instincts, masturbated periodically, was of constipated habit and constantly troubled with furuncles which were distributed over various parts of his body.

In his eleventh year several attacks of rheumatism of right ankle were followed by stiffness of knees, and later by bursitis of the right knee, from which there was complete recovery; but falling several times, subsequently, and striking it, muscular atrophy developed; after which the knee began to enlarge around the joint, an osteoarthritis resulting. Pronounced genu valgum was noted, but there was a minimum of discomfort. The cervicodorsal kyphosis and scoliosis were progressive.

Within seven years he had learned to read and write fairly well, to care for himself in every way, and having attained his mental limit in abstract school work, he was transferred to the industrial department, where in kitchen and housework he became an excellent aid. His reasoning powers were very defective, and he had only a rudimentary idea of relative values. An incident illustrative of this occurred when an umbrella, which he greatly desired, was given him, and on the first rainy day he walked to and fro in the pouring rain until drenched, explaining that he wanted to "get the good of it."

When he was eighteen years old an abscess developed in the right antrum of Highmore. The upper canine tooth was extracted, and the cavity at the root of the second bicuspid tooth perforated, irrigated and drained, followed by an apparent recovery. At this time also a marked change was apparent. His speech became guttural and very slow, and he grew irritable and introspective with frequent attacks of violent temper. He began to grow with great rapidity, the kyphosis became more pronounced, and osteoarthritis of left knee was noted. Thyroid was given for some months, but with practically no result, and as he was much troubled with headache and abdominal pains, it was discontinued.

In his twentieth year he reached his maximum height—six feet seven inches—when growth ceased. At this time a right empyema developed, which continued for six months, when it was apparently cured. In his twenty-fourth year he suffered from a severe sinusitis; and from no apparent cause, retained urine for twenty-four hours; was catheterized and sixty-two and one half ounces of urine was withdrawn. When he was thirty-three years of age pulmonary tuberculosis developed. He was given the usual treatment, and lived practically out of doors. In his thirty-fifth year a swelling on right side of face appeared, which was discovered to be a sarcoma of upper maxilla.

Seven months before death, without warning, he had a frightful hemorrhage of the right jaw, passing over three pints of foul smelling blood. He was forced to sit up for over five hours, as at each attempt to lie down the hemorrhage would recom-



FIG. 1.

FIG. 2.

FIG. 1.—Posterior view showing posture and proportion of the limbs.

FIG. 2.—Anterior view of patient.

mence. From this time on until death, he had many small hemorrhages frequently repeated.

The cancer grew with great rapidity and soon invaded the upper air passages and throat and at time of death was about the size of a small cocoanut. His face was much distorted, his nose greatly enlarged, and there was a constant purulent, foul smelling, bright yellow discharge from his nostrils. His sufferings were intense. For over two months he took only strained broths, ice cream and milk. Finally he became unable to swallow, and for six days preceding death, although fully conscious, he could not articulate. He just lay moaning and gasping for breath in an open air pavilion, over which the buzzards hovered, attracted by the frightful odor; indeed it could be plainly detected fifty feet away. At last, with a gasp, his eyes seemed to start from their sockets, and a profuse hemorrhage ended the chapter of life. It is greatly to be regretted that a necropsy was not possible.

Photographs taken and physical examinations and anthropometric measurements made ten months before death showed the following:

Height, six feet seven inches (grew four inches in twenty years); weight, 198 pounds (lost twelve pounds in twenty years); the head, large and doliocephalic, eight inches in length, twenty-five and one half inches horizontal circumference; cephalic index sixty-two and one half degrees; maximum width of forehead five inches; minimum width of forehead four and five eighths inches; decided bulging over right parietal region. The face was nine inches in length, five inches in width, asymmetrical, flatter on left side; nasobregmatic arc six inches; the complexion was pallid, and cancer cachexia developed; skin coarse and thickened over face and entire body; pigmentations over face and shoulders. The expression

was sad and brooding. The mouth was large, two and one half inches in length and one and one half inches in width. The lips were thick; teeth decayed; uvula rudimentary; hard palate asymmetrical, high and v shaped. The alveolar processes hypertrophied, especially on right side; tongue large (broad and long), red and deeply fissured. The voice was deep and husky and enunciation indistinct and slurring.

The beard was scanty; all of the hair was coarse in texture and dark reddish brown in color; which obtained in axilla and pubic region. The eyes were small and grayish blue, or blue gray; slightly asymmetrical; measurements: right, length one and three eighths inches; left one and one fourth inches; width of both eyes three fourths inch; pupils equal and react, but there was progressive double atrophy; vision therefore somewhat impaired; very poor at night. The sense of smell was defective in both nostrils; nose deflected to the right; broad and long; two and five eighths inches in length; two and one fourth inches in width. Septum thickened and a large spur springs from lower border of septum. Both the middle and inferior turbinated bones deeply congested and infiltrated, especially on right side. Malar bone un-



FIG. 3.—Lateral view of patient.

usually large, especially on right side. Inferior maxilla thick, and the chin protrudes to such an extent that the incisors—both upper and lower—do not articulate, and the jaw is distinctly prognathous with a craniofacial angle of sixty degrees.

The ears were greatly enlarged; cordia deformed;

medium helices; left root longer, and left antihelix excessive; attachment medium; both lobules very broad; left lobule broader; tragus excessive and double. Antitragus excessive and large on right; right angle forty-five degrees; left angle twenty-five degrees; left ear one inch higher in placement. The hearing was about one third normal in left ear and two thirds in right.

The neck was short and thick with right thyroid gland hypertrophied; clavicle and sternum broad and thickened; and ribs at sternal junction were beaded; breasts distinctly enlarged and partial pectus carinatum. The abdomen was full, pendulous and rugæ marked; testicles enlarged but firm; penis very large, circumference five inches and length five and one half inches when flaccid. The arms were asymmetrical, the right one being longer; length stretch, from tip to tip of middle finger eighty-five and one half inches, or seven feet one and one half inches. The hands were large; from wrist to index finger tip—nine inches in both hands; nails broad and flat and very thick.

<i>Right</i>		<i>Left</i>	
First	4¾ inches	First	4¾ inches
Second	5½ inches	Second	5¾ inches
Third	5¾ inches	Third	5 inches
Fourth	4 inches	Fourth	4 inches
Thumb	3 inches	Thumb	3 inches

The feet were asymmetrical; instep, right high, left medium; left twelve and three eighths inches long, four and one half inches wide; right eleven and one eighth inches long, four and one fourth inches wide. The gait was slow and he propelled himself; station very poor. The right kneejerk was diminished; left absent; no ankle clonus. Hyperhidrosis was marked; continually bathed in perspiration; axillary temperature varying from ninety-seven and three tenths degrees to ninety-nine degrees daily. The pulse was from eighty-six to ninety-nine; arterial tension increased; heart enlarged; respiration twenty-two to thirty. The liver was markedly increased in size. Traces of sugar and albumin were found in the urine which showed a specific gravity of 1.012.

INTERDEPENDENCE OF THE FUNCTION OF THE DUCTLESS GLANDS.

An Etiological Factor in Toxic Goitre.

By J. CHRISTOPHER O'DAY, M. D., F. A. C. S.,

Honolulu, Hawaii,

Member Honorary Staff, Queen's Hospital, Honolulu.

Since the chromaffin substance in certain of the ductless glands and certain of the sympathetic ganglia has been demonstrated, a so-called chromaffin system has been conjectured towards furnishing grounds for the belief that the proper behavior of any one of the ductless glands is dependent, largely, upon fitting cooperation of the others. Some very good arguments have been advanced in support of the theory, but in so far as we are able to determine nothing of scientific value has been given.

In an effort to find what might serve as clinical evidence to show whether or not an interrelation of function did exist, we grouped, respectively, such syndromes as are known to be associated with

the typical diseases of ductless gland origin. Then by comparing the units of each group a plan was immediately at hand by which a reasonably accurate conclusion might be drawn, but aside from the lowering of the carbohydrate tolerance observed with a disturbance of the function of the pars anterior and the thyroid nothing was put together that would prove such an interdependence existed.

Take the suprarenals. The disease most likely to attack them is tuberculosis. As a rule it is secondary to a tuberculous infection of other parts, namely, the lungs and the bones, those of the spinal vertebrae being the most likely. It is not known that these glands have ever reached a state of hypersecretion but once they become stricken with disease hyposecretion proportionate with the degree of involvement immediately becomes apparent.

Assuming that the secretion of the suprarenals, under normal conditions, is the means of preventing the secretion of the thyroid from becoming toxic and that failure of the adrenal's physiological supply is the reason for the beginning of the thyroid's hypersecretion, then we merely have to turn our attention to those signs that bespeak the presence of Addison's disease to understand how impossible it would be for any such relation to exist.

In Addison's disease the cardiac action is singularly feeble, the pulse is slow, small in volume, with little or no tension. The very picture itself might easily be mistaken for one of hypothyroidism. Hypoadrenalism has been caused by a cirrhosis as well as tuberculosis of the gland. Hadden's report, mentioned by Sir Dyce Duckworth in his quite complete studies of Addison's disease, shows that in fibrosis of the suprarenals the symptoms are precisely the same as when the gland is attacked by a central tuberculosis. Addison's disease, as too often believed, is not tuberculosis exclusively, but whether the inability of the adrenals to furnish its normal amount of secretion is due to cirrhosis or destruction by a tuberculous invasion, the fact remains that hyperthyroidism does not ensue.

There is one point connected with tuberculosis of the suprarenals that is worthy of being kept in mind, and that is the way in which the infection may impose itself. It may begin in the medulla or it may begin in the cortex; when in the latter, extension into the sympathetic ganglia and branches of the abdominal sympathetic plexus is sure to take place. Reporting a number of minute and careful dissections made upon the ganglia and branches of the abdominal sympathetic nerves of a number of subjects who had died of Addison's disease, Duckworth, who directed the work, says: "The semilunar ganglia have been found altered in structure, enlarged and redder than natural, dense meshes of fibroid tissue develop them and the nerve branches connected with them. This new growth proceeds from the connective tissue capsular investment of the adrenals, and gradually invests and mats together the ganglia and delicate nerve fibrils. The growth is generally very dense and hard, and the difficulty is to determine accurately what is nerve matter and what is mere

fibrous tissue. The suprarenal and solar plexuses thus become fused, as it were, into a matted felt. These changes were not found with central tuberculosis or cirrhosis of the gland."

It is of interest to note that as a consequence of these changes within the sympathetic nerves and their ganglia no harm was caused to the function of the thyroid. The stomach, alone, was the sufferer. Gastric symptoms were of such regular occurrence that Addison's disease of cortical origin is readily differentiated from the two other varieties of the disease. Discussing this phase of the malady Duckworth observes: "The occurrence of nausea, gastric crises, vomiting, depressed circulation, collapse and sinking sensations are all consonant with the idea that these sympathetic centres and nerve fibres are gravely involved."

Turning to the pituitary gland in disease we were equally unsuccessful in establishing any evidence to support the theory of interdependence of the function of the ductless glands.

The textbook by Harvey Cushing (1) was, without doubt, the best work we were able to find on the subject. From its review we became still more convinced that nothing like an interdependence of function of these glands was likely. The author's reference to a similarity of the thyroid, parathyroids and anterior and posterior lobe of the pituitary body is a little suggestive, yet in meaning it more likely was intended as a warning; if not a warning, then more likely a basis to work on while investigating the hypophysis alone.

One of his contentions we ourselves had failed to observe—what he refers to as an overlapping of the symptoms of both hyperthyroidism and hypothyroidism. This he mentioned because of a similarity between the symptoms and those of pituitary gland disturbance. To quote: "Hence the transition symptoms may be neither one thing nor the other, neither hyperthyroidism nor hypothyroidism, but rather dysthyroidism." Coming back again to a discussion of the pituitary, admitting the possibility of the symptoms of both anterior and posterior lobe disturbance overlapping each other as in dysthyroidism, he cautions against carrying the doctrine too far for fear of leading to confusion. Touching on this point, he says: "But even accepting dyspituitarism as a sufficient mantle for all states due to a perverted function of the hypophysis, we nevertheless are still so far from a complete knowledge of the various clinical syndromes which may be elicited by disturbances primary in one or the other lobe that, for a time at least, we shall do well to adhere to the more cumbersome, though temporarily useful, clinical subdivision. For if not carried to the point of confusion through excessive subdivisions, the separation, on the basis of certain striking clinical features of the various types of disease attributable to lesions of a given organ, may serve as a temporary convenience, even though such symptomatic pigeonholing does not prove to be of enduring value. We are quite willing to admit the likelihood of an overlapping of the symptoms of anterior and posterior lobe disturbance of the pituitary, but until our knowledge of the parathyroids

becomes more clear, can we accept a dysthyroidism beyond what may be understood of that time when hypothyroidism is beginning to merge into the earliest manifestations of myxedema.

Duckworth's dissections and study of the sympathetic nerves and their ganglia, in association with disease of the suprarenals, so far as we were able to ascertain, have not been so thoroughly attempted with other ductless gland disorders, and our reference to what had been observed concerning the superior cervical ganglion in association with toxic goitre would quite conclusively tend to show that no change, by reason of the coexisting hyperthyroidism, had taken place.

Cushing himself, makes no reference to the sympathetic system in having sustained a pathological condition as a result of disease of the pituitary body. As an end result of our work we were forced to conclude that peripheral tuberculosis of the adrenals is the only disease of the ductless glands capable of extending a pathological condition into the nerves and ganglia of the abdominal plexuses. In this, however, owing to the limited amount of work reported, the propriety of caution seems quite evident. Cushing hints at the possibility of a correlation or interdependence of function when he says: "The pars anterior, so far as we can tell, not only seems to be more closely correlated with the other ductless glands, but presides more intimately over skeletal growth; whereas the posterior lobe has been shown to be more closely allied to the process of tissue metabolism, an insufficiency causing a marked deposition of fat, and to the activity of the renal and vascular system."

There is one analogy between lesions of the thyroid and the hypophysis that I will mention. I refer to perversion of their function with and without glandular change. A vascular or colloid goitre will not disturb function while the most severe toxicosis may come from an overactive gland where an increase in the size has not obtained. The same character has been noted of the hypophysis. Cushing relates: "It will be recalled that cases of acromegaly have been recorded in which not only was there no tumor present, but in which, as was stated, the gland showed no recognizable histological change."

In refuting Marie's view that pituitary lesions are the cause of acromegaly, he regards hypophyseal growth as a mere coincident, rather than the cause of the disease. Our specimens from toxic goitres were so uniformly rich in acini and glandular epithelium, and correspondingly poor in connective tissue stroma, that we were left with no conclusion other than this condition hyperthyroid victims is due to a congenital abundance of the gland's secretive mechanism more than to anything arising in recognition of a foreign demand, and whatever the function of the sympathetic nerves and ganglia relative to the ductless glands, it is quite evident that no part is played which in any way might make one gland's function dependent in any way upon the functions of the others.

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Editorial Notes and Comments

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ENDOCRINOLOGY.

New chapters are being written in medicine, and one of the most important of these is endocrinology. Gross anatomical and physiological changes due to the removal or malfunctioning of various glands of internal secretion have been observed for hundreds of years. The high pitched voice, skeletal changes, and various feminine characteristics are well known in eunuchs. In Graves's disease we find tachycardia, rapid speech, exophthalmos, perspiration, loss of weight, and other well marked physical and psychological changes. And so, little by little, we have come to recognize the grosser changes due to disturbance in the endocrine glands. The laboratory has also contributed its findings on the subject of endocrinology—substances affecting blood pressure, striped and unstriped muscle fibres, the oxygen linking qualities of the blood, calcium metabolism, and many other vital functions have been attributed to one or another of the glands.

The subject of endocrinology now has a new impetus and is being attacked from a new angle. It is felt that this new method of attack, the clinical, will prove of greater value than former methods. More detailed observations have been made and various endocrine types have been noted. Minute landmarks—the arrangement and texture of the teeth, the distribution of the hair, the coloring, the location of various forms of pigmented moles, the position, shape, and size of the ears, skeletal proportions—these and many other markings have proved of service to the careful worker in endocrin-

ology. It has been shown that certain types dominated by one or another of the endocrine systems are more susceptible to certain diseases and are more likely to be unfavorably influenced by certain drugs.

Another important point emphasized by modern workers in endocrinology is the correlation of the various glands of internal secretion, which at times assume each other's function either wholly or in part. Again, a gland may appear to be at fault and the entire organism may be suffering from the effects of excessive secretion discharged into the circulation, when the fault lies in another gland, remotely situated, whose secretion or lack of secretion is causing the hyperactivity of the gland under suspicion. The surgeon will often attack the innocent gland and not be able to account for the failure of the operation.

Formerly the dose of a given endocrine gland was based on the gross changes it produced: this was due to the radical requirements of myxedema and other well marked abnormalities. Recent findings, however, have demonstrated that an extremely minute dose often suffices. Sterility has frequently been overcome by minute doses of ovarian gland. Sometimes the difficulty has been attributed to a lack of stimulation of the gonadal glands from the adrenals or the pituitary, and the ovarian difficulty has been overcome by small doses of these glands. Headache caused by hypersecretion of the pituitary, due to a failure of the check exerted by other glands, has been overcome by feeding adrenal gland in small doses. On the other hand, headache may be caused by a hypersecretion of the adrenals causing an adrenal drive, and this in turn may be remedied by glandular therapy which will tend to overcome this tendency.

The chief immediate benefits will be derived in the realm of diagnosis. Landmarks, such as dental formation due to gonadal abnormalities and changes in tooth structure caused by the faulty metabolism occasioned in various thyroidal states, often prove of great value, enabling the observing clinician to use these as indicators of the more important underlying changes.

As yet little is known of the mechanism of endocrine disorders. The laboratory data are fragmentary and not correlated. Much remains to be done. In spite of the good results recorded by some of the earnest workers, the entire subject is still in the realm of speculation. However, the rewards are greater than those promised in other therapeutic fields, for here the human organism may be dealt with in its entirety.

We have gathered together contributions from leading endocrinologists in this country and we present them to our readers. Many of these findings should prove of immediate practical value, and the results already achieved should be an incentive to other workers in every branch of medicine to observe their patients from the endocrine point of view so that additional data may be made available, in the hope of giving more practical aid in the future.

RADIOGRAPHY IN DISEASE OF THE SUPRARENAL GLANDS.

Vaquez and Nobécourt have shown that the convulsive paroxysms in eclampsia can be foreseen by taking the blood pressure, which goes up when the attack is about to occur, which they suppose is the consequence of a sudden suprarenal hyperfunctioning. Tuberculosis subjects, who usually suffer from a state of hypertension, whose blood pressure drops to normal or even goes up to 190 or 200 before hemoptysis takes place, are having a temporary suprarenal hypersecretion at the time, and Sézary has shown that in the case of sclerosed suprarenals or tuberculous patients there are always some islands of hyperepinephria. In both these instances in which exaggerated function of the suprarenals has such serious consequences, it is logical to suppose that prophylactic treatment of the suprarenals with radiotherapy may be useful. In practice, the best results from x ray treatment have been in cases of high blood pressure with elastic arteries and no albumin. Some patients with interstitial nephritis with hypertension may be helped, but the most evident and lasting results are obtained in subjects in whom the hypertension and its consequent disturbances appear to be the result of hyperepinephria. These cases of pure hypertension are in the presclerous phase. Sometimes the hypertension has been made manifest for some time by headache, vertigo, tinnitus aurium, and painful sensations in the limbs; again it is revealed by a sudden attack of hemiplegia, paresis, or fleeting aphasia.

Headache, the most frequent symptom, usually comes on after eating or in the morning when the patient gets up, and the slightest intellectual or physical exertion aggravates it. The site is usually occipital, occasionally frontal or temporal. It causes a feeling of weight, a vague lameness, with occasional very disagreeable pulsations. Some patients experience peculiar sensations in the lower limbs in the form of cramps and tingling when rising in the morning, but walking quickly disperses these disturbances. These manifestations are supposed by Josué, to be due to changes of the

circulation in the cerebral centres. Diffuse rheumatoid pain or distinct neuralgia in a given nerve may occur. Local algidity in a limb or a portion of it is complained of, especially in the feet, knees or hands. The vertigo of hypertension occurs when the patient changes his position or makes an exertion and is likely to occur with tinnitus aurium or a decrease of the hearing. Fleeting ocular disturbances or even serious lesions of the retina may take place during an attack of hypertension. Ophthalmic migraine amaurosis during an increase of the blood pressure, subsiding when it is lowered, has been observed, as well as a temporary hemianopsia without lesions of the fundus.

Exertion dyspnea obliges these subjects to stop to get their breath and is particularly marked after eating. Sometimes there is pulmonary emphysema, at other times the lungs are normal. The cardiac disturbances amount to some slight precordial distress, but they may assume the form of an attack of angina pectoris. These subjects become tired quickly, while intellectual work is difficult. They sleep poorly, are restless, and awake feeling tired. Rarely nervous, these patients are depressed mentally and Josué has referred to the necessity of taking the blood pressure in elderly neurasthenics.

Radiography reveals an enlarged heart, showing hypertrophy of the organ *en masse* or simply of the left ventricle. The apex is enlarged low down and carried outward. The precordial shock is exaggerated and occupies a larger area than normal. A *bruit de galop* or a slight murmur of functional mitral insufficiency may be heard, but there is a symptom to which Huchard drew particular attention and which he regarded as pathognomonic of hypertension, namely, a reinforcement of the second sound on the right of the sternum or a diastolic hammer blow sound over the aorta. The pulse is full and resistant, and if vasoconstriction is marked, it may be so contracted that it is difficult to find. The sphygmographic tracings show an oblique or jerky rise; the apex instead of being pointed is rounded or flat, while the descent only shows a slight dicrotism. Both the systolic and diastolic pressures are high, being from 190 to 250 for the former, and from 120 to 150 or more for the latter.

The urine is often limpid and albumin free, but is passed in considerable quantity. These are cases in which radiotherapy of the suprarenal glands seems logically indicated. Some albuminuria is not a contraindication for treatment, but when the vascular sclerosis is marked and the second aortic sound is changing, the x rays should only be used if the case is one of mild arteriosclerosis without albuminuria.

REALIZATION BY RECEPTIVITY.

From the graves of a buried army there has arisen a hope, an expectancy, that something can be known of the destination and present abode of those who were hurried out of the world. It is well known to physicians that the announcement of a successful weapon having been found to fight the deadly scourge of cancer or tuberculosis brings thousands of letters from those so afflicted, full of tremendous faith in the untried remedy, especially if its use is advocated by famous doctors, and an affirmation of communications with the dead, made by eminent scientists, has raised in all the people not an idle curiosity, but an ardent hearkening for any voice from the great Silence. Thousands will flock to hear Sir Oliver Lodge because of his position in the scientific world.

But ninety per cent. of his hearers will also base their belief on newspapers and popular articles in the journals, not on any systematic study or research. The Man in the Street, when cures are foretold, talks glibly of bacilli, germs, and organic disease without any comprehension of the terms or the tragic difficulties and painful research the path to discovery has meant; so, today, the crowd bandy about psychological phrases without understanding even their surface meaning. Fortunately, the people are not in the hands of sensationalists, for mediums and the hanky-panky of former times are generally discredited. There is an invitation to co-operate by a receptive waiting to hear, not by trying to force a way into the Unknown.

Perhaps this fact, or theory, of communication has come at the right time. It will rekindle a healthy vitality in nations who now have time to count their losses, secretly defiant or openly sorrowful for the fathers, brothers, and sons taken from them. The belief might be reckoned as a national asset, for every bereaved person holding secret resentment is a menace to the security of a government, and each dead soldier who "communicates" gives stronger security than an armed guard.

To dismiss the evergrowing idea, now under worldwide discussion, as a mere theory would be to assume that in spirituality alone all is known that can be known and our limits of knowledge reached. Who may dare to say so? For hundreds of years the Chaldeans and their successors thought they had penetrated far into the awful mysteries of Starland. Yet they were mere contemplative astronomers to whom the discoveries of today would have sounded as wild dreams. By exact measurements the volume of the earth is reduced to the millionth part of the sun's volume, the sun him-

self, transported to the region of the stars, takes but a small place among the millions revealed by the telescope, and irresistible proof is given that certain stars have retired to such distances that light could not traverse in less than a million years. The conquest of the spiritual world is still contemplative, but natural science has become an ally.

A little volume has just been written by a French doctor on *The Right to Die*, and, as army surgeons know, this right was demanded by mutilated, hideous remnants of men brought into the hospitals. These might plead as an additional reason for going Sir Oliver's assurance that there is no death, that being allowed to pass over would simply mean renewed vitality and the chance of seeing and speaking to friends, without the sadness and hardly concealed shrinking which meeting them in tattered fleshly garments would entail.

WHY NOT VENTILATE?

It would seem that most of the time and money which have gone into the study of ventilation have been lost, due to the failure of practice to keep pace with knowledge. While we know a great deal about how to ventilate, still, in institutions managed by learned scientists and teachers, proper ventilation is not enforced. Perhaps it is due to our innate indolence that we suffer and allow others to suffer rather than speak a word or lift a hand to improve such conditions. The outlook is not hopeless, for in a survey of schools we have found entire districts, even in rural communities, where knowledge of this important subject is put in practice, but where one most expects to find good air, he is often sadly disappointed. It is quite true that the problem of ventilation is not yet solved. It may be centuries before we know enough about the nature of the atmosphere to permit us to learn the whole secret, but we do know that superheated air is decidedly bad for comfort or for work, and there is no excuse for not keeping the temperature from rising above the point for comfort and maximum good work.

In a survey of schools in a New England city that boasts enlightenment, we found that, while most of the rooms had thermometers, in very few indeed was the temperature below seventy four degrees and often the mercury stood at seventy eight. Not only was there an inability to obtain work from the pupils, which might easily count up to weeks for the year, but the loss in fuel was needless and stupid. In a new and up to date hospital for contagious diseases all the thermometers in the place stood at seventy-four, notwithstanding that

the patients were children, had fever and were covered with bed clothes.' The discomfort was surely extreme, and again the waste of fuel was unpardonable. In a private room of another hospital a patient with fever was suffering from intense headache. The thermometer read eighty degrees but the nurse did nothing to bring relief to the sufferer.

How long will we pay attention to the little and the esoteric things—the powders and pills—and forget the larger and more vital affairs of food, air, exercise, rest, and, not least, temperature! Cannot nurses, and even janitors and engineers, have some practical science driven into their heads along with much superfluous material? Is it not as vital that a nurse should keep the temperature of her ward below sixty-six or sixty-eight as that she should not fail to take the temperature of her patient every few hours? Is it not as easy to read a room thermometer as a body thermometer, and cannot a nurse be taught to know the relationship between the two readings? As for teachers—but teachers are difficult to teach.

Let us have some applied, as well as theoretical ventilation in public even if it is not possible in private institutions. We cannot afford the waste of time, of money, and of comfort, and the destruction of health which go on at present throughout the country.

THE TELEPHONE.

The telephone is one of the most useful implements of modern civilization. It is of especial value to the physician, inasmuch as he is able to communicate with his patients, give them certain directions until he is able to reach them, and communicate with the hospitals; in every way he is dependent to a degree upon the telephone.

The telephone service in the city at present is demoralized. The hospitals have registered a protest. Deaths have been attributed to faulty telephone service in a fire which occurred a few days ago. Physicians have been delayed for hours in a vain endeavor to call central, causing a great loss of time and often obliging the physician to neglect his patients on account of the lack of communication. This has been especially marked and highly disastrous during the past epidemic. Surely something can be done to remedy the defect. Surely a city like New York is entitled to a better telephone service. Some effort should be made to improve existing conditions. Some system should be devised which will enable a physician to have a clear wire and right of way even when the 'phone service is crippled.

A complaint has been registered by hospital superintendents and by the workers in the board of health. Surely some way should be found to enable the city authorities to safeguard the lives of its citizens even when it may entail a radical action involving a privately owned monopoly.

Obituary.

JOHN VAN RENSSELAER HOFF, M. D.

of Washington, D. C.,

COLONEL, MEDICAL CORPS, U. S. ARMY, (RETIRED),

Colonel John Van Rensselaer Hoff, one of the most distinguished officers of the Medical Corps, and a former editor of the *Military Surgeon*, died January 14th in Walter Reed Hospital, Washington, D. C., following an operation for septic gall-bladder. Colonel Hoff was born April 11, 1848, in Mount Morris, N. Y., and was graduated from the Albany Medical College and also from the College of Physicians and Surgeons. He organized the first detachment of the hospital corps in the army and the first company of instruction hospital corps. In 1902 and 1903 he was a member of the faculty of the Army Medical School, serving during the same period as president of the Association of Military Surgeons of the United States. Previous to his retirement in 1912 he was chief surgeon of the Department of the East, and Eastern Division.

News Items.

Connecticut Mental Hygiene Division.—The Connecticut Department of Health has established a division of mental hygiene, with Dr. William B. Terhune, of New Haven, as director. Connecticut is the first State to establish such a division.

Personal.—Dr. Thomas B. Carpenter, formerly first assistant bacteriologist of the laboratories of the Buffalo Health Department, has been appointed director of laboratories to succeed Dr. William G. Bissell, recently deceased.

Dr. Richard C. Cabot, of Boston, has been appointed professor of social ethics in Harvard University.

Doctor Warbasse's Resignation Asked by Long Island Physicians.—The resignation of Dr. James P. Warbasse from the Associated Physicians of Long Island was asked at a recent meeting, in the interest of the "good name of the society." It is stated that action on the proposed demand may not be taken until June.

Postgraduate Course in Public Health.—Albany Medical College announces the opening on March 4th of a postgraduate course in infectious diseases and public health, under the direction of Dr. Charles C. Duryee, sanitary supervisor, New York State Department of Health. The course, which is to consist of clinics, demonstrations, and conferences, will conclude June 18th.

Philadelphia County Medical Society.—The annual business meeting of this society was held January 21st, at which time the following officers were elected: President, Dr. Herman B. Allyn; vice-president, Dr. Benjamin F. Devitt; secretary, Dr. J. Morton Boice; treasurer, Dr. Edward A. Shumway; directors, Dr. Paul B. Cassidy, Dr. J. Norman Henry, and Dr. Arthur C. Morgan; censor, Dr. Judson Daland; assistant secretary, Dr. Charles Scott Miller.

Prize for Influenza Cure.—The *Denver Post* has announced that it would pay \$25,000 to the physician discovering a cure for influenza. The award is to be made after the cure has been approved by the Rockefeller Foundation and by Johns Hopkins University.

Associated Physicians of Long Island.—The twenty-second annual meeting of this society was held January 31st in Brooklyn. The following officers were elected: President, Dr. Henry Goodwin Webster; first vice-president, Dr. Harriss A. Houghton; second vice-president, Dr. Hugh Halsey; third vice-president, Dr. Joshua M. Van Cott; secretary, Dr. James Cole Hancock; treasurer, Dr. Edwin S. Moore.

High 1918 Death Rate in United States.—The death rate in the United States for 1918 was the highest on record, according to the annual mortality statistics issued by the census bureau. There were 1,471,367 deaths for the year, a rate of eighteen in 1,000 of population. These figures apply to the death registration area, consisting of thirty states and twenty-seven cities, with a total estimated population of 81,868,104. Of the total deaths, 477,467, or more than thirty-two per cent., were due to influenza and pneumonia.

Reorganization of Staff of St. Mary's Hospital.—As a result of a reorganization of the staff of St. Mary's Hospital, Brooklyn, eight members have been dropped. Dr. Martin Bodkin, president of the staff, is succeeded by Dr. James S. Waterman. The others whose connection with the institution are severed are Dr. Francis B. Doyle, Dr. Bodkin's assistant in the department of colonic and rectal surgery; Dr. E. A. Parker, Dr. Lawrence J. Morton, Dr. John M. Clayland, Dr. P. V. Costello, Dr. Robert J. Morrison, and Dr. William J. Flannery.

Health Conditions Among Troops.—The admission rate for disease among U. S. troops was considerably greater for the week ending January 30th than for the previous week. The rate was 154.86 as compared with 104.24 for the week previous. Cases of influenza reported were 1563, with 103 pneumonia there were thirty-three deaths from pneumonia following influenza. There is an increase in the number of new cases of influenza, measles, and pneumonia among the American forces in Germany.

New York Tuberculosis Association Bulletin.—The New York Tuberculosis Association has issued the first number of its new bulletin under the date of January, 1920. The bulletin will have for its purpose "the dissemination of knowledge for the information of all those interested or engaged in the fight against tuberculosis in New York City and elsewhere, and although covering a wider field, it will take the place of the *Clinic Notes*, formerly published by the Committee on the Prevention of Tuberculosis of the Charity Organization Society. In addition to serving as the official organ of the association, the bulletin will contain news, short articles of interest, answers to questions, articles on the special work of the association, and brief statistical summaries of the tuberculosis situation in the city.

Philadelphia Academy of Surgery.—The Philadelphia Academy of Surgery has elected the following officers for 1920: President, Dr. George C. Ross; first vice-president, Dr. John H. Jopson; second vice-president, Dr. Edward B. Hodge; secretary, Dr. J. S. Rodman; recorder, Dr. John Speese.

Pneumonia Epidemic in Italy.—Influenza complicated by bronchopneumonia is reported epidemic in Italy. Large assemblages of people are discouraged, public places are being disinfected, all street cars are disinfected before leaving depots, and cabs carrying sick persons to hospitals are also disinfected.

Medical Society of the State of New York.—Announcement has been made of the program for the one hundred and fourteenth annual meeting of the Medical Society of the State of New York, which will be held Monday, March 22d, to Thursday, March 25th, in New York City. The meeting of the House of Delegates will be held Tuesday afternoon at the Academy of Medicine, and in the evening there will be a general meeting at the Hotel Pennsylvania, when the president's address will be delivered by Dr. Grant C. Madill, of Ogdensburg. The various sections will hold their meetings through Tuesday, Wednesday and Thursday.

The scientific program promises to be of unusual interest. A symposium on vitamins will be given at a joint meeting of the sections in medicine and in pediatrics, and another meeting of the section in medicine will be devoted to a symposium on gastrointestinal diseases. At a joint session of the section in surgery and the section in medicine, there will be a symposium on goitre. Among those who have been invited to speak are: Dr. Edwin H. Place, of Boston; Dr. E. V. McCollum, of Baltimore; Dr. John Howland, of Baltimore; Dr. William C. Quinby, of Boston; Dr. Emil Goetsch, of Baltimore; Dr. Thomas R. Brown, of Baltimore; Dr. Edward Starr Judd, of Rochester, Minn.; Dr. Charles E. Roderick, of Battle Creek, Mich.; Dr. George W. Crile, of Cleveland, Ohio; Dr. James T. Case, of Battle Creek, Mich.; Dr. Alexander E. Garrow, of Montreal, Quebec; Dr. Hugh Cabot, of Ann Arbor, Mich.; Dr. William P. Graves, of Boston; Dr. Edward Reynolds, of Boston; Dr. Joseph Colt Bloodgood, of Baltimore; Dr. Reuben Paterson, of Ann Arbor, Mich.; Dr. J. Whitridge Williams, of Baltimore; Dr. Charles C. Norris, of Philadelphia; Dr. S. Lewis Ziegler, of Philadelphia; Dr. Henry A. Cotton, of Trenton, N. J.; Dr. C. Macfie Campbell, of Baltimore; Dr. Allen K. Krause, of Baltimore; Dr. John Foote, of Washington, D. C.

The chairmen of the various sections are: Medicine, Dr. John R. Williams, of Rochester; surgery, Dr. Claude C. Lytle, of Geneva; obstetrics and gynecology, Dr. George B. Broad, of Syracuse; eye, ear, nose and throat, Dr. Arthur J. Bedell, of Albany; neurology and psychiatry, Dr. Marcus B. Heyman, Ward's Island; pediatrics, Dr. A. Clifford Mercer, Syracuse; public health, hygiene and sanitation, Dr. Paul B. Brooks, of Albany.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

(Continued from page 208)

Before concluding this series with a reference to some of the unusual manifestations of rheumatism which may lead to its being mistaken for other disorders, it seems advisable to mention briefly a rheumatoid condition described for the first time by Chantemesse and his coworkers in 1917, in which after death an apparently new microorganism was found, characterized by its appearance in recent cultures in the form of short rods, and later, as elongated, frequently curved, motile bodies, passing into branched forms from which spores are ultimately set free. This organism was looked upon as occupying a botanical position between the bacteria and moulds. It proved pathogenic in animals. In the author's patient the clinical condition produced assumed the form of a polysynovitis, with visceral complications and finally coma and death. The case was that of a woman thirty-seven years old who, when first seen, had been suffering from joint pains for two weeks. The symptoms at the time were decidedly suggestive of a severe case of acute rheumatism, with high fever, marked sweating, albuminuria, a systolic murmur at the apex, and improvement under salicylates. Soon after, however, meningeal symptoms with marked restlessness set in, and after four days death took place. The earlier manifestations in this case plainly pointed to rheumatic fever; yet a definite microorganism, different from the probable infective agent in acute rheumatism, was eventually shown to have been responsible.

On the other hand, conditions apparently not rheumatic, and tending to orient the diagnosis toward some other affection, have sometimes given rise clinically to confusion. Among the more recently reported observations along these lines is that of White, 1916, who encountered a case in which an acute, transient, but pronounced heart-block occurred as the first sign of an oncoming rheumatic fever, appearing before the joint symptoms themselves. The heart muscle was thus seemingly the first tissue to suffer from the rheumatic infection; no evidence of involvement of the endocardium or pericardium was found.

Bilateral pleurisy as a manifestation of acute rheumatism has been emphasized by Mollard and Favre, 1917. Such a pleurisy may occur even in the absence of joint trouble, in which case the natural tendency of the practitioner is to consider it of tuberculous origin and to omit the treatment by salicylates, to which it generally yields promptly. These authors specify as being the chief distinguishing features of such a pleurisy a rapid onset,

the involvement of both sides, the simultaneous presence of congestion of the lungs and dry pericarditis, and the ultimate entire subsidence of the condition, without any subsequent trouble. Before it subsides, however, the pleurisy is likely to have been present for a considerable time—a number of weeks—without undergoing any marked change. The effusion is of moderate amount. Mild chest pains generally accompany it. Mollard and Favre urge that rheumatic infection be thought of and suspected whenever bilateral pleurisy and a joint disturbance coexist, or even where a bilateral pleurisy exhibiting the features referred to is present alone. Recognition of such cases is of particular advantage because when sodium salicylate treatment is instituted the pleural disturbance is soon checked, the lung congestion passes off, and the effusion itself gradually undergoes absorption.

In a case recently recorded by Poynton, 1919, general pericarditis was the most striking feature of the case when it came under observation, although the patient, a girl of seventeen years, had already passed through an attack of rheumatic fever, with endocardial complication, some time before. In this case the pericarditis was accompanied by a marked effusion, which threatened life for a time through mechanical interference with the heart's action. Paracentesis pericardii was carried out and the subsequent course of the case was favorable, the febrile temperature subsiding and the effusion failing to recur, so that the patient was eventually discharged, able to walk a short distance, with a mitral lesion adequately compensated. Particular interest in this case attached to the fact that Poynton found numerous small diplococci in the fluid withdrawn by puncture. Most of these microorganisms had already been engulfed by polynuclear leucocytes, but some were free in the fluid itself. Poynton holds that this case supports his view of a diplococcus as the cause of true rheumatism, and also indicates that the obstinate cases of recurring rheumatic pericarditis in children result from the setting free from time to time of living diplococci enclosed in necrotic portions of the chronically inflamed pericardial tissues. This applies in particular to the cases attended with little effusion but pronounced pericardial thickening.

(To be continued.)

Tetragenus Osteomyelitis with Septicemia.—De Gaubiac, Nathan, and Clavierie (*Presse médicale*, November 26, 1919) report the case of a child of twelve years suffering from osteomyelitis at the upper end of the tibia, chronic from the start and unattended with fever. Bone tuberculosis, syphilis, and osteosarcoma were thought of, but the blood yielded twice the tetragenus organism in pure culture and this bacterium was also isolated from bone fragments taken out during an operative procedure. The operation was followed by a brief attack of dry pericarditis.

Prolonged Serum Treatment in Hemophilia.—P. Emile-Weil (*Bulletin de l'Académie de médecine*, November 25, 1919) notes that in 1907 he recorded the case of a man aged twenty-six, who had had hemophilic joint disturbances every month since childhood and hematuria four times a year, in which six injections of human or animal blood serum arrested all hemorrhagic manifestations in a year and shortened the coagulation time. In the subsequent five years this patient received twenty mls of serum every three months and later every two months. No spontaneous hemorrhagic phenomena recurred, though when cut the patient bled more than a normal person. Six other patients among the large number seen by the author consented to follow a continuous serum treatment. In five the same attenuation of the disease and arrest of spontaneous hemorrhages as had been noted in the first case were procured. In the sixth, improvement was less, cutaneous hematomas recurring. The essential result of the treatment seems to be that it causes artificial maturation within a few months of a diathesis which, while ordinarily tending to become milder in the course of time, takes many years to subside. No serious anaphylactic symptoms were encountered in any case, though at times fever, mild joint disturbance, or urticaria appeared. These symptoms came on most irregularly, one patient exhibiting them only once, after the seventeenth injection, and none subsequently, while other patients had them only after the first and not after any later injections. Fear of anaphylaxis should not deter the practitioner from resorting to the treatment, which, as shown in the reported cases, completely alters the formerly serious prognosis of hemophilia.

Treatment of Chronic Dacryocystitis.—W. L. Benedict and R. A. Barlow, (*American Journal of Ophthalmology*, December, 1919) describe as follows an operation for chronic dacryocystitis: Two or three drops of a one per cent. cocaine solution are instilled into the eye, allowing the probe to be introduced into the punctum with little or no discomfort. The intranasal anesthesia is obtained by blocking the sphenopalatine ganglion and the anterior ethmoidal nerve by introducing a cotton applicator, impregnated with cocaine mud with adrenalin as a solvent, beneath the posterior end of the middle turbinate, and a second applicator passed between the septum and the middle turbinate to the cribriform plate. These applicators are allowed to remain in position ten minutes, which ordinarily gives complete anesthesia of the nasal chamber. In case of high or anterior septal deflection a submucous resection of the septum should be done at this time.

A lacrimal probe is now introduced through the lower punctum, without slitting the canaliculus, into the sac and duct as far as it will go and allowed to remain. This serves as a guide and landmark, reminding the surgeon working in the nose of the direction of the duct. The mucous membrane of the agger nasi is now elevated and resected and a flap about one cm. in diameter is removed just in front of the attachment of the middle turbinate. The bone is next removed by means

of a small chisel to make a window slightly smaller than that of the mucosal opening. This exposes the inner wall of the lacrimal sac and the upper part of the duct. Any diseased ethmoidal cells which are discharging their contents into the duct can be easily broken down at this time. The lacrimal probe is now withdrawn slightly until the tip causes a tenting of the sac wall into the opening made through the bone. With a small knife the sac is incised, the flap is grasped with a fine forceps, and the incision continued in a circular path completely removing this portion of the sac wall. The probe is now removed and the sac irrigated through the punctum. Practically no aftertreatment is required. No packing is necessary. The patient should be cautioned not to blow his nose vigorously and a lotion of zinc sulphate and adrenalin is used for a week. The reaction is very slight, healing is rapid, with little contraction of the mucous membrane. The patients experience no epiphora or other discomfort.

Two Distinct Forms of Bilious Hemoglobinuric Fever.—Houssain (*Presse médicale*, November 15, 1919), after experience with twenty cases of hemoglobinuric fever in the Belgian Congo, asserts that the condition is divisible into two groups of cases requiring different treatment. In one form hemoglobinuria sets in consentaneously with a pronounced malarial paroxysm in a subject already infected with the disease. In the second form, hemoglobinuria occurs in a chronic case of malaria, the patient being under the influence of some secondary factor, such as fatigue, alcoholic excess, or prolonged exposure to the sun—such secondary factor not in itself causing destruction of red blood cells but contributing indirectly to the onset of the hemoglobinuric process. The first form, apparently due to destruction of red cells *en masse* in a subject already anemic from previous attacks, is characterized by a chill, vomiting, fever of 39.5° to 40.5° C., restlessness, slight delirium, scanty and pink urine, a subicteric hue, a regular and accelerated pulse and normal intensity of the heart sounds. In the second form, in which hemoglobinemia is already present before the onset and is transformed into hemoglobinuria by the secondary factor, there is no chill and generally no vomiting; temperature is 38.5° to 39.5° C.; patient is quiet, without delirium; the urine is abundant and nearly black; the skin is frankly jaundiced; the pulse is compressible and slightly accelerated, and the heart sounds are weak. The second form is the more dangerous of the two. In both forms the author administers at once by rectum an infusion of eight grams of senna leaves in 500 grams of water, with thirty grams of sodium sulphate added, at body temperature. An enormous discharge of bile results, which may be kept up, if desired, by giving every two hours an enema of 150 to 200 mls of a 1.5 or two per cent. hypertonic salt solution. After the enema and also the next morning the patient receives a dessertspoonful of sodium sulphate in a glassful of water. For beverage purposes mineral water or fresh plain water and diuretic infusions are given. Special treatment of the first form consists in injecting at

once 0.2 gram of quinine hydrochloride or sulphate. Urine is collected every hour or two and the different specimens compared against a white background; a latent period of six to twelve hours usually elapses before the urine begins to improve. The temperature is also taken every hour or every two hours, any reduction being regarded as a favorable sign. Where the temperature is reduced, another dose of quinine may be given in eight or ten hours, preferably in divided injections of 0.1 gram each. The reason for being so cautious with the quinine is that larger amounts may themselves prove hemolytic and lead to further darkening of the urine. The patient must be watched even after the temperature has returned nearly to normal, as the heart may weaken. In the second form the main indication is to support the heart. Large doses of camphorated oil are injected from the start. Diuretics are unnecessary and quinine would aggravate the disturbance. The hemoglobinuria yields if the body as a whole is placed in a good condition to resist it. In either form, death may occur from anuria; yet one case anuric for fifty hours recovered. In anuria drugs by mouth are to be avoided; massive injections of camphorated oil, large enemas, and hot applications are used.

Resection of the Stomach as the Method of Choice in the Surgical Treatment of Gastric Ulcer.—J. Abadie (*Bulletin de l'Académie de médecine*, November 25, 1919) reports thirty cases in which resection of the stomach was systematically applied in place of gastroenterostomy or simple excision of the ulcer. The series comprised seventeen cases of primary pylorotomy; ten cases of more extensive gastrectomy, followed in six instances by laterolateral gastroenterostomy and in four by terminolateral anastomosis; two cases of pylorotomy following former gastroenterostomies which had not brought complete relief; and one case of pylorotomy done in two stages—gastroenterostomy first, and pylorotomy two months later—on account of the marked emaciation and weakness of the patient. In some of the gastrectomy cases three fourths, or even more, of the stomach was removed. Only two patients died, one from slow hemorrhage from the pancreas; the other, to parting of the duodenal closure, with peritonitis on the seventh day. Certainly the latter and probably the former fatality could have been avoided with the improved technic developed by increasing experience. The conclusion reached is that in all subjects about forty years of age with a history of hypersthenic gastric attacks of increasing severity, separated by increasingly short intervals of apparent recovery, in which appropriate medical treatment has failed, operative treatment is indicated, without waiting for hemorrhage or indications of gastric stasis. The x rays were helpful, in the author's series, in confirming the decision taken, and at times in removing doubt; furthermore, the x rays gave a better idea of the exact seat of the lesion and the relations of neighboring organs. The rays never contraindicated an operation already decided on on the basis of clinical data. Study of the gastric contents proved of slight value in deciding upon operative treat-

ment. Gastrectomy is to be preferred to gastroenterostomy because the latter sometimes gives only incomplete results, being followed by recurrence, cancerous degeneration, etc., whereas gastrectomy yields complete cures. While gastroenterostomy is a less serious operation, this objection should be overcome by further technical progress. The radical treatment as a whole is of enormous social value, transforming subjects incapable of working for years into normal, active individuals in three weeks' time.

Intravenous Injections of Pancreatic Extract in Cancer of the Stomach.—Maurice Loeper (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, July 31, 1919) states that in three out of five cases of cancer of the stomach this measure was definitely beneficial, although in cases of cancer of the ovary, tongue, breast, uterus, spleen, and intestine it had failed. Five to ten per cent. solutions of pancreatin in water were used, after filtration through a porcelain filter and tyndalization. One to two centigrams of pancreatin were thus injected into an arm vein every day or two, up to a total of twenty-five or even thirty-five injections. Each injection caused a slight descent of blood pressure and a leucopenia, followed on the same evening and especially the next day by a polynuclear leucocytosis up to even 35,000. In the improved cases the patients showed a return of appetite, diminution or cessation of vomiting, and a gain in weight of from 2.7 to 5.1 kilograms. When the injections were stopped the weight remained stationary; if resumed, it rose again. Two patients showed increased erythrocytic resistance and antitryptic power, and three, a rise in the red cell count of from 500,000 to 850,000. In explanation of the effects, the author notes that in many cancer cases, especially of the digestive canal, the antitryptic power of the blood is increased, owing to passage into the blood of an excess of proteolytic ferment. The pancreatic injections serve to increase the antiproteolytic power of the serum. The increased red cell resistance and red cell count are similarly produced, proteolysis and hemolysis often running parallel. More obscure favorable effects result in the improved general nutrition and body weight. The procedure would appear to act as an antigen and increase the resistance of the body and its defensive reactions against the cancerous products.

Determination of the Acidity of the Gastric Juice.—Paul Baufle (*Paris médicale*, November 29, 1919) calls attention to the error made in using the terms test meal and gastric juice synonymously. The test meal as removed from the stomach is actually a mixture of gastric juice with residual fluid from the meal itself, and therefore cannot be taken as directly representing the gastric juice. Although normally the secretion index, i. e., the secreted gastric juice divided by the residual fluid from the test meal ranges between 1.2 and 1.5, it may fall below one or rise to three or even more. Where but little gastric juice is secreted and the residual fluid is of large amount, the true acidity of the juice must be much higher than would be supposed from the acidity of the fluid withdrawn

from the stomach. This discrepancy should be taken into account clinically, and can readily be circumvented by adding to the test meal some ferric sulphate, as recommended by Meunier, and later calculating from the amount of ferric sulphate in the fluid withdrawn, how much of the mixture consists of residual test meal fluid and how much of secreted gastric juice. This is rendered possible by the fact that ferric sulphate neither alters gastric secretion nor is absorbed through the gastric mucosa. To find out the actual acidity of pure gastric juice in the individual case, the acid findings in the mixture withdrawn, these findings are simply multiplied by a fraction of which the total amount of the mixture is the numerator and the secreted gastric juice contained in this mixture the denominator. Thus, if the product from an Ewald test meal measures 270 mls and the ferric sulphate show that ninety mls of this is residual test meal fluid; and if the estimations by the Töpfer method show 0.584 of free acid, 0.146 of fermentation acid, and 0.438 of combined acid, multiplication of these figures by 270 over 180, or 1.5, yields the true acid figures in the specimen under examination, viz., 0.876 of free hydrochloric acid, 0.657 of combined hydrochloric acid, and 1.752 of total acidity (including the fermentation acid). The procedure even as thus modified, is not of mathematical accuracy because a considerable amount of saliva is sometimes swallowed and considered as secreted gastric juice; it is nevertheless far more exact than the procedures hitherto customarily employed.

A Therapeutic Test for the Differentiation of Gastric from Hepatic Disorders.—G. Leven (*Presse médicale*, November 15, 1919) comments on the frequency with which hepatic disorders are represented solely by gastric symptoms and on the unreliability of the usual clinical criteria of hepatic disease. In the therapeutic test he recommends, the patient is first placed on a strict diet for three days, receiving 1500 grams of a hot infusion on the first day, 850 grams of milk mixed with 750 grams of infusion on the second day, and 1500 grams of milk on the third day. On the fourth and fifth days a more generous but exactly predetermined diet is given. In addition, the patient must remain at rest in bed for the first few days or even the first week and in the following weeks refrain from any strenuous activities. After the first three days sodium bromide is given regularly in daily doses of two grams for twenty days. Each spoonful of the bromide is taken in the middle of the noon and evening meals. After the bromide has been taken for four or five days a preparation containing ten grams of bismuth subcarbonate, twenty grams of acacia, and 300 grams of sterilized distilled water is added in cases in which the bromide has apparently failed to benefit. The bismuth preparation is taken in tablespoonful doses every hour and a half from 7 a. m. to 9 p. m.; after three days the intervals are extended to two hours; after five days more to two hours and a half, and so on, according to the benefit resulting, up to twenty days. If constipation—not due to the bismuth under these conditions—should prove obstinate, only water and milk enemas, 400 grams of water to 100 grams of

milk, should be used, given slowly. Throughout the period of rest in bed, and at night thereafter, hot, moist applications over the entire abdomen should be made; they should also be used for five or six hours during the day after the period of rest in bed is ended. By this procedure all symptoms are removed except those directly reflecting the disease process itself. If in three or four weeks no results are obtained, one is authorized to refer the case to a surgeon for exploration, with the prediction that he will find either lithiasis, cholecystitis, or a pyloric or duodenal lesion. Usually he will discover complex lesions involving all these regions to a greater or less extent.

Infectious Diarrhea.—F. J. Kinberger (*New Orleans Medical and Surgical Journal*, January, 1920) gives the results of his study of this disease in babies during the summer of 1919. The onset is sudden, the incubation period variable, probably short and often only a few hours, and usually there are no prodromal symptoms. The temperature rises to 104° or 105° and the fever is continuous for several days. Prostration and often collapse is present and may occur within a few hours. Vomiting is early and severe. Extreme restlessness and convulsions are common. The stools number twenty to thirty in twenty-four hours and contain mucus, pus, and blood. Bacteriological investigation showed that the dysentery bacilli when grown in media containing an excess of carbohydrates, use the carbohydrates first and only enough proteid to furnish the nitrogen requirements of their living body structure. Treatment was formulated accordingly. A safe diet was a formula of fat free milk, ripened with lactic acid bacilli, a formula low in fat and protein with a sugar proportion of about five or six per cent. Hot stupes were used to alleviate the pain, paregoric to check excessive peristalsis. Caffeine sodium benzoate, one eighth to one half grain hypodermically, was found to be the best stimulant. Brandy by mouth according age. For the treatment of collapse, fluid by hypodermoclysis giving from four to six ounces every four hours, or six ounces of normal saline, or five per cent. dextrose intraperitoneally. Fuel in the form of five per cent. dextrose or glucose was given intravenously, in infants under eighteen months in the longitudinal sinus at the posterior angle of the anterior fontanelle, a special apparatus being contrived for this purpose. One to five minims of adrenalin, one in 1,000, was added at times to the dextrose. Sodium bromide according to age was best to control the nervous symptoms. Lumbar puncture was done to relieve intracranial pressure. In undetermined cases it is best to give diet and observe; if results are favorable, continue; if temperature rises, change to protein. The necessity of supplying fluids is urgent, as much as twenty-four to thirty-two ounces in twenty-four hours. The dysentery was treated dietetically with, aside from an initial dose of castor oil, very little medication by mouth. In cases past the acute stage a small dose of milk of bismuth was given if stools remained rather frequent. The prognosis should always be very guarded.

General Surgical Analgesia by the Spinal Route.

—Paul Delmas (*Bulletin de l'Académie de médecine*, November, 18, 1919) condemns the spinal technic of the Jonnesco type, i. e., introducing the anesthetic agent directly at the level of the nerve roots to be anesthetized, on the ground that accidental puncture of the spinal cord may result in permanent injury. Procedures involving puncture in the lumbar region are of two sorts, viz., that of Tuffier, in which the action of the anesthetic drug is limited to the roots below the level of puncture and in which, therefore, the analgesia does not extend to structures above the umbilicus; and that of Le Filliatre and its modifications, in which, by preliminary removal of twenty mils of cerebrospinal fluid, diffusion of the drug to the nerve roots at all levels is promoted. Cocaine is the most effective agent in this procedure, but its employment for the purpose has become permissible only by virtue of modern technic, in which the drug, extremely sensitive to heat, is sterilized by dissolution in absolute alcohol, precipitation with anhydrous ether, and desiccation in vacuo. Under these conditions the drug acts in a uniform manner and is devoid of toxic effects in the customary dose.

The author's procedure, which is modified from that of Le Filliatre, aims at uniform cocainization of all of the cerebrospinal fluid, impregnation of all the posterior nerve roots, and consequently, general surgical analgesia. The puncture is made in Chipault's lumbosacral space, located by counting down along the midline below the line joining the ilia, four, four and a half, five and five and a half. With a twenty mil Luer syringe, twenty mils. of cerebrospinal fluid are withdrawn and discarded. An ampoule containing 0.05 gram of purified cocaine hydrochloride is opened with a file, five mils of cerebrospinal fluid collected in it, the solution drawn up into the syringe, the latter attached to the needle, and the injection made, enough fluid being drawn into the syringe in the process to secure a ten mil dilution. The final injection of the fluid into the subarachnoid space is made forcibly. The needle used is seven centimetres long and seven fifths of a millimetre in its internal diameter. The patient is then placed in recumbency. Analgesia of the entire body comes on immediately and lasts about an hour, one centigram of the anesthetic yielding, on the average, fifteen minutes of analgesia. The motor and special sensory nerves are not affected. There is no immediate or late side effect. The field for the procedure thus includes all cases in which inhalation anesthesia is contraindicated. The patient must not sit up for twenty-four hours, but may take food at once and need not be starved before the operation. The procedure is contraindicated where lumbar puncture is attended with risk, e. g., in cases with infection in the vicinity of the puncture site, brain tumor, or advanced arteriosclerosis suggesting possible weakness of the pial vessels. The uniform results and harmlessness of the procedure have been demonstrated by a series of nearly 600 cases without a fatality or untoward symptoms.

Diathermy.—N. Patterson (*Lancet*, December 6, 1919) details the use of diathermy in the treatment of malignant growths in the mouth and upper larynx. The method requires a high frequency current applied over the abdomen by a large electrode protected with several layers of lint soaked in saline, and an applying instrument of a shape suited to the work at hand. Heat is produced in the tissues about the applicator and the albumin is coagulated at a distance from the point of application. It is particularly suited for malignant growths, as the heat not only produces a sloughing of the tumor tissue but also kills the cancerous cells in the adjacent tissues without disturbing them and so lessens the danger of starting cells on their way to set up metastases.

Twelve advantages of diathermy over cutting are enumerated, as follows:

- 1, Bloodlessness; 2, total destruction of neighboring tissues; 3, sterilization of field; 4, destruction of tissues at a distance from the electrode; 5, sealing of vascular structures, preventing absorption of bacteria and toxins; 6, less resulting shock; 7, ease of use on recurrences; 8, production of denser scar which acts as a wall in recurrences; 9, ready use in more or less inaccessible places without wide cutting for exposure; 10, clearer definition of involved tissue because of bloodlessness; 11, usefulness in patients too old or feeble for operation; 12, possibility of approach from surface of origin.

The method is as follows: Apply electrode before turning on current; draw a line three quarters of an inch around the lesion and destroy everything within this line; scrape away the coagulated tissue (scraping with vulsellum forceps stretches normal tissue while it tears tumor tissue), and repeat until the tumor is destroyed, also tissue three quarters of an inch beyond it on all sides.

Another satisfactory method is to use the electrode as a cutting instrument to remove the tumor *en masse*. A dull electrode should be used unless the tissue is not very vascular or unless ligation of the vessels has been done. In such cases a sharper cautery may be used, but it enhances the danger of hemorrhage though allowing of much greater speed. When the mass has been removed the bed of tissue remaining should be subjected to thorough diathermy. The complications to be watched for are sloughing and swelling, with possible aspirations of tissue or obstruction of the air passage in laryngeal cases, hemorrhage, and difficulty in removal of adjacent metastases due to the matting together of parts by fibrosis. Removal of involved nodes should be performed three or four weeks after the primary operation. The use of diathermy for this purpose is not satisfactory. The after-treatment consists of frequent cleansing of the mouth with a mild antiseptic, a fluid diet, getting the patient up in a sitting position as early as possible, and the symptomatic treatment of pain, hemorrhage, etc. The results have been satisfactory considering the type of late, often inoperable cases, in which the method has been used. In early cases it should give much better results than the knife and should always be used in preference to surgery whenever possible.

Proceedings of National and Local Societies

MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

*Stated Meeting held at New York Academy of
Medicine, November 17, 1919.*

The President, Dr. EDWARD E. CORNWALL, of Brooklyn,
in the Chair.

SYMPOSIUM ON ENDOCRINOLOGY.

Indications for Internal Glandular Therapy.—

Dr. WALTER TIMME, of New York, presented a paper dealing with the more important phases of endocrine therapy and the indications for its application. He also gave many diagnostic points of interest. The address will be found on p. 226 of the current number of the NEW YORK MEDICAL JOURNAL.

Endocrine Neurosis and Their Treatment.—

Dr. M. ROGERS, of New York, defined the term endocrine neurosis and showed the close relationship between the endocrine organs and the involuntary nervous system. He also showed the close interrelationship of the various glands of internal secretion. The deductions reached from his studies as far as he has gone will be found in his paper on p. 229 of the current issue of the NEW YORK MEDICAL JOURNAL.

Dr. ROBERT T. MORRIS wished to know from Doctor Rogers if the exophthalmos might not represent elective affinity of Landström's muscle for some one of the morbid enzymes in the circulation in the type of goitre affection described. The symptom of exophthalmos usually developed at the time of the highest vagus drive. At that time Landström's muscle became spastic. The ordinary function of this muscle, which was attached about the periphery of the orbit, consisted in the offsetting of the pull of the oculomotor group of muscles. These would act mechanically from their fixed points in such a way as to draw the eyeball too firmly back into its socket, if it were not for the counteracting influence of the Landström muscle. The latter could not be brought into a spastic condition by the experimental use of thyroid extract, but perhaps some enzyme produced coincidentally at the time of the highest vagus drive exerted selective influence upon this muscle, throwing it into a spastic state and caused a protrusion of the eyeball greater than the power of the oculomotor group to exercise control over the position of the eyeball.

Dr. W. H. SHELDON said that for a number of years he had had the opportunity of studying Doctor Roger's work at Cornell Medical Clinic. That while he had been very sceptical at first as to the value of Doctor Rogers's treatment he had gradually been convinced of the curative effect of the treatment in certain types of cases. Moreover, Doctor Rogers had cured or greatly improved the condition of a large number of patients whom he had referred to him from private practice. In listening to the papers of Doctor Rogers and Doctor Timme he had been impressed, especially in

Doctor Timme's paper, with the fact that bias in favor of endocrine therapy had led the speakers to take much for granted that had been far from proved. He suggested that instead of assuming that certain patients had an endocrine disease that those interested in the question should describe certain symptoms and physical characteristics of a group of patients and then study them carefully, using all of the methods of diagnosis, and observe the effect of various forms of treatment. Only by observing the changes in the patients' conditions, if possible by means of calorimetric studies and blood examinations, strength tests and weight charts, could we be certain of the effect of treatment by means of the glands of internal secretion. If those interested in endocrine therapy would pursue such a scheme it would do much to bring clarity to the entire subject. As it was, too much reliance was placed upon the words of the patient, which, as was generally conceded, is a very unreliable method of judging improvement under any method of therapy.

Dr. HARLOW BROOKS said that he was intensely interested and much confused both as to what he himself thought and what he thought the two speakers thought. We were all working at these things but were somewhat in the dark. We should first establish fairly definite types, which have not yet been established, and then try to establish some sort of relationship of the ductless glands with these connected types. Until that was done, we would be working to a certain degree in the dark.

Doctor Draper said that the discussion had been very interesting and made him feel more and more that perhaps there were two methods of learning to swim. One way was to throw the boy overboard into deep water and let him swim; the other way was to begin very carefully to explore the film of water that slides up from the sand. Doctor Rogers had bravely plunged in and Doctor Timme had showed the other method; he had been paddling carefully on the sands, and sooner or later both of them would be swimming with good powerful strokes. The scientific method, unfortunately, had not been applied to the study of endocrinology. Doctor Timme's work illustrated what was being done in various places in the attempt to rationalize and make possible a careful study of the anthropomorphological attributes. That should be extended into the biological field and into the psychological domain. It was only by correlating these various fields and by really controlling the observations that progress could be made. Much of the work that had been done lacked control. The attack was very good, just as empiricism had led the way. The old women used to cut foxglove and make tea for various ailments, and later on it was shown that digitalis was the active principle. We have been experimenting with thyroid, and pituitary, and various other extracts from the glands, and have obtained very excellent results. Recently an important substance had been isolated from the pituitary; it may be the active principle. We must

not scoff at these efforts. Every one has an imagination, and every one hopes to use it, but not every one is careful enough to use scientific methods in following up this work.

Dr. TASKER HOWARD, referring to the action of the heart in hyperthyroidism, asked whether he was correct in understanding that the tachycardia was due to metabolic disturbances affecting the heart muscle rather than to the influence of the thyroid on the nervous mechanism of the heart. The fact that the autonomic nervous system was stimulated during hyperthyroidism might explain the fact that so little response was obtained in this condition by the use of digitalis. He asked Doctor Rogers whether in his experiments there was noticeable the same immediate vagal effect upon the heart that had been noted with the stomach.

Dr. FOSTER KENNEDY recalled the fact that he and most of his audience had received an education which was in the main the outcome of the materialistic teachings of the nineteenth century; by which they were confirmed in the study of pathological specimens and of morbid anatomical structure, given over to the examination of dead cells in sectioned tissues. They looked for the explanation of morbid processes in gross anomalies of structure. Freud's philosophies were the reaction to that narrow line of thought and urged us to interest ourselves in mental mechanisms without paying any attention to the body in which such mechanisms were lodged. Such doctrines did much to offset materialism in physiology and directed the attention of physicians to the study of personality and the results on personality of circumstance and environment. Unfortunately, or perhaps happily, these doctrines and disciples suffered from an essential lack of humor, which indeed is but another way of saying a lack of the sense of congruity and proportion, and the followers of this cult in reducing life processes to their lowest common denominator, failed to avoid their own inclusion in the general declension. Freud's symbolistic theories were extended just as the Bolshevik theories have been extended—beyond the threshold of laughter—the prayerbook revised by the Bolsheviks supplants an autocratic God by a president of the heavenly republic, and Strunsky lately was quite in the Freudian vein when he demonstrated the moral obliquity of the works of Euclid when reviewed with sufficient predisposition. It would seem that now we had reverted to the humoral philosophy of the eighteenth century, we were in danger of an exaggeration similar to that shown in the other medical eras. It had been said that Hughlings Jackson's guess was worth ten men's facts; but it was not given to many to have such certainty in assumptions—and even Jackson put forward his hypotheses tentatively and with some misgivings and fear.

An illustration of this need for humility in the face of knowledge was the lecturer's remarks about the two brothers with pseudohypertrophic palsy. In one case he said the disease was progressing while the other case was—rather cursorily—said to be under treatment and on the highway to cure. Doctor Timme did not say what had been done

for this latter boy, but his somewhat light touch had suggested that the boy who was more seriously ill could also have been healed had he begun glandular therapy earlier. Doctor Rogers has shown that the gastrocnemius was capable of experimental stimulation and activity if not already quite fatigued—but that after utter muscular exhaustion no stimulus could be effective; a scientific endorsement of the value of the beauty sleep before midnight and therefore a scientific challenge to Doctor Kennedy to resume his seat and allow his hearers to depart.

Doctor Timme said in closing that the subject of his paper was indications for internal glandular therapy, and he had endeavored to give these indications. The program did not require him to say anything about types or classifications. He had only endeavored to show some indications for treatment. No criticism had been made of that. The criticism that had been offered had been made on some of the incidental therapeutic statements. Replying to Dr. Foster Kennedy's inquiry whether cases of pseudohypertrophic paralysis, if seen early enough, could be cured, he said that of course he had not meant to make any such statement. There were only two cured cases on record. He had some cases that were going on to improvement. One of the boys which he had shown on the screen was improving. The other boy was more advanced when first treated, and was losing ground. This older boy had a pineal shadow; the younger one had none, and the speaker thought that this made a difference in the prognosis. Doctor Timme said that he had been criticized for not presenting fixed types, with definite laboratory status, prognosis, and necropsy reports. He had not done that to-night, nor had Doctor Rogers, but such work had been done, and if his hearers would read the literature they would find a number of such types in which these points had not only been advanced and discussed, but in a certain number of instances with lethal termination the cases had gone to autopsy and the diagnoses had been confirmed. Many such autopsies had been recorded. Important work was being done, but the subject was a new one and no one could expect to have a finished production presented in this early stage. If such expectation was the attitude of any one before he could believe he was to be pitied. If just a little sympathy and patience were exhibited toward the pioneers instead of destructive criticism, something surely would be learned. The subject was intensely interesting and much good had already been accomplished. The same response could be made to Dr. Harlow Brooks's remarks. It was highly desirable that these conditions should be classified by types, with scientific and autopsy reports of cases, and other data, but the subject was a new one, and these deficiencies would be supplied in time.

Doctor Draper had expressed the right idea; there were many ways of approaching the subject, from the viewpoint of surgery, neurology, physiology, etc., but no matter what the portal of entry, all observers were gradually getting on a more or less common ground with mutual recognition.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

The Principles of Gynecology. By W. BLAIR BELL, B.S., M.D., Lond., etc.; Gynecological Surgeon, Royal Infirmary, Liverpool; Lecturer in Clinical Gynecology in the University of Liverpool; Sometime Examiner in Gynecology and Obstetrics to the Royal College of Physicians and Surgeons, England, and to the Universities of Durham and Belfast; Arris and Gale Lecturer and Hunterian Professor, Royal College of Surgeons, England. Illustrated. Third Edition. New York: William Wood & Co., 1919. Pp. x-660.

The third edition of this valuable textbook appears within eight years of the publication of the first edition. Few changes were made in the second edition, but the demand for the book was so great that the printing of a new book was called for. This record for a scientific textbook is very significant. The reason is not far to seek. The author has brought the results of his simple painstaking work directly from his practice and presented them to the medical profession. His aim has been to create a useful book, a book that can be referred to in every day practice, where information on gynecological topics can be obtained in a concise and yet authentic form. He has succeeded. Theories are not given much space. Even the favorite subject of the author, calcium secretion and metabolism, are not given more space than they would receive in a textbook written by any other gynecologist who had no special interest in the subject.

There are no ponderous explanations, technic is explained in a direct fashion, and the illustrations help to clarify the steps of the various operations devised. The physiological aspects of menstruation, involution as well as the incidental pathological conditions encountered, are treated in an attractive manner, attractive inasmuch as there are no cumbersome passages cluttering up the text and the objective point is reached directly. As in the former editions, proper names have been omitted whenever possible and references have not been made use of. It is an ideal book, of its kind, for the student and busy practitioner.

The Practitioner's Manual of Venereal Diseases. With Modern Methods of Diagnosis and Treatment. By A. C. MAGIAN, M.D., Ancien élève de l'Hôpital St. Louis, Paris; Hon. Surgeon, Manchester French Hospital; Hon. Surgeon, Wood Street Clinic for Genitourinary Diseases. Illustrated. St. Louis: C. V. Mosby Company, 1919. Pp. 215.

In this little manual of 215 pages, the author has given us a book that should be in the hands (not on the shelves) of every medical student and practitioner who wishes to treat venereal diseases. There is a vast fund of medical and historical lore concerning these diseases that ought to be known by all practitioners. The teaching is thoroughly up to date, conservative and efficient; and the manner in which the subject matter is presented must appeal to all readers because of the fascinating,

free and limpid style in which the book is written. On the whole, the reviewer feels this is by far the best little book on venereal disease that has come to his notice in many years, and does not hesitate to recommend it most heartily.

The Errors of Accommodation and Refraction of the Eye and Their Treatment. A Handbook for Students. By ERNEST CLARKE, M.D., F.R.C.S., Ophthalmic Surgeon to the King George Hospital, Queen Alexandra Hospital for Officers; Consulting Surgeon to the Central London Ophthalmic Hospital; Consulting Ophthalmic Surgeon to the Miller General Hospital. Fourth Edition. Illustrated. New York: William Wood & Co., 1918. Pp. v-243.

There is little to be added to what has already been said concerning this work as it appeared in the three previous editions. The author states that he has thoroughly revised the work and rewritten many chapters so as to bring the contents up to date, but the reviewer has failed to note any essential changes. The character of the book is the same, and the need of a fourth edition shows that it is appreciated among those who require a small work on this subject.

Births, Marriages, and Deaths.

Died.

BALL.—In Williamsport, Pa., on Saturday, January 31st, Dr. Francis Pollock Ball, of Lock Haven, aged sixty-three years.

BOBB.—In Philadelphia, Pa., on Sunday, January 25th, Dr. Wallace G. Bobb, aged sixty years.

BOWLES.—In New York, N. Y., on Wednesday, January 28th, Dr. Fred J. Bowles, aged sixty-seven years.

DALY.—In Livermore, Cal., on Tuesday, January 6th, Dr. Bernard Daly, of Lakeview, Ore., aged sixty-two years.

GENZMER.—In Verona, N. J., on Friday, January 30th, Dr. George Victor Genzmer, aged twenty-nine years.

GUINAN.—In Rochester, N. Y., on Sunday, January 4th, Dr. Peter C. Guinan, aged sixty-four years.

HAUSER.—In Camp Grant, Ill., on Sunday, January 18th, Lieut. Raymond Jack Hauser, Med. Corps, U. S. Army, of Danville, Pa., aged thirty-four years.

HUGHES.—In Ipava, Ill., on Friday, January 23rd, Dr. Edward Burns Hughes, of Canton, aged seventy-nine years.

KANE.—In Brooklyn, N. Y., on Friday, January 23rd, Dr. John Austin Kane, aged forty-two years.

KEARNS.—In Middletown, N. Y., on Wednesday, January 21st, Dr. Robert Kearns, aged forty-four years.

PHELPS.—In Spartansburg, Pa., on Monday, January 5th, Dr. Byron H. Phelps, aged seventy-six years.

RICE.—In Chicago, Ill., on Thursday, February 5th, Dr. May Cushman Rice, aged fifty-seven years.

SCHNECK.—In Indianapolis, Ind., on Wednesday, January 21st, Dr. Luella M. Schneck, aged fifty-three years.

WILSON.—In Johnson City, N. Y., on Wednesday, January 21st, Dr. William H. Wilson, aged fifty-seven years.

ZERBE.—In Schaefferstown, Pa., on Monday, January 26th, Dr. Thomas T. Zerbe, aged seventy-three years.

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Original Communications

FLUCTUATIONS OF THYROSUPRARENAL ACTIVITY IN GENERAL DISEASES.*

BY CHARLES E. DE M. SAJOUS, M. D., LL. D.,
SC. D., F. A. C. P.,
Philadelphia.

In January, 1903, I submitted personal interpretations of the functions of various endocrines, which seemed to me to warrant the prediction made at the time, that these organs would modify profoundly our conception of practically all diseases. In the second volume of the same work published in 1907, I illustrated the bearing of this prediction by analyzing the symptomatology, pathogenesis and treatment of over one hundred diseases, and also the pharmacodynamics of some fifty therapeutic agents. Until then, the diseases of the ductless glands themselves, Addison's and Graves's diseases, myxedema, cretinism, acromegaly, and some others had alone received attention, while the influence of these organs on the diseases we meet in every day practice had been overlooked. As considered in the present paper, the fluctuations of thyrosuprenal activity are treated in the latter sense, i. e., in their bearing upon general diseases.

In keeping with all innovations which tend to disturb profoundly the comfortable placidity of orthodox knowledge, the newer interpretations submitted failed to gain support at first. Yet, seed was being sown and the plant finally began to bloom. It must be admitted, however, that this was expected to occur some time, even though tardily, because the mode of work pursued practically insured it. No one more than I recognizes the commanding value of experimental demonstration; but if one grants such importance to one set of experiments, one must admit that many such experiments, fifty say, by different competent men working in kindred lines of research must prove correspondingly more reliable, when coordinated, as a foundation for a sound conclusion. Particularly must this be the case when each experiment used is analyzed and controlled through that great source of light, the clinical or practical field. I say practical field because I had learned while reviewing ten successive times the whole field of medicine from A to Z for my *Annual of the Universal Medical Sciences* and its successor, the *Analytical Cyclopaedia of Practical Medicine*, before I wrote *Internal Secretions*, that

experiments on animals often failed to afford conclusions that could be applied to the great biped man. We are told by physiologists, for instance, that adrenalin tends to inhibit both pancreatic activity and intestinal peristalsis; but in practice, therapeutic doses, even long continued, fail to show indications of any such effect which is obviously produced in animals by the use of relative quantities that are contraindicated in man. Again, that human diseases are themselves superlatively instructive as sources of physiological data has been emphasized by a great physiologist, Professor Pawlow, who wrote in this connection (1): "The world of pathological phenomena is nothing but an endless series of the most different and unusual combinations of physiological occurrences which never make their appearance in the normal course of life. . . . It is an interlinking of events the like of which," he adds, "could never enter into the mind of the present day physiologist." It was as a clinician, therefore, with the aid of all collateral data I could collect, including those afforded by physiology, besides personal laboratory work in anatomy, histology and biochemistry, and my current work as a practitioner, that I reached the conclusions submitted.

In the present paper I shall submit evidences showing that physiologists have independently confirmed what seemed at one time almost heretical views, viz., conceptions of functions either differing totally from those generally taught in textbooks of physiology, or which so far had remained wholly obscure. The far-reaching meaning of these conceptions, precisely where practical medicine has failed to decrease mortality, will be illustrated by a few examples.

The great function of pulmonary respiration, even as now taught, had been found defective for over fifty years when I first wrote *Internal Secretions*. It had failed to account for many phenomena witnessed. Bohr, a Danish physiologist, had emphasized the need in the blood of some substance capable of taking up the oxygen from the air in the pulmonary air cells. With Henriques, he subsequently (2) showed the presence in the alveolar walls of a substance actually capable of absorbing the atmospheric oxygen, "a sort of internal secretion," they said, but the nature of which they could not determine. A prolonged study of the subject, also in the clinical, laboratory, and collateral fields, besides the literature of the subject, led me to conclude that it was the secretion

*Read by invitation before the Philadelphia County Medical Society, January 29, 1920.

of the adrenals which carried on this all important function. The following were my words as written at the time (1903) after recalling that the adrenal secretion entered the inferior vena cava through the suprarenal veins, and passed through the heart to the lungs: "When the venous blood reaches the pulmonary alveoli, the marked affinity of the adrenalized plasma for oxygen causes it to absorb this gas from the alveolar air. The carbon dioxide in the blood is thus forcibly replaced by oxygen, and expelled with corresponding vigor. The red corpuscles, after this operation, bathe in an oxygen laden medium, and their hemoglobin becomes converted into oxyhemoglobin." (3) In 1917, Menten (4) of the University of Chicago, wrote: "The presence of adrenalin in the venous blood of the capillaries of the lungs undoubtedly induces changes which meet the conditions suggested by Bohr, as requisite for an alternative to the explanation of oxygen secretion, that is, adrenalin could act as a substance altering the property of hemoglobin so as to give it a greater attraction for oxygen as it passes through the lung." Working with Crile two years earlier the same author (5) had noted that the blood from the adrenal vein invariably assumed a bright red arterial color in from one to twenty minutes after dilution with saline solution, while blood from other organs treated in the same manner showed no change. The same phenomenon was observed with human venous blood, the cause of the arterial hue assumed being found spectroscopically to be due to the formation of oxyhemoglobin, thus confirming precisely my own findings of former years. Need I urge that this conception is bound to influence greatly our interpretation of pulmonary diseases and their treatment?

Another kindred line of work in which confirmation of conclusions followed ultimately refers to the nerve cell. I had also urged in 1903 that all nerve fibres—including the cerebral neurons—were the seat of active metabolism, with the adrenal ferment—which I term adrenoxidase—circulating in the axis cylinder and the cell body, the purpose of which was to supply the nerve cell its oxygen and sustain its respiration, in keeping with all other tissues. Not only has the presence of adrenalin in the axis cylinder of nerves been confirmed by Lichwitz, but so able a biochemist as Professor Macallum, of Toronto, has found in sympathetic nerves a substance corresponding in its reaction with this adrenal principle. More recently others have found as I had, that the nerve cell was the seat of a respiratory process and of active metabolism. The investigations of Tashiro (6) at the University of Chicago, have demonstrated that "nerve fibres have a metabolism as active as any tissue in the body. Ganglions appear to have a somewhat higher rate than the nerve fibres. Such estimations as have been made of the oxygen consumption of the brain, an index of its chemical exchanges, place it at a figure decidedly greater than that of the skeletal muscle. Evidently then, the nervous tissues are not devoid of a vigorous respiration," thus again confirming my own conclusion. Need I urge that a knowledge of the

circulation of the nervous system, which Harvey could not possibly discern through lack of technical facilities, will fundamentally transform our conceptions of nervous and mental diseases?

The clinic affords evidence even now, if looked at in this light, that respiration, the very life of the tissue cell, is influenced by the adrenal hormone. The value of adrenalin in asthma, and in heart failure following acute infections and other disorders, now belongs to the domain of common knowledge. Indeed, our very drugs looked at from my viewpoint, give us control, as it were, of the furnace of life by increasing the oxygen intake of its cells. Again, as far back as 1903, I (7) suggested, on pharmacodynamic lines, that strychnine owed its powerful influence on the oxygen intake and the carbonic acid output to stimulation of the adrenals. Recently, Stewart and Rogoff (8) found that therapeutic doses of strychnine caused a marked and lasting increase in the production of adrenalin.

Pneumonia, and the same might be said of pulmonary tuberculosis, affords an example of the sacrifice of human lives that neglect of the endocrines in general pathology and diagnosis entails. Under normal conditions, that is to say, when epidemics of pneumonia do not prevail, a large proportion of the deaths are due to its senile form, which the late Doctor Osler once termed "almost the natural end of old men." Now this form is practically an expression of adrenal failure, of "terminal hypoadrenia" from the start. After a brief reaction to the infection, slight fever, a very moderate rise of blood pressure, practically no chill, but little if any cough and expectoration and no pain in the chest, there occurs as Elsner (9) expresses it, "rapid lowering of the arterial tension, marked lividity, edema of the lungs and extreme asthenia." He also mentions dilatation of the heart, particularly of the right side, as a frequent complication which he states "sometimes precedes the infection," thus suggesting that the infection itself may be secondary to the adrenal failure. All this applies also to weaklings of all ages in any form of pneumonia. Weak adrenals mean weak metabolism and weak defenses.

But why this early failure in the elderly? Because in them, as colored injections have clearly shown, the vessels of the adrenals have become sparse, and the organs correspondingly deficient. In the young adult, the vessels stand out luxuriantly as does a virile bush in the spring; in the aged, they simulate the same plant, but shorn of its leaves and of the majority of its branches. The winter of life has come. Now, identifying this so-called pneumonia, if you please, as a pneumococcic hypoadrenia, and treat it accordingly, and you will prolong many lives rendered precious, as in Doctor Osler's case, by mature experience.

Senile pneumonia is but one of many diseases that could be used to illustrate what failure of the adrenals, now virtually ignored, may do to perpetuate high mortality. We will now turn to what excessive activity of these organs, acting in conjunction with their coworker in metabolism, the thyroid gland, may bring about in the clinical field.

Another feature which favors the work of the fella reaper, and perpetuates much suffering in this connection, is the neglect by clinicians of the defensive functions of the thyroid apparatus. The observations of many physiologists, pathologists and clinicians have clearly shown: 1, that removal of the thyroid apparatus reduces markedly the antitoxic and bactericidal properties of the blood; 2, that these properties are restored by giving thyroid gland; 3, that the blood and urine are rendered more toxic by removal of the thyroid apparatus, but that this unusual toxicity is removed by giving thyroid gland; 4, that animals are rendered more susceptible to infections by removal of their thyroid apparatus, but that they can be protected against certain toxins, particularly those capable of causing a febrile reaction, by giving thyroid gland. My own labors indicated that this antitoxic action of the thyroid secretion was similar to that attributed by Sir Almroth E. Wright to opsonins, and also that it was a component of the systemic antitoxins or alexins. This has been confirmed by several European experimenters, Fassin, Stépanoff and Marbé, the two latter of the Pasteur Institute. Frugoni, Grixoni and other clinicians, including myself, have found, moreover, that thyroid medication influenced favorably both auto-intoxications and infections.

With this defensive function before us we can readily understand why it is that focal infections, dental, tonsillar, intestinal, and many others, so frequently cause hyperthyroidism, and why it is that elimination of the toxic focus so frequently proves the turning point of recovery, with appropriate medication calculated to subdue the thyroid erethism. While the gland is overactive, however, in order to carry on its defensive rôle, we see it also produce phenomena, rapid emaciation, for instance, which clearly show that it also, as do the adrenals, activates general metabolism. Indeed, as stated by Kendall, of the Mayo Clinic, who recently isolated the most promising active principle of the thyroid: "The changes occurring in a patient with thyroid deficiency or in an experimental animal by the administration of thyroid are so great that practically every cell within the animal organism is changed. The effects are felt throughout the nervous system and the circulatory system; the rate of metabolism is enormously increased." Although he attributes the effects of his thyroxin to an interaction between it and amino acids, this does not explain the action on the nervous system. Clinicians know that in hyperthyroidism there occurs an increased excretion of phosphoric acid, while the clinical nervous phenomena are so marked that Graves's disease has been considered by many, including Professor Putnam, of Harvard, as a neurosis. The action of the thyroid on the metabolism of the nervous system which Kendall recalls need not be doubted.

If we add to prevailing knowledge of hyperthyroidism, the fact that it is usually because the defensive activity of the gland is enhanced that it becomes enlarged, the evil work of focal infection is not only elucidated, but our curative efforts are directed towards the real seat of trouble. Again,

knowing that the myelin of nerves is rich in lecithin or phosphorized fats and that the thyroid secretion when in excess breaks down fats, we know why the nervous system also breaks down in hyperthyroidism and why mental symptoms occur, i. e., owing to a similar effect on the phosphorized fats of the cortical cells. It explains why rest is so important, because exertion by adding wastes to the blood, increases the defensive work of the gland and the morbid process as a whole.

Another application of this process has seemed to me to prevail in one of the most distressing of mental disorders with which psychiatrists have to contend today, i. e., dementia præcox, which sends 30,000 of our boys and girls, often our brightest ones, to insane asylums each year, to remain there until they die. Indeed, of the 21,070 patients in the New York State hospitals during the fiscal year ending June 30, 1917, only twenty-one, less than one tenth of one per cent., were discharged cured. Recent reports indicate, moreover, that dementia præcox cases represent over fifty-three per cent. of our asylum inmates.

The usual therapeutic methods having proved so sterile in the severe cases that drift to the asylums, a possible connection between the endocrines and dementia præcox suggested itself. Search in the literature showed, indeed, that a kinship between the symptomatology of this disorder and hyperthyroidism had long been observed, to such a degree in fact, that Berkley and Follis and others had performed partial thyroidectomy, with more or less benefit in early cases; that Dercum and Ellis, and more recently, Byron Holmes, had also incriminated the ductless glands; that Régis, of Bordeaux, and also Krapelin had urged the importance of a toxemia in the disease, and, finally, that Byron Holmes had laid stress on the importance of focal infection and had had a few good results by means of an appendicostomy that enabled him to wash out the cecum and colon. These certainly were excellent and suggestive clues.

Among my cases was one of two years' standing in a fine boy of fourteen and a half years, suffering from a severe form of the acute catatonic type, one of the kind which I would term the "hyperthyroid type" (for there are others) which leads to the asylum. So violent, in fact, were the periodical exacerbations that the straightjacket had to be used and the feet fastened to the bedposts. Psychiatrists had either advised rest or postponed reexamination six months. My own examination failed, however, to reveal the more familiar signs of hyperthyroidism, but showed the presence of the less known signs of this condition, in some of which adrenal signs also take part: dilated pupils, low blood pressure, swarthy skin bordering on cyanosis, and other clinical signs. This tentative pathogenesis I proved by the temporary use of desiccated thyroid and suprarenal gland in small doses, which considerably aggravated all symptoms. Physical examination having suggested intestinal stasis, an x ray examination of the cecum with a barium test meal showed a forty-eight hour detention fecal stasis. This being uninfluenced by high enemas and purgatives, Dr. Ernest Laplace

performed for me a cecostomy (the appendix having been removed several years before) for the purpose of washing out the cecum daily. All meats, even fowl and fish, were removed from the diet, and one composed of fats and carbohydrates substituted, with eggs after the third week. When the process of detoxication was deemed sufficient to arrest the thyrosuprarenal erethism which caused excessive catabolism of the fats and fatty acids of the cortical and other nerve cells, persistent effort was made by the use of lecithins, and a diet rich in fats, to restore the functional efficiency of these cells.

Steady progress, thenceforth, asserted itself; the cecocolonic flushings have now been stopped for about four months. The child is well physically and mentally; the periodical attacks, which came on about every ten days have ceased; all thyro-adrenal symptoms including emaciation have disappeared. His weight, 102 pounds when very ill eight months ago, is now 149, and his blood pressure formerly very erratic between 92 and 110 systole, is now 134.

Although I know that these patients are subject to remissions, I do not expect any in this instance. There was doubtless, as in most cases of dementia præcox, a biochemical instability of the nervous system, particularly of the cortical cells, underlying the attacks, but abstinence from certain foods, and measures to avoid recurrence of the intestinal stasis, thus preventing the pathogenic hyperthyroidism, will, I believe, prevent recurrences. So far these have occurred in other cases, from my viewpoint, only because the toxicothyrogenic mechanism, besides the psychogenic, had not been taken into account and was left to perpetuate the malady.

Doctor Laplace who operated on the patient has characterized the recovery as miraculous. Yet, it only represents, I am convinced, what is to be expected in many now obscure nervous and mental diseases, when the endocrines will have been given their true place in pathological physiology. Laignel-Lavastine, a prominent neurologist of Paris, in his recently translated book (10) states that since his report at the Congress of Dijon in 1908, where "he insisted on the importance of these glands in neurology and psychiatry, the glands of internal secretion, heretofore ignored, have now become the special study of medical men." But I had preceded him, first in 1903, with a careful histological and biochemical study of the nerve cell, covering seventy-two pages, which we have seen has been sustained experimentally; and in 1907, what at the time appeared to be warranted conclusions concerning our most common nervous diseases. These views also, time and additional experience have sustained in many respects. We are even now better prepared, therefore, than the French profession to develop neurology and psychiatry in the physical direction these branches still need, for while the French have developed their knowledge on purely clinical lines, we possess a solid foundation in the circulation and metabolism of the nerve cell which will enable us to account for the disorders observed, and perhaps, to master them.

Before closing, permit me to refer briefly to a disorder which is causing us all anxiety; epidemic influenza. I urged in 1907 that this disease was an acute neurosis, with more or less marked paresis of the sympathetic system which, as you well know, has also been called the chromaffine system, owing to its wealth in adrenal medulla. The toxin or filtrable virus of the disease, from my viewpoint, causes a paresis of the adrenal functions, which inhibits, therefore, general oxidation and metabolism, thus causing the familiar asthenia and low blood pressure. The arterioles of all tissues, deprived in part of their adrenal hormone, are thus dilated, causing circulatory disturbances in various organs. In France, many clinicians, Lesné, Lereboullet, Lyon and others, also refer to a vasodilating action of the disease toxin, and give adrenalin, from five minims every hour orally, not exceeding forty minims daily, to fifteen minims of the 1-1000 solution orally three times daily. Recently Cowie and Beaven (11), in view of the asthenia and low blood pressure that are so characteristic of influenza and the pneumonia attending it, tried to ascertain whether hypoadrenia, i. e., failure of the chromaffine system did exist to account for the symptoms. They found hypoplasia of the adrenals at autopsy and evidences of inhibited function, thus confirming my own views. Finally, we know that strychnine is our best tonic during convalescence. As we have seen, I had pointed out that it did so by stimulating the adrenals, while Stewart and Rogoff found recently (1919) that it stimulated powerfully the adrenals.

This suggests what might prove to be a physiological prophylactic against influenza: a capsule containing one grain of desiccated thyroid gland (American preparation), to enhance our defensive functions and general metabolism; suprarenal gland two grains, to provide against any existing deficiency of adrenoxidase; and strychnine one fiftieth grain, to insure full activity of the adrenals. Taken three times a day, after meals, this capsule acts so efficiently as a tonic that some subjects who take it are brought to realize that they had previously been debilitated, which means vulnerable to infection.

As the disease usually develops in young subjects, the contraindications are limited to those suffering from serious organic heart disorders and advanced tuberculosis. Adynamic functional types, on the other hand, will be benefitted. In middle aged and elderly subjects, clearly defined arteriosclerosis, especially in the plethoric with tendency to apoplexy, or angina pectoris, removal of the strychnine will obviate all danger. The need of prophylaxis asserts itself of course, only during an epidemic, but some subjects find their general health so improved that they persist in the use of the capsules much longer than is necessary. Ample nutritious food favors the protective process.

These few examples are intended only to outline the vast horizon that the endocrines offer for the elucidation and development of internal medicine as a whole and particularly those diseases the mortality of which we have failed to reduce. Our physiologists, pathologists and clinicians include

many men of the first order and our laboratories are surpassed by none. We still hold the lead; why not maintain it by united, virile and harmonious endeavor, with the great motive of our profession, to stay the hand of death and prevent suffering, as inspiration?

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THE PINEAL BODY: ITS STRUCTURE, FUNCTION AND DISEASES.

By SMITH ELY JELLIFFE, M. D.,
New York.

(Concluded from page 240)

CLINICAL PATHOLOGY.

The studies already briefly summarized, upon the comparative morphology, embryology, histology and neural integration pathways leave little doubt that the pineal gland has had in the past and for man does have distinct physiological functions. Before discussing the probable physiological functions, however, it seems desirable to discuss some chemiopathological data since the pathological method is so indispensable in throwing light upon functional features. The problem may then be further elaborated by a review of the evidence from the results of extirpation from pharmacological use of the substances of the gland, from feeding experiments and from grafting experiments.

When viewing the clinical pathological evidence it must be clearly borne in mind that the study of tumors of the pineal has shown that a variety of clinical pictures have been recorded that may result from modification possibly of the pineal alone, or from the effect that an enlargement of the pineal upon contiguous structures may cause so-called pressure or neighborhood syndromes, which while occasioned by the new growths in the special region, yet may have little or no bearing on the problem of pineal function *per se*; in fact they may even confuse the issues.

As an example the adiposogenital syndrome of Froehlich which has frequently been noted as a concomitant of certain pineal tumors, in all probability is due to an interference with vegetative reflex arc functions whose pathways pass through the hypophyseal stalk. The internal hydrocephalus that results when certain pineal tumors reach a certain size causes dilatation in the infundibular region,

compresses the vegetative fibres in the hypophyseal stalk, cuts out physiological pituitary balance (pars anterior) and causes the syndrome. We prefer to accent the neuroregulatory function of the pars anterior rather than the humoral function, for the elaboration of the proper hypophyseal hormones depends upon this, and Bell has shown and we have maintained this to be a truer explanation of Froehlich's syndrome than the strictly humoral interpretation. That both humoral and neuroregulatory factors may operate is possible but it is certain that any interference with the passage of nerve stimuli passing to and from the hypophysis through the stalk will most effectually modify the calcium, fat and other metabolic functions which are predominantly controlled through this important organ.

Further the corpora quadrigeminal pressure syndromes should be eliminated from this part of the discussion—also the more outlying features of pressure from hydrocephalus acting upon many other sensory motor or vegetative paths. Therefore limiting this part of the discussion to what may be more narrowly interpreted as lesions due to pineal body involvement alone the uncomplicated cases are comparatively few although a great variety of tumors may come under review, and which Bailey and Jelliffe, Seignur and Münzer have summarized, and that Kidd has ably reviewed.

The metabolic disturbances which have been referred to as due to pineal disease, whether hyperfunction or hypofunction cannot yet be determined, are:

1. Fatty metabolism factors, obesity.
2. Sexual precocity factors, macrosomia genitalis.
3. Muscle metabolism, dystrophy factors.
4. Mixed syndromes.

As has been stated the fatty metabolism factor, so far as the definite Froehlich's adiposogenital syndrome is concerned should be more definitely relegated to hypophyseal function. This leaves the sexual precocity features, and the muscular dystrophy and certain mixed cases.

Although Marburg must be given the credit for having called attention to the special and general syndrome his account of the more limited pineal symptoms seems to need some revision. It may be that fatty metabolism can be modified directly through pineal activity but the evidence seems to point rather to the secondary hypophyseal disturbances or a possible pluriglandular relationship, should such be shown to exist between the pineal and the gonadal structures. Whether the macrogenitosomia or sexual precocity depends upon a pinealgonadal interrelationship or a pinealgonadal-adrenal cortex complexus as a primary pineal syndrome is not yet established either, but macrogenitosomia seems to stand in a closer relationship, especially in the young, to primary pineal function than obesity.

Pellizzi on the basis of two cases, without autopsies and no definite evidence, beyond clinical resemblances that the epiphysis was involved, created the epiphyseal syndrome of *macrogenitosomia precocce*. As a number of definite pineal cases have shown this same feature we intend digesting some of these cases pointing out the evidence.

Pellizzi first reports a personally observed case as follows:

CASE I.—A boy five years of age of healthy parents. Growth was normal in infancy. At seven months the penis began to enlarge and the body weight was above the average. The dentition was retarded, the first teeth appearing at fourteen months; speech was retarded slightly until about the twentieth month when he commenced to use a few words. Erections were noted at the age of two and followed shortly by ejaculation. The body weight was above the average but the general mental development was not as robust as the physical development. Ejaculation occurred at night and also in the day time at weekly intervals; was not apparently induced by masturbation and the semen contained *hemaspermi numerosi*. The psychological development of the boy was retarded. He spoke many words badly, was capricious, bad tempered and vicious, and very irritable.

At his entrance into the clinic at Pisa he was four and a half years of age. His head was comparatively large, the body robust and strong, the skin was pink, the fat was ample but not excessive, muscular development good. The bony development was in good proportion. The teeth were sound, twenty in number; the penis was large, the entire genital apparatus like that of an adult and well covered with dark hair. The testicles were well developed. The axillary hair was also well developed. Radiographic study showed the ossification of an adult of from sixteen to nineteen years of age. The sella turcica was normal. Binet Simon tests showed a psychological age of about four.

The diagnosis of pineal involvement was evidently made solely upon the hypothesis that the *macrogenitosomia prococe* was *per se* due to pineal disease as no symptoms referable to this organ were present in the history. No pineal shadow was demonstrable on the x ray plate illustrating the head, which, as the author remarks, is not very good as it was hard to keep the boy quiet.

CASE II.—This history was taken from the notes of the clinic and not seen by the author. A. R. had entered the clinic in 1901. He was then five years of age. The parents were healthy. He was normally born, being one of ten children. He had a severe enteritis as a baby and then had some slight convulsive movements linked to the ocular muscles at the age of six months. They then became general but were not severe. When he was a year old he was somewhat rachitic and hydrocephalic. The head was large, with prominent frontal bosses. The mental development was slow. At about the age of two the penis and testicles began to increase in size, the body remaining proportionate to the age. The muscles of the arms were larger than normal, those of the leg were flaccid, hypotonic. Marked voracity was present.

At five the boy was markedly hydrocephalic, with large asymmetrical head. The upper lip was hairy, also the pubis. The upper extremities were disproportionately large as compared to the lower. Abundant panniculus of chest and abdomen was present. There was no cranial nerve alteration.

The erections were marked; semen contained spermatozoa. He was good tempered and docile, affectionate to those who fed him, and spoke in monosyllables but was not capable of simplest reasoning. He died from gastroenteritis in 1902, having been taken home in order to avoid an autopsy.

As may be seen, the belief that this patient had pineal disorder is also founded solely upon the precocious genital development. Pellizzi then develops his thesis using the cases of Hudovernig et Popovits, Ogle, Oestreich and Slawzk, Frankl Hochwart, Gutzeit, Parhon and Zalplachta, and only really raises the question of a possible reciprocal relation between hypopineal and hypergonadal function which needs much more proof than we have at present to admit except as a working hypothesis.

Machell's case, which Kidd has reviewed in detail, is also inconclusive, and the cases of Ogle, Oestreich and Slawzk, Frankl Hochwart, Gutzeit, Parhon, Zalplachta and Bailey and Jelliffe may readily be grouped under hypophyseal dystrophies.

What does cause precocious genital development and premature ossification, which in Hudovernig's case seemed to be much influenced by ovarian extract but not by thyroid or hypophysis, although the opotherapy was too massive, does not yet appear apart from the well proved relationship between pituitary function and bone metabolism.

The large question of adrenal cortex precocious sexual development enters into the discussion but cannot yet be taken up at this point.

Feeding experiments such as those of Foa, Berkeley and others will also be discussed later.

MUSCULAR DYSTROPHY.

Obesity has been excluded as a necessary pineal syndrome and this frequently observed symptom group has been relegated to a more limited hypophyseal syndrome due more particularly to interference with the neuroregulatory fibre pathways passing to and from the hypophysis by means of the pituitary stalk and chiefly occurring, so far as the pineal is concerned, to such mechanical factors as produce infundibular hydrocephalus.

We turn now to a new implication of the pineal syndromes brought into prominence chiefly by the studies of Timme. These are certain types of muscular dystrophy. Timme reports a somewhat atypical form of progressive muscular dystrophy, rather resembling Erb's infantile type of extremely benign and slow progress as a type of the disorder under discussion. Marked hereditary features have been observed and the generalization is based upon the study of about fourteen cases.

"Of the seven living members with the disease, all but two have been examined thus far (1917) by röntgen rays, and of these five, four show distinct changes in the pineal gland producing shadows in the röntgenogram. The fifth, a youth aged fifteen, whose affliction was rather of a different type than the others, in that the bony growth was abnormal, showed an enlarged sella turcica, but no shadows in the pineal as yet. Weighing all the evidence advanced by previous investigators (sum-

maries of which appear in Timme's original papers) to show derangement of the internal glandular balance in cases of progressive muscular dystrophy and giving due significance especially to the changes produced by tumors and diseases of the pineal gland on the various tissues of the body, changes that resemble in character, if not entirely in degree or disposition, those present in progressive muscular dystrophy, we must admit the extreme probability of the causal relationship between the two. If to this probability we actually adduce the evidence shown by cases of progressive muscular dystrophy of changes in the pineal gland demonstrated by röntgenology, the probability approaches closely to the proof that disturbances in the pineal gland play an important rôle in the pathogeny of progressive muscular dystrophy.

cretions may occur as early as the age of two. Marburg's hypothesis that the presence of the concretions is a sign of involution still awaits verification, with the evidence running away rather than toward it at present. Boas and Scholz in their study have found ten pineal shadows; in nine of these patients there were no neurological signs. A tenth was found in a patient with muscular dystrophy in a man aged forty-five. They are inclined to subscribe to the general hypothesis that the calcification is an evidence of senescence and is accompanied by marked arteriosclerosis and calcification elsewhere in the body. They believe the pineal functions only before puberty—a view to which assent cannot as yet be given unqualifiedly.

Timme promises a full report upon his interesting family group but in discussions has stated that pineal feeding in some of his dystrophy cases has given some excellent therapeutic results.

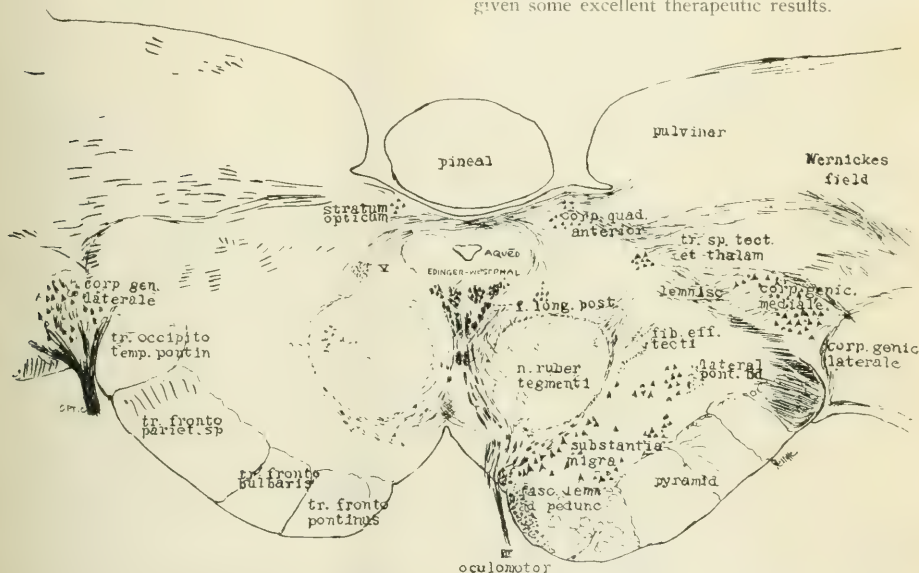


FIG. 4.—Section of the midbrain at about the middle, showing the lower level of the region involved in Benedict's syndrome.

Recognizing the criticism, that so far as his own cases are concerned, Timme relies upon the röntgen picture of pineal shadow as evidence, he quotes Schüller as stating that in older persons who already have reached the stage of calcification of the arteries the shadows are but evidences of such calcified bodies in the pineal gland. A study of 150 skull röntgenograms of nondystrophic patients had shown pineal shadows in two per cent. of the skulls examined.

Boas and Scholz (12) have made a comparatively recent study of pineal shadows and call attention to the early as well as the late appearance of calcium deposits in the choroid, pineal and habenular commissures, apparently being found, even in comparatively large amounts, as early as the seventh year. Krabbe (13) has shown that the con-

A final decision as to the part played if any, by the pineal upon the metabolism of the muscle acting through the vegetative balancing mechanisms, indicative on the histological evidence as a diminished sympathetic tonus (evidenced by the serum exudate and increased tissue tension as contrasted with a fibrosis) viz., hypersympathetic stimuli, cannot yet be given.

EXTIRPATION EXPERIMENTS.

Turning now to another aspect of the problem, attention may be focused upon certain experiments involving the removal of the pineal body. Kidd has collected and digested the evidence up to 1913. Dandy and others have repeated this work.

Sarteschi operated upon rabbits in 1910 and upon dogs in 1913, working in Pellizzi's laboratory and under the influence of this author's gener-

alization already discussed. His rabbits died. Of fifteen dogs experimented upon three survived, and as Dandy points out his operation did much more than remove the pineal. He maintained that in his young dogs adiposity developed. They also had precocious somatic and genital development and sexual precocity. What sexual precocity in a dog is has not yet even been determined by the students of animal behavior.

Exner and Boese operated upon rabbits, twenty two of the operations out of forty five were successful, and their results as to somatic or genital changes were nil; Kidd in commenting stated that the experiments were quite inconclusive.

Foa worked with chickens. In birds the epiphyseal complex is reduced to the same or similar elements as in mammals, namely the proximal portion of the pineal organ. It is markedly follicular in most of the genera. His results tended to show marked variations from the usual development of primary and secondary sexual characteristics. The animals at first were listless, but after three months began to grow rapidly. The cockerels crowed earlier; the combs and testes developed more rapidly and earlier than in control animals. Careful microscopical examination of all of the bodily tissues showed no marked variation from the control animals.

As Dandy puts it (p. 240) adiposity may result from feeding pineal extract (McCord, Dana, Berkeley) or by complete or partial removal of the pineal (Sarteschi). Sexual and somatic precocity may result from feeding pineal extracts (McCord, Dana, Berkeley), or from partial or complete destruction, (Foa, Sarteschi) or nothing may result from the feeding (Goddard) or from its partial or complete destruction. The extirpation experiments of Horrax were performed upon guineapigs and rats. His results point in the direction of hastened genital development in the pinealectomized animals. This is manifested before maturity by a relative increase in size and weight, both of the testes and the seminal vesicles. Histologically the testes and seminal vesicles of these animals, if taken before the age of sexual maturity, show a more advanced physiological state than their controls. The operated females appear to show a tendency to breed earlier than controls of the same age and weight. The experiments on rats, only just begun by Horrax, also tend to show some evidences of hastened maturity.

Such is, the paradoxical experimental support for Marburg's hypothesis of pineal function, says Dandy.

His own careful experiments finally developed an almost faultless technic in dogs and he concludes his study: "1. Following the removal of the pineal I have observed no sexual precocity or indolence, no adiposity or emaciation, no somatic or mental precocity or retardation; 2, our experiments seem to have yielded nothing to sustain the view that the pineal gland has an active endocrine function of importance either in the very young or adult dogs; 3, the pineal is apparently not essential to life and seems to have no influence upon the animal's well being."

The first of the series of conclusions seems to be justified but what the possible endocrine functions in a dog may be his observations do not warrant any such broad negation, and what human being knows much about what is essential to a dog's mentality, his life, or his well being, beyond the merest superficial observation that the animal behavior is superficially like that of another dog. It is not at all impossible that a competent and trained animal behaviorist might have found in trained or carefully observed dogs marked modifications in their behavior. Perhaps just living is all that should be expected of a dog, but what does one really know about it. At all events the experimental observation upon lower animals leaves us without any reasonable hypothesis which may be remotely related to the pineal function of the infinitely much more complex machinery of human life.

FEEDING EXPERIMENTS.

Many unreconcilable results on feeding experiments are recorded. This is but natural in view of the different types of animals used, the different doses, and the varying criteria used in comparison. Dana, Berkeley, Goddard, Hoskins and McCord have fed the various pineal substances to various animals. Dana and Berkeley first fed the pineal materials to young kittens. They interpreted their experiments as tending to show that such animals increased in weight, activity, intelligence and resistance to intercurrent disease. Guinea-pigs fed for four months increased more in weight than the controls. Rabbits fed for five months also grew heavier than the controls. Intraperitoneal injections of pineal nucleoprotein in guineapigs also resulted in accelerated weight development.

Extensive feeding experiments in feeble-minded children were undertaken, the chief conclusions that can be drawn that some were helped, others not and from the Vineland reports it would appear that the problem was of such great complexity that the interpretation of the results was not yet possible. Dana and Berkeley were in general optimistic that something happened; just what could not be accurately measured nor interpreted. The report of Goddard and Cornell, who followed out another series of experiments, showed less optimism although they too were of the opinion that something happened, but it was not definite enough to warrant continuing the experiments on the plan thus far formulated.

McCord's experiments, particularly those upon tadpoles, have opened up an entirely new line of thought, some of the implications of which have already been touched upon in our discussion of photosensitive functions and in the review of Jordan's work on lipid substances.

McCord's earlier feedings done upon chickens, guineapigs and dogs seemed to indicate that an increase in development, comparable to the results of extirpation experiments, was observable. In protozoa an interesting hastening of reproduction rate was observed and in tadpoles both growth and differentiation were hastened. The most interesting results, however, obtained upon feeding pineal substance to young tadpoles was a pronounced ef-

GENERAL SYMPTOMS OF PINEAL TUMOR.

When the tumor becomes large enough the general symptoms are usually the first to appear. In very early childhood the ununited sutures of the skull, or the presence of a soft or gelatinous tumor, may permit a large involvement with comparatively few signs (Schmidt case).

Headache, however, is likely to be present early. In children it may appear late only, and not infrequently the tumor may have been growing for a long time when a more or less sudden block causes an acute hydrocephalus and the appearance of a headache just before a fatal termination. Thus in Lawrence's case the pain began only ten days before death. Pappenheim's patient had marked headaches for only a period of seven weeks before death. Marburg had a case in which pain was not complained of. Frankl Hochwart's patient began to have headaches only four weeks before death.

In adults there is also no rule but the tendency is rather to later than earlier development of the headache and the onset of the headaches is probably determined when the tumor reaches a size sufficient to cause a definite hydrocephalic pressure. It may vary in intensity although this is unusual and the site of the headache offers little help in the diagnosis. Occipital headaches are frequently associated with some stiffness of the neck or even opisthotonos and often suggests meningeal syndromes. (Neumann, Morquira, et al.) At times the stiffness of the neck may even pass over into opisthotonic bending, and generalized extensor cramps; even convulsive seizures have been observed. These may be associated with loss of consciousness or not, they may be localized, but do not show typical Jacksonian features.

Giddiness is not frequent unless eye palsies are present, but anorexia, nausea and vomiting are frequent and develop more or less parallel with the development of the headache.

Retinal changes, chiefly in the nature of choked disc, nearly always develop as a pressure symptom. In nearly half of the reported cases of tumor of the pineal this pressure neuritis has caused blindness. In others irregular scotomata occur.

Somnolence and stupor are frequent. Whether this is better arranged as a symptom of general pressure or as a specific response to mesencephalic pressure is not yet definitely shown. With these marked grades of coma, incontinence of urine and feces may be expected. Occasionally this has occurred early and without disturbance of consciousness (Marburg) and is referred by him to thalamic pressure rather than to a general hydrocephalic symptom.

MESENCEPHALIC SYNDROME.

Lying as the enlarged pineal does directly upon the corpora quadrigemina, eye muscle palsies are to be expected when the pressure is directed here. In some large soft tumors direct pressure has been seen at autopsy but the mesencephalic syndromes have been absent.

Pupillary disturbances usually occur early. Mydriasis is the rule accompanied by irregularity. In

the recorded cases the right pupil has been more often larger than the left. This is thus far only a statistical fact and has no other known significance as it does not seem to correspond with the retinal picture, nor is it parallel with the general hydrocephalic pressure. Stiffness to light and to accommodation develop and even absolute light and accommodation fixation may develop.

Double vision is a not unusual appearance; or an eye muscle palsy a variety of which are recorded. Superior and inferior rectus palsy are frequent; deviate conjugation has been observed, strabismus, ptosis, trochlearis palsy and other palsies are recorded. Complete internal and external ophthalmoplegia are recorded. Magendie Hertwig's syndrome was present in Bailey and Jelliffe's case.

Protrusion of the eyeballs is an occasional and interesting symptom pointing towards some interference with the central *mesencephalic sympathetic* innervation. When the pressure from a pineal tumor is directed further backward involving the posterior quadrigeminal regions some auditory signs may be noted. Ringing and buzzing in the ears is the commonest of these. Loss of hearing, usually bilateral, but unequally so, may occur.

Pressure upon the cerebral peduncles may give rise to hemiparesis, or hemiplegias, which, as in Bailey and Jelliffe's cases, began as a weakness of the right upper extremity and then developed a left hemiparesis. Similar irregular palsies are recorded by Zenner, Joukovsky, Hösslin, Bouchut and Blane. Increase in the pyramidal reflexes are to be expected. Raymond and Claude's case was accompanied by some muscular wasting; whether this is to be regarded as a dystrophic symptom, as we believe, or is to be considered with the changes discussed in this paragraph, as Marburg has done, must be left open.

Facial paresis has been recorded by Howell, Coats, Daly, Gowers, Neumann and Schmidt. Hypoglossal weakness (Bailey and Jelliffe) have also been observed as mesencephalic complicating symptoms.

PONTINE SYNDROMES.

It is only in rare instances that pressure upon the pons is possible; the few pontine symptoms must be interpreted in some other manner. Nystagmus as reported by Bailey and Jelliffe, Howell, King, Neumann, Nothnagel, Raymond and Claude, and the Magendie-Hertwig syndrome (Bailey and Jelliffe) are probably of pontine origin. Just how this is produced is not clear, and the pontobulbar complications occasionally observed only make the diagnosis more clouded, as Marburg has observed.

CEREBELLAR SYNDROMES.

Cerebellar syndromes are not so difficult of explanation and are in fact frequent and are to be expected. The cerebellar ataxic, or partially drunken gait, has been one of the most frequently reported symptoms of pineal tumors, nearly one fourth of the reported cases showing it. Standing becomes difficult and there is a great tendency for the patient to fall backward.

Adiadochokinesia (Marburg, Bailey and Jelliffe) and ataxia of the upper extremity have been recorded. The cerebellar complications may result from direct pressure, from involvement of the cerebellum by the tumor or from the hydrocephalus.

THALAMIC SYNDROMES.

The great tendency to forward extension of the pineal new growths into the third ventricle almost invariably implicates the thalamus. The records of its syndrome are few however, possibly because of the involved mental condition of the patient which interferes with the necessary cooperation in carrying out sensory testings. The sympathetic syndromes, however, of hypothalamic implication are of clinical moment and great theoretical interest. Gauderer and Reinhold reported vasomotor changes; hot flushes in the hands with paling of the skin. Hyperthermia has been observed, as have also polyphagia and pollakiuria. Menstrual irregularities may receive either a local interpretation or be referred to the hypophyseal syndrome, or possibly the pineal gonadal integration.

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- 64 WEST FIFTY-SIXTH STREET.

ENDOCRINE TROPISMS.

*Thyrotropisms.**

By D. M. KAPLAN, M. D.,

New York,

Director, Department of Neurology and Serology, Brooklyn Diagnostic Institute.

In previous communications the interdependence of the various endocrines was emphasized as being indissolubly associated with a proper understanding of all internal secretory phenomena, whether normal or abnormal. This view is becoming more acceptable as we approach the many sided subjective or objective symptomatology of an endocrinopath. With a proper understanding of the workings of each symptom one can with a little patience unravel the good or bad manifestation and relegate it to the gland responsible for its production. The study of the various tropisms aids to a certain degree in arriving at a workable conclusion, particularly when we regard endocrinology as a stepping stone to therapeutics. There are many who still refuse to accept the importance of

this study, and blame its exponents for soaring in the clouds on a runaway Pegasus. This view, the outcome of being satisfied with the little medical knowledge which they have learned from the dead house and from the impotent therapeutic equipment which constitutes their armamentarium, will prevail for as long as medicine will be a jumble of disjointed experiments in statics without the slightest regard for the functional side of humanity. But there is hope for those who, though embracing the study as a fad and a fashion, find that there is a truth hidden in the cryptic expressions which the endocrinologist attempts to unravel. The commentaries on the meaning of this or that symptom, however, carry no utilitarian principles unless they are accompanied by suggestions which enable one to treat his patients better than before; it is in this particular field that the endocrinologist excels his uninitiated colleague who in the majority of instances gropes in the dark for the want of a specific or a vaccine or indulges in the therapeutics of symptomatic medication. In the elucidation of endocrine phenomena one must be careful to weigh the importance of each subjective and objective manifestation and not be too hasty in dismissing a patient with exophthalmic goitre with a generalized conclusion of hyperthyroidism. Hyperthyroidism is the most superficial and often the most remote cause of the trouble. Before taking any therapeutic measures the tropism of the individual must be established. This is not always easy, and hence the reluctance of going into a deeper study of the mysteries of the endocrines. It is true that in thyrotropism the function of the thyroid gland is a factor of prime importance, but when we speak of Basedow's disease we enter upon the discussion of a clinical designation with an extremely complex endocrine significance. The most manifest and superficial phenomena are only a mask which the disease displays to the casual observer, its reality being hidden and unless the investigator is painstaking, the personality of the real actor will never be disclosed.

It is not in the least farfetched that the causative factor of the drama enacted during the endocrine revolution of this disease and the chaos which has been brought about, will not be the thyroid gland. It is just as plausible that the gland primarily involved mustered the thyroid gland into service as an ally and in the course of the struggle left the field entirely to the latter, shifting the onus of the struggle and permitting the thyroid to assume the responsibility for the wrecked state of affairs. When this condition is reached the patient consults the doctor and the most evident manifestations tend to point to the thyroid as the faulty member of the endocrine family. During this period the most glaring therapeutic errors are committed, taking for granted that the physicians are on the trail of the chief offender, whereas the real culprit rests with comparative ease perchance in the pelvis, viewing and not interfering in the difficulty that its ally has been placed in, thus entirely escaping the blame for the existing state of affairs. The sufferer is not benefitted, but signally harmed, particularly when surgical measures are taken

¹A more complete list of references will appear in the reprints.

*The third instalment of the series.

without due consideration of the underlying cause.

Frequently the myopic therapist is content with symptomatic medication and the surgeon believes that the villain in the tragedy was removed by extirpating the thyroid; both are contented with the temporary quietus obtained and they flood the medical literature with eulogisms on this or that drug or a new way of bringing about the extinction of the thyroid functions. At any rate, every one is trying to read the riot act to the mob of emotions and anarchy of functions without an attempt to silence the instigator of the trouble. The thyroid is often indicted on circumstantial evidence, and as 'often removed without additional proof of its guilt.

However, the plea of not guilty is very often substantiated in time to avert the catastrophe caused by injudicious therapeutics, but the reverse, alas, is only too frequently true when the thyroid is made to suffer for the dysfunction of another endocrine gland. When search is instituted in earnest, every plausible function must be analyzed from earliest infancy, nay, even before the child is born, for endocrine maladjustments often have their incubation period in a burdened heredity, in a heredity of which the final endocrine disorder in the patient under consideration is only an echo.

The sufferer even in the third and fourth generation is by no means a rare occurrence in endocrine disorders, and the duty towards our patients lies in our ability to detect a faulty tendency as manifested not only in the patient but as evidenced in the tropism of his parents. Of course all this is an endeavor to render more lucid the dark paths of endocrine study, but the real application of this communication, is to render therapeutic service and enable the student to extract from his endocrine information a guide to the readjustment of the perversion of function, provided of course that the malady has not caused a structural change in the patient incompatible with a cure.

I have emphasized in this contribution that the surgeon should not be permitted to treat true Basedow's disease with the knife. One must arrive at the conclusion that there are no affections of the thyroid gland which do not call for surgical treatment. What I wish to make clear is that true exophthalmic goitre is a medical disease, meaning thereby that proper medical management will do as much for the patient, if not more, than the selected surgical successes have demonstrated. The thing to bear in mind, is that the fact that the disease mentioned above is rarely a purely thyroidal condition and that other endocrines enter in its production and maintenance.

What then do we understand by the term thyrotropism; is it not a faulty function of the gland? This is true, but only partly so. There are four different ways in which a thyrotrop may show his tropism; there may be an overaction, an underaction, a perversion of the secretion, or the first two may be present at the same time. The latter condition is more often obtainable than is generally admitted, and this theory is becoming more popular the more we learn of the different chemical side chains that constitute the biochemis-

try of the thyroid gland. An overaction of the gland may be present without giving the slightest inconvenience to the owner of the gland, and in fact from our conception of the function of this important member of the endocrine family, an overaction in a mild form is the *raison d'être* of our good health and the speedy recovery from infectious diseases. We have the greatest need for the support from this department in infancy, and if we get a history of freedom from all infantile infectious troubles, or only measles, or, on the other hand, that the patient has had every conceivable infantile disease and overcame them with ease, we then conclude that the thyroid, although strained, was nevertheless adequate to meet the increased demand. Such a patient is, speaking in terms of endocrinology, a thyrotrop.

It may seem to sound somewhat unfinished if the data offered for one tropism overlap into another tropism, but it has been pointed out that the endocrines are functionally interrelated and at no time exert their mannerisms singly and unaided, but always in groups, and these groups either aid or antagonize. This is all done with a view of establishing compatible equilibrium. The teeth of a thyrotrop are transparent, long and have a delicate white color which the dentists designate as bluish. They are not scalloped, as in the case of pituitotropic teeth. They are not inordinately spaced as is the case of the latter, but their position is correct, and the color is beautiful. The skin of a thyrotrop is fair, at any rate smooth, and at this juncture one must bear in mind that we are not speaking of those well established clinical states where a distinct hypofunction of the thyroid is at hand, but only the workable phase of the individual's constitution without any stereotyped clinical disease. There are some persons who are subject to a fruste form of hypothyroidism, and in these patients will be found a rough skin, with very little sweating and the ever present complaint of much lost hair in the combings. Such hair is often brittle in contradistinction of the extremely fine hair of those who possess a thyroid which is furnishing an excessive secretion to the organism. The malar prominences in the thyrotrop, on a hypothyroid basis, are often puffy and around them is distinguished an area of fine capillaries giving the appearance of a constant blush. The apparent age of the patient in the hyperthyroid state is less than the actual age, so that the patient's juvenile appearance is striking.

As stated before, whatever the tropism of the patient, all the endocrines share to a certain degree in the architecture of the individual, so that in the unusually youthful we have the gonads sharing in the production of the state of affairs, while in the prematurely senile we have the conjoined interaction of the thyroid, adrenals and the gonads. The discussion in this particular instance is of adults only; in the pregonadal period of life—before puberty—the thymus plays an important rôle in the determination of the individual's exterior. In rather rare instances the thymus can be held responsible for the appearance of the patient in adult life. Patients sometimes come to the

doctor for relief of a peculiar kind of insomnia. They complain that they find it difficult to sleep on their backs, as they experience difficulty in breathing in this position. They present a youthful appearance and are what one would call chubby and ruddy. Their thymus can be demonstrated by the x ray and by careful percussion, and the pressure it exerts is responsible for the dyspnea and insomnia. Such patients always show—subjectively or objectively—the inhibiting influence of the thymus on the function and structure of the gonads. Provided we have *a priori* right to assume this mode of thinking, we can look into the gonadal life of an individual from the thymic point of view, on the basis of a persistent thymus. This will be brought out more fully in the next instalment on gonadotropism, I shall attempt to offer for review not only the manifestations that mark thyrotropism but also the cardinal features that determine the candidate for Graves's disease. This review will show the particular rôle played by the thyroid in the entire panorama of endocrine activity. It will thus help the explorer of this field of research to assort the various phenomena and assign to this or that gland the responsibility for the variegated subjective and objective symptomatology. My information can be regarded only as an introduction, and the reader will have to penetrate much more deeply into what seems to be an unknown jungle in medicine.

The definition of tropism needs no reiteration; it is used instead of the word index or clue. This may be obtained by an insight into the subjective characteristics of an individual—for instance, when he admits an inordinate fondness for sweets or carbohydrates in general. The thyrotropism in this instance is explained as follows: It is known experimentally that the thyroid secretion checks the work of the pancreas and is its natural antagonist; when the opportunity offers itself in the form of a thyroid hyposecretion, the pancreas has a chance to overact, and the patient will be able to metabolize a greater quantity of carbohydrates and so he will disclose to the doctor his fondness for sweets. The far sighted clinician is thus enabled to distinguish between those forms of thyroid disease which parade under the usurped distinction of a Basedow, whereas they are only near forms of this malady. It is these pseudo Basedows which lend themselves to successful treatment, whether it is surgical or the osteopathic. Leonard Williams (1) asks, with proper emphasis, where the surgeon got his license to be able to distinguish the real from the pseudo forms and challenges the efficacy of surgical intervention in the genuine exophthalmic goitre.

In this disease as well as in other endocrine disturbances, the glands do not rebel singly and, as before stated, they must be considered in the light of an accessory to the principal, the latter more often than not being an expression of direct, remote, or atavistic heredity. The student of constitutional medicine soon learns that behind every disease there is a patient to be reckoned with, and unless this is taken into account, disastrous consequences to the patient will ensue. With the exception of

accidents and emergency situations symptomatic medication should be denounced from every household. This symptomatic attitude toward the thyrotrop candidate for Graves's disease is the temporary benefactor which in the near future will demand heavy toll for the fleeting comfort of an hour. To obviate such errors, therapists must learn to adjust natural functional discrepancies, and before doing this the doctor must understand what is removable and what should be left *in situ*. Endocrinology is giving us a chance to peep into the inner functional mechanism of a patient; in fact, one need not be a patient at all to possess endocrine markings or tropisms of interest to the endocrinologist. The clue to the individual's functional makeup is frequently in his exterior and can not be hidden, *nolens volens*. The Schick test for diphtheria candidates is the humoral counterpart of the constitutional endocrine expression that can be found in the skin, the hair, the teeth, and in the study of the Sergeant's line of the patient. Constitutional landmarks decide the tropism of every individual, whether sick or well. These indices are useful in deciding the functional therapy for a patient and are the cornerstones upon which endocrine therapy rests.

In this communication I do not propose to offer a cure all, nor will one find the one certain procedure in so far as exophthalmic goitre is concerned, but it will dawn upon the careful reader that the term exophthalmic goitre is as conducive to a clear understanding of the variety of symptoms that bear that name as the designation of asthenic bronzing is to a proper understanding of the syndrome known as Addison's disease. The chief reason for my deviation from this nomenclature lies in the harm it has done therapeutically. At close range the goitre and the exophthalmos are very striking, but the birdseye view of the disease is quite different, and I must, with all due apologies to the surgeons, charge them with the former attitude.

The exophthalmos is not a primary thyroidal phenomenon; it exists without goitre and is absent in other distinctly hyperthyroid states with or without the thyroidal enlargement. It is more than probable that the thyroid is forced into service to quell a riot which started by an endocrine member somewhere else. Of course, it is logical to expect that the thyroid assistance is not without its drawbacks, but how much of it is due to the thyroid and how much to the primary offender will require the brain and eye of a medical Sherlock Holmes. The muddle of symptoms and the changeability of vasomotor phenomena together with distinct pathological changes in the cardiovascular apparatus cannot be produced by one gland, but all of them are involved in a true case of the disease, some more, others less. A small quota of inconveniences is at times removed by a thyroidectomy, the greater mass of trouble is however left behind. In the course of time other phenomena, and frequently very distressing ones appear, which make the patient repentant of the step which permitted the total removal of the gland. Furthermore, the unrest, the stare and the frozen fear expression is left behind, the cardiopathy is not improved, the

adrenals manifest their inadequacy and the patient gradually succumbs to his cardiac disease or a rapidly increasing asthenia. The triumphs of surgery are thus left unchallenged for the witnesses cannot be summoned to appear in their behalf.

It must be emphasized very emphatically, that Graves's disease is amenable to proper medical management, provided, that the management is correct, that treatment is not wasted on a mutilated subject, and finally that the patient has been seen in the early stages of the disease. Feeding with thyroid preparations will not avail, for there are very few standard extracts of reliable quality on the market. Grafting thyroid tissue into the patient is only conducive to amelioration lasting no longer than the time necessary for the absorption of the engrafted mass. But an understanding of the totality of symptoms in the case and the selection of the proper drug that has the power to influence all these symptoms and remove them, is in my opinion the proper therapeutic procedure. Have we any such drugs? I say, yes. But we must first divest ourselves of our orthodox teachings of medicine, and build our therapeutics upon a basis of, "handsome is as handsome does." This phase of my subject will be elaborated more extensively later. I shall return to thyrotropisms and initiate the reader into endocrine analysis.

Without need for any further emphasis complete history of the case is of paramount importance. The patient must be studied from an ancestral viewpoint and every little peculiarity must receive attention from an endocrine point of view. To the endocrinologist the knowledge that the patient's father or mother had asthma, or apoplexy, or diabetes, or arteriosclerosis is food for thought and analysis. It will be interesting to ascertain the dominant and recessional factors in endocrine heredotransmission. At present I find that a diabetic parent transmits in a few instances a thyrotropism to his daughters. As stated before the thyroid gland is to a certain extent a curb on the pancreas and those who are excessively fond of sweets direct the attention of the endocrinologist toward the thyroid gland, because, among other thyrotropic features the pancreas not receiving the humoral curb on its activities, enables the thyrotrop to handle a larger amount of the carbohydrates giving him an increased desire for sweets. It may be permitted in this connection to use the term hypo in regard to the pancreas curbing feature of the thyroid, but only in so far as this function is concerned and no other, for one may possess a thyroid that shows a distinct hyperactivity in another department of its functional establishment. This is one of the reasons why the terms hyper and hypo are misleading, because both qualifications are to be found in the same gland at the same time, and this is also the reason why I believe the term tropism to be more fitting to the conditions encountered in endocrine studies.

It is surprising to note how many nonthyroidal features are ascribed to the thyroid by specialists on the subject of Graves's disease. One will find them chiefly among surgeons who advocate the

removal of the thyroid or the surgical therapy of the gland even in the so-called fruste forms. The thyroid is amenable to medical management and the results are equal to the therapeutic skill of the doctor in charge. At any rate, I wish to emphasize the fact that there are as many if not more medical successes as there are surgical ones, bearing in mind the chief stumbling block i. e., permanency of the curative effects. I would still like to see a patient with true Graves's disease five years after surgical interference thanking the surgeon for what he has done for her. I emphasize the sex in this connection, for true cases of this disease among men is as scarce as the proverbial hen's teeth.

Admitting that neither the surgeon nor the medical man can restore to a permanent normal a genuine case of exophthalmic goitre and enable the sufferer to spend the rest of her life in absolute subjective comfort, I shall outline my conception of thyrotropism and attempt to shed light on a prophylactic therapy which will keep the candidate from being elected to that perturbation of functions that characterizes a true Graves patient. I shall begin by stating that men need not receive this prophylactic guidance, or at most, only very rarely. The young woman between fourteen and twenty-four needs the care and attention of a doctor with endocrine knowledge. Her chief and striking symptom is at present only an objective one and the subjective inconvenience, whether it is a headache or a tired feeling in the morning, has no apparent connection with this sign. I am emphasizing the slight exophthalmos or to put it less pathologically, the over bright and prominent eye. It is the eye that will take in everything at a glance, and with it goes an alert intelligence; every emotion no matter how insignificant is accompanied by a visible change in the vasomotor sphere, and every act is executed with rapidity and precision. They are the diagonal opposites of the individual whom nothing disturbs psychically or physically. Alert, on the *qui vive* and rarely idle, they are not the interfering busybody, but on the contrary, they are useful, industrious and likeable persons with a pleasing grace and a clean pretty exterior.

This designates the thyrotrop who is not afflicted with anything and goes along without experiencing the slightest discomfort. In fact they need not be patients at all and this introduction is given merely to point out the sort of material a thyropath is made of. Their childhood is remarkably equipped with resistance against the infectious diseases of babyhood. They may later on show a tendency to sore throats or inflamed tonsils, conditions which return every now and then. Whatever ailment develops during their early life, there is a response on the part of the organism by promptly readjusting the protective forces to normal. These individuals are rarely sick for a long time, and their troubles are not serious. This, of course, is the case with the thyrotrop who is well balanced in her endocrine administration. Hives, enterorrhea mucosa, and the accumulation of tough, tenacious mucus anywhere, in the cranial sinuses or in the uterus, are all expressions of a symptomatology common to thyrotrops. Their thyroid dependence

is readily established by applying the therapeutic test; the condition is often changed promptly by giving thyroid extract in repeated small doses, say one sixth or one quarter grain once a day. Here, as elsewhere, the entire endocrine apparatus contributes something in each case, and the hangovers in hives, colitis, sinusitis, or endometritis must be combatted on a basis of individual tropisms. The keynote, however, is thyroid.

Having at hand indices that determine tropism pointing to thyroid, one should be prepared to manage the patient in the future on endocrine lines. This brings me to the point where the candidate for exophthalmic goitre is detected. The patient—as a rule, a young woman—relates the story of her heredity, which need not always furnish the necessary ancestral taint. However, such findings strengthen the clue. Such patients may say that during or shortly after the gonadal advent, they were shocked. Shock and the gonadal advent are indispensable links in the chain of evidence that points to a *morbus Basedowii*. This shock may be anything and need not affect others to the extent of deserving the appellation of shock, but for the candidate it was a psychic event, unforgettable and significant—a brother may have been drafted in the army, or the patient may have seen a fire across the street, or quarreled with a dear friend, or a distant relative may have died. The patient at once responded with palpitation, even dyspnea, and tremulous nervousness, which to a slight extent prevailed even before the excitement.

In these histories one often detects flaws in the menstrual function, and amenorrhea; irregularities, or accompanying bad headache stamp this important female function. Such patients need not become affected with exophthalmic goitre, but when one carefully analyzes the case of such a patient he will usually find more than one of these landmarks. The gonadal partnership in bringing about Basedow's disease is by no means of secondary importance, and when in the beginning of this contribution I hinted at pelvic instigation of this malady, I had reference to the gonads and the uterus in particular. For this reason I suggest that very careful management—not only somatic but preeminently psychic—should be used by the doctor and particularly by the mother in disburdening the mind of a child about to assume a function novel to her unprepared mind and body. False modesty should be replaced by diplomatic discretion, and the event should be introduced as soon as the vasomotor system indicates the proximity of the gonadal event. It is the doctor's business to tell the mother of her daughter's approaching womanhood. The management from now on depends entirely upon the discernment and good taste of the mother, features which are chiefly the outcome of education, environment, and common sense. At least the rudiments of womanhood should be gently imparted to the candidate, carefully progressing until the youngster ceases to be the child. Any irregularities in the function should be reported at once, as well as other manifestations in the way of headache or other

aches, eye strain, anorexia, and unexpected conditions of skeletal growth. At this stage the developing woman can be guided and her inconveniences adjusted so that the future will be rendered less difficult from a functional point of view. It is by no means safe to prophesy that acromegaly, even when detected before any of the classical signs have developed, could be checked at this stage, but hope could be offered for those who have been thus managed, and I believe they have a better chance than the woman whose past was steeped in ignorance.

The latter classical entity is, however, not as frequent as the manifestation which parades under the name of exophthalmic goitre. It may at first seem impossible that a great many of the fruste forms of this disease could be eradicated by judicious endocrine therapy. Ovarian extracts offer the best results. There are instances where the adrenal and thyroid, as well as the pituitary, must not be lost sight of, but their administration depends entirely upon the constitutional tropism of the individual. The thyroid gland even when functioning improperly need not always present the Basedowic phenomena, nor is the true Basedow a purely thyroid disease. It is evident that uniglandular therapy in all cases will be inconsistent with this contention, and one has to adjust the treatment entirely upon individual needs. One patient will require ovarian extract, another something else. By no means rarely the endocrine drugs do not help at all, and one has to resort to other medicaments, not shunning even the homeopathic or osteopathic practices. This requires courage and can be advocated only when one is convinced of their utility. In this connection, the utilitarian principle should be inculcated more strongly into the mind of the practitioner, who will have to become tolerant as well as far seeing in making use of these methods. Personally, I have had unexpected results in cases where I had previously tried endocrine and allopathic treatment to the best of my ability. I have used ferrum metallicum, spongia, calcarea, iodata, and other homeopathic products. Occasionally even the osteopath, much as we may want to disbelieve his statements, gave the patient better results than allopathic therapy, from which the patient graduated into the osteopath's hands.

I take it for granted that everyone is acquainted with the ordinary management of exophthalmic goitre and it is not my intention to reiterate, but I do wish to remind the allopathic physician who reads these lines that it is time for him to extract the good points from schools not allied to his orthodox convictions. It may be of interest to note that the form fruste Basedow on a gonadal basis will improve with ovarian extract given in rather large doses, say five grains a day. There is also a peculiar phenomenon which I have observed—that hand in hand with the patient's improvement goes a dermal condition analogous to acne rosacea. With the development of this skin trouble the pulse rate drops, the exophthalmos recedes, and the goitre becomes less apparent. Having been bedridden before or easily tired upon the slightest exertion.

when the first crop of pimples appears these women are strong enough in mind and body to look for work. One patient whom I have in mind at present has been working four years, without having missed a day, since I discharged her, and has been married for two years. She is perfectly well and has no need of a doctor.

Although not being the true type of morbus Basedowii, the adrenal variety presents many therapeutic difficulties. The vasomotor upheavals at times require heroic measures. Very often after an allopathic management of the general nervousness with quinine hydrobromide, one obtains fair results with ferrum metallicum on the homeopathic basis. Once having prescribed this drug, it is advisable to stick to it unless the persistence proves of no avail in checking the weakness, palpitation, exophthalmos, and thyroid swelling. In this connection, another patient who noted a gradual increase in the number of melanoblastic spots improved markedly under the above management. She is still under treatment.

It is needless to emphasize that all hygienic measures serve to enhance the value of any treatment, and hydrotherapeutic, psychic, and somatic measures remain of paramount importance in managing any form of this disease. There are cases where the character of the enlargement leaves no doubt of its malignancy, and when recognized very early the surgeon should be consulted. Of course even after recovery from the removal of the gland, one has no guaranty that metastases will not develop a few years later in the vertebra, often taking the form of spinal paralysis due to extramedullary pressure on the cord.

The interdependence of the endocrines has been so often talked about that it should be remembered without further mention. However, some investigators and endocrinologists have forgotten to include the tonsils in the endocrine family. The tonsils, for this reason and possibly for others, have been considered a sort of pariah in the human household. This view should be changed, particularly when one has before him an individual with a thyrotropic constitution. I admit that the thyrotrop will, more often than the other tropisms, display tonsillar manifestations requiring careful handling and may even show a dilapidated structure, harboring all kinds of bacteria and other toxic substances, besides being so actively inflamed and enlarged that the surgeon's palm actually itches for the knife. Such a course is sometimes fairly justifiable, but how often are the tonsils removed when they could be conserved and left to perform those duties of which we as endocrinologists know as yet so very little. We must admit that the knowledge of even the most popularly known glands is very meagre and that contradictory findings loom up here and there to prove our poverty in endocrine lore. We find in the literature cases with most pronounced adenomatous involvement of the pituitary, without giving any signs aside from those which could be explained on a basis of territorial pressure, such as headache, limitation of visual fields, etc. Of course in the case hinted at there was sterility and a gonadopause precoc,

otherwise nothing else to suggest a pituitary disease. If this patient had started in the very incipency of her trouble with a pair of infected tonsils, what good would tonsillar extirpation have done to the neoplastic tendency of her pituitary? We can argue the same way in cases designated as thyrotropic. The tonsils often hypertrophy, not from an accidental freak of nature, but according to definite laws regulating health and disease. That we do not know all of these laws is no reason why the tonsils should be made to suffer for our ignorance, thus crippling the human body by removing an unproved useful member of its establishment.

The thyroid gland is a structure which par excellence regulates the qualities of the endocrines, not how much or how little, nor how often, but in its essential property of doing its particular good for that individual. When the tonsils have been removed, their work has to be assumed by a vicarious manifestation of endocrine energy through the intervention of other glands. Upon such mutilation the thyrotrop not infrequently develops an infectious endocarditis, the pituitrop a rapidly suppurating appendicitis. Those unfortunate who have had both removed show distressing headaches and are forever drugging themselves with remedies which sap their resources and further diminish their vitality. I am quite certain that in the future every conscientious physician will make an attempt to leave the temporarily pathological tonsils *in situ*, unless such a procedure is unquestionably deleterious to health and life, and by administering one of the endocrines hit upon a solution of the problem without the knife, thus saving an organ which may be essential for the future health of the individual. As for myself, I would seek every means, endocrine, allopathic or homeopathic, vegetable or mineral, in order to conserve instead of removing, firmly believing in the utilitarian principles and advantages of my convictions, and having ample proof of the correctness of these views.

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8 WEST EIGHTY-SIXTH STREET.

THYROIDAL CONSTIPATION.

BY SPENCER G. STRAUSS, A. B., M. D.,
New York,

Lieutenant, Medical Corps, U. S. Naval Reserve Force.

Before venturing into a comparatively new therapeutic endeavor it is wise to glance back over our accepted classical conceptions through whose deficiencies we have come to feel the need for progress. No advance could have been made in the science and art of medicine if we had not been willing to face our own shortcomings squarely. Let us agree that we are becoming more and more willing to regard states of pathology, i. e., diseases, and their therapeutic correction as individual problems in contrast to our former rather indolent mental habit of thinking of the medical correction as fixed by

rules, once the pathological diagnosis is established. Anatomy is not fixed and permanent, nor is physiology, nor environment, nor heredity, nor pathology. By the latter I mean states of illness. Surely every human being differs from his fellow externally and so more surely differs in the forces that have gone to cause apparent differences. It should be our attempt to find how individuals differ so widely, and in that answer lies the answer to the question of the variation in disease states, and therefore, to the variations in the correction of those states.

We have learned to regard constipation as a condition of delayed evacuation of intestinal food residues frequently associated with a quantitative deficiency and a qualitative alteration of the fecal mass whether this is purely functional in origin or dependent on organic disease. This is true as far as it goes, but it does not go far enough. Why are some individuals so troubled and others not? To fully cover the causes of constipation we must read through numbers of great volumes and in the end find that a few essential features stand emphasized. Efficient intestinal peristalsis depends on the strength of the bowel muscle, the tonus of the nervous mechanism, and the quantity and quality of the intestinal contents. Any great alteration of these factors from the normal may cause constipation.

A further subdivision is usually made depending on whether the cause be organic or functional. Among the former we find partial lumen obstruction due to adhesions or bands involving certain intestinal segments. Similarly abdominal or pelvic organ displacements, or tumors, may cause such a condition by pressure from outside of the gut lumen. We find organic changes in the gut itself both of congenital and acquired origin chief among which are the various degrees of ptosis and dilatation. Beyond this, any organic change in the extra intestinal part of the mechanism of fecal expulsion may be responsible. Among these the most frequent is probably perineal laceration in the female. Bearing in mind that we usually divide the functional type of constipation into the subclasses atonic and hypertonic, we include the following as the important causes of constipation of these types. In the first place, psychic causes which result in intestinal atony. We are told that individual habit holds a prominent place among these. So do we frequently admonish our patients to foster the habit of regular and continuous attempts at proper bowel evacuation. Diseased conditions of the upper alimentary tract, notably the stomach, may so affect the intestines that either a condition of atony or spasm results. Particularly does hyperacidity have a constipating effect.

Qualitative and quantitative factors in our food intake certainly affect the expulsive function of the intestinal tract. Probably each gastroenterologist has his own pet dietetic schemes and ideas. Changes in the intestinal flora exert a positive influence on their function as do local areas of inflammation. And finally we are taught that too sedentary a life and improper modes of dress may be the sole fault. So we have indeed a large variety

of causes to choose from and can surely satisfy our patients, if not ourselves, when they ask the invariable "Why?" And when we agree with them that this fault must be corrected and they ask us "how" what an enormous variety of therapeutic methods are presented to us for our choice. In the first place, dietetic regulation alone is sufficient in some cases to affect an apparent cure. While on the other hand, the majority require a further remedial measure be it mechanical, electrical, hygienic or medicinal. The former three are too uncertain in their effect and insecure in their protean characteristics to warrant description here.

Among the most important drugs used in this connection are aloes, cascara sagrada, magnesia, phenolphthalein, podophyllum, rhubarb and senna. The salines are used for a positive temporary effect, the important ones being magnesium and sodium sulphate, potassium and sodium tartrate and sodium phosphate. More recently agents which act mechanically in the intestines have been introduced. The mineral oils for simple lubrication and substances which bring about bowel evacuation through the formation of a large intestinal residue such as bran and agar-agar. There is no doubt that there is a strong feeling away from drugs for overcoming this condition, for we realize, as does the public, more and more, that the cathartic habit is one of the easiest formed and one of those broken with the greatest difficulty. As a matter of fact, most patients have tried one or more laxative or cathartic remedies for various periods of time before asking our aid and the clever clinician usually makes the valiant attempt to remove the remedial drug which the patient has discovered for himself. The thought appeals to the patient. But unfortunately, the doctor's effort is rewarded with little success and he may be forced to prescribe a rarer drug which the patient has never seen advertised, and this poor layman, being ignorant on the subject, goes his way believing that everything possible has been done for him.

So we have open to us, in our attempt to correct our patient's difficulty, a wide variety of paths. Our efforts will often undoubtedly be rewarded with success, if not complete, then surely partial. But only too often does the patient return, our therapeutic measures having been withdrawn after a conscientious trial, complaining that the old state of affairs has returned. And why this ultimate difficulty? It is because we have devoted our energies to defining a local condition and applying a remedy limited in its effect to the correction of this pathological detail. A local remedy for a local symptom. How narrow.

The day has come when we must regard the individual and his physiology, whether it is normal or abnormal, as a unit. We must ask ourselves why does the intestinal tract of this individual refuse to do its share, but at the same time, recognizing clearly that a big constitutional reason underlies that local manifestation of inadequacy. We must recognize that the only hope of cure for this local error is a deeper correction and we have the means at hand. Let us forget our patient's bowels and his defecatory difficulties, and let us look into the

biological soul of the patient himself. Let us try to see in a bigger way how this individual differs from others physically. Let us analyze him from the endocrinological viewpoint.

The glands of internal secretion are gaining a position of growing importance in our medical knowledge and what a few years ago was so keenly interesting by its novelty, is today accepted as common knowledge. Today, those clinical pictures due to disturbance of the endocrine chain which are universally accepted, are the full blown, complete syndromes; such as gigantism, cretinism and the like. But let us pause for a moment. Prophylaxis is the watchword of modern medical and surgical science. There was a time when surgery was a rare and risky therapeutic means. Does the surgeon today wait until pus has broken into the peritoneal cavity before he advises and undertakes the appendectomy? Does the clinician wait until his patient's entire family has contracted scarlet fever before isolating the original focus?

We recognize without a doubt the value of looking beyond the immediate phenomena in our richly rewarded effort at prevention. So, flushed with the successes due to this mode of thought, let us not grow myopic when we travel into newer fields. The signs and symptoms of thyroid deficiency are so numerous, so varied, and yet frequently so slight, that we often in our ignorance or stubbornness, and more frequently in our haste, fail to give the aid we could to such patients.

We must look for both subjective and objective symptoms in our patients which interpreted in the light of our knowledge of the endocrine glands and their physiology, denote slight derangements and alterations from the normal which can be successfully corrected by medical means; whereas, if such deviations were allowed to increase, we would be faced with a complete picture of endocrine pathology, of a surety easy to recognize, but unfortunately, no longer in a state where our therapy would avail.

Throughout the literature we find references to thyroid therapy for the cure of various states of constipation, but apparently this path has been advised and followed in a purely empirical way with the resulting disastrous effect that the busy practitioner is now likely to use this latest addition to his therapeutic armament as harmfully as he formerly did the common garden variety of cathartic pill. Thyroid extract, however given, is not, nor will it ever be, a constipation remedy; nor can it ever become a cure for constipation as such unless in its administration it corrects a constitutional defect which predisposes the individual to an abnormal metabolic state, which in its manifestations includes a deficient bowel evacuation constipation.

We must have regard for the rest of the picture however, and only prescribe thyroid extract when we feel justified after a careful physical analysis that we have to deal with a case of thyroidal disbalance. In this connection it is wise to mention that the thyroid gland in the human physiology seems to act, not alone by virtue of its own inherent qualities, but by its peculiar ability to activate and coordinate the functions of the other glands of

internal secretion, and in this way we may obtain happy results from thyroid therapy, inasmuch as we have indirectly stimulated a gland other than the thyroid to a greater activity through our efforts while the patient's thyroid gland remains normal. Roughly comparing our endocrine organizations to a cartwheel we could give the thyroid the hub position with its activities radiating through the various spokes each representing another gland of the group. The rim of the wheel representing the final individual gland tone.

Let us try to make our therapy as specific as possible and only employ thyroid extract when the thyroid regulation is essentially to blame. This blame must not be laid definitely upon that member until we have evidence enough, after careful search, to condemn it. Clinical study shows that various qualitative and quantitative physical marks are characteristic of thyroid disbalance *per se*. They cannot be proved as yet in the laboratory, but they are valuable nevertheless.

For sake of convenience I shall briefly indicate the more usual thyroidal marks which when combined with the so-called constipation call for the thyroid therapy, such therapy would then in all probability be specific.

THYROIDAL INDICATIONS.

Mental signs.—Sluggishness at times, alternating with sparkling wit. Irritability which grows worse at any slight opposition. Moodiness generally. Inability to concentrate; forgetful; easily tired; lack of confidence; heavy dullness in the morning which wears off as the day progresses. Require much sleep.

Hair.—Usually coarse and dry. Tendency to come out. Likelihood of dandruff. Hair lacks brilliance and looks dusty.

Head.—Liability to generalized dull aching on slight effort. Headaches usually frontal or occipital.

Eyes.—Eyebrows tend to sparseness, especially the outer third. Scaliness of skin under eyebrow. Puffiness of upper eyelid, particularly outer half. Sparse eyelash growth. Orbit often seems sunken, enophthalmic. Dull expression generally to eye. Iris pigment usually hazel or grey green. Rarely a clear color as brown or blue. Pupil tends to be narrow.

Nose.—Tendency to rhinitis. Crusts form frequently.

Ears.—Scales form easily along external auditory meatus.

Mouth.—Lips tend to dryness and cracking. Tongue thick and stubby. Teeth often leave their imprint along margin.

Teeth.—Heavy, soft, easily becoming carious. Tend to yellowish stain. Liability to pyorrhea.

Tonsils.—Tonsillitis attacks are frequent. Tonsils usually enlarged.

Respiratory system.—Frequently acquire cold and difficulty in recovery. Tendency to winter bronchitis which usually has associated a productive cough. Adenoid tissue overgrowth likely in children.

Cardiovascular system.—Cardiac rhythm steady and sluggish. Not affected easily by physical or emotional stress. Rate tends to be slow—around sixty. Systolic pressure unchanged, but pulse pressure usually less than normal. Extremities usually cold, may be damp. Poor capillary circulation as shown by slow refilling of skin capillaries after pressure. No stimulation reaction experienced after cold baths. Patient usually takes only warm or hot baths. Patient feels much better in warm weather. Winter often makes him feel utterly miserable. Vasomotor skin reaction and pilomotor skin reaction very sluggish. Both may be absent. Temperature usually subnormal.

Digestive.—Appetite usually not large, but at times it is extreme; but even at these times it is easily satisfied. Patient experiences times when he craves sweets. All food agrees with patient. Tendency to tasteless, gas-

eous eructations after meals, and meteorism and offensive flatus. Tendency to thickening of rectal veins with bleeding. Tendency to gain weight rapidly. Desire to sleep after meals.

Urinary.—Tendency to polyuria. At times slight traces of albumin and sugar appear. Indican frequently excessive. Nocturnal enuresis often present.

Skin.—Dry. Thick. Tends to scale easily and often shows psoriatic and eczematous patches. Tendency to small warty growths. Perspires with difficulty. Yellowish earthy color. Fingers and toes often seem cyanosed. Fragility of nails, which show ridges and thickening.

Skeleton.—Relaxation of ligamentous structures. Crackling noises on motion of small joints.

CONCLUSIONS.

Having determined that the patient can be included in this symptom group, and, although one cannot, as yet, define laws for such inclusion, the careful clinician will soon be able to tell easily whether the patient presents enough of the above physical signs to warrant this diagnosis; the problem then to be met is that of the therapy. This is a problem of readjusting and accelerating the individual's thyroidal tonus to the normal.

I begin with doses of one tenth grain of thyroid extract, given on an empty stomach, either in the morning on awaking, or on retiring at night. This dose is given once a day for a week and the result noted. It is important to mention here, that although the constipation may be unchanged, one or more of the other symptoms which the patient revealed, which are equally important in their thyroidal bearing as is the constipation, may be bettered or cured. If this is the case, repeat the same routine another week for it means improvement generally. Both patient and physician must be willing to travel slowly. The constipation, being so pronounced and gross, may persist to the last. Do not be discouraged by slow results.

To return to the therapy: If the small dose has no effect it should be increased in quantity, but administration once a day as before is all that is necessary. From one tenth grain go to one half grain, then to one grain and so on. The proper quantity will be found, but what it will be is impossible to predict.

I have met the following extremes: A child of twelve was perfectly well for six months after three doses of one tenth grain; whereas, on the other hand, a man of forty required fifteen grains each day which were taken for weeks at a time without the slightest toxic sign.

I have not been able to determine that the product of any one manufacturer excels that of another, but as a general rule, it is best to get the freshest preparation as all animal extracts seem to deteriorate with age.

While under this regime the patient lives as he wishes. Of course, any cathartic or laxative medication is strictly forbidden. If the bowel remains absolutely inactive for thirty-six hours, small saline enemata may be used. The patient is not placed on any dietary restrictions; he is told to live as he pleases and to forget his troubles.

As soon as the intestinal action is normal, stop the thyroid extract. Then give no further medication unless there should be a symptom return, in which case the treatment routine is repeated.

Our task is not the creation of an atmosphere replete with restrictions in which the sick individual can live, but the adjustment of the patient to his normal environment by improving the coordination between his glands of internal secretion.

46 EAST SEVENTY-FIFTH STREET.

HYPERTHYROIDISM.*

By A. B. WEBSTER, M. D.,
Philadelphia.

The brilliant results we obtain with operative measures are in cases of early thyrotoxicosis. The surgeon will get results only when the part of the gland that is diseased is completely removed and the part that is normal is left. The gland is not affected equally, therefore it requires the greatest of care and also a keen knowledge of living pathology in order to expect the best possible results.

Many of these patients have suffered time after time with relapses until there is practically no normal gland left. A large proportion of the patients have gone for so long that the disease is not localized. The myocardium has become involved, and in looking over our list of hyperthyroid patients, it is difficult to say whether the symptoms remaining are due to thyrotoxicosis; to a slight form of cardiac degeneration, or to a hereditary neurotic or neuropathic condition.

In 1910 Ochsner made the statement that it would only be a few years before we could look forward to a mortality rate of less than one per cent. The great master of technic, Crile, has made this possible, and in his last series of over 300 cases the mortality rate was six tenths of one per cent. This will allow us to classify this disease with the simple appendectomies when the operation is done by those who are experienced in this work. I am not using the words competent surgeons because there are a great many surgeons brilliant in abdominal surgery who are not qualified to do goitre surgery.

The danger of operation upon the thyroid depends largely upon the damage done before the operation. Our best operative results will be obtained in Graves's disease when we get the patients before irreparable harm has been done to important structures (the heart for instance). This is especially true in a certain class of patients who respond readily to nonsurgical treatment, and immediately relapse into a thyrotoxicosis on the least amount of exertion. In my mind these patients should be asked to submit to the radical cure by the internist immediately after the acute exacerbation subsides.

Rest, hygiene, diet and care of the patient are the greatest adjuncts preliminary to early operation. With every attention paid to detail and with a moderate amount of skill, especially in following Crile's technic, hemorrhage, shock, and injury to important structures can, to a large extent, be avoided.

Postoperative hyperthyroidism can be handled at

*Presented at the Symposium on Goitre, Philadelphia County Medical Society, January 28, 1920.

the present as it never has been handled before, by the use of the rubber blanket and ice pack as recommended by Crile. I have had an opportunity to try it and the results have been wonderful. I have even ventured to use it with other toxic patients with equally brilliant results. Every patient after operation should immediately be treated by the internist as the physician now has a bigger field than he had before the operation.

One of the rare accidents is the collapse of the trachea following the removal of a very large goitre. The pressure of such a growth may soften the rings of the cartilage so as to allow it to collapse. The condition of the patient immediately becomes desperate and necessitates a tracheotomy. Some clinicians are at present using intratracheal anesthesia in order to prevent such a calamity. It is a very simple matter to do a tracheotomy at this time in order to prevent disaster.

The patients with hyperthyroidism that have almost reached dissolution before operation are those in which medical treatment and rest have not done much; you can expect almost anything and therefore it is so necessary to be on guard, and with the aid of Crile's method very little difficulty will be encountered.

Cystic adenomas are sometimes troublesome. They may exist for years without causing any trouble and suddenly fill up and produce so much pressure that the patient will be almost asphyxiated. If a patient with such a cyst, especially if it is of large size, should get an acute cold, the cyst will often become swollen, and it will be necessary to aspirate with a trocar in order to give relief. Respiration is often greatly interfered with. A small growth of the thyroid low down will occasionally compress the trachea, cause absorption and thus interfere with respiration. A case has been reported where it was necessary to do an emergency operation in order to save the patient's life.

Doctor Northrop in his lecture has referred to intrathoracic goitre. Here we are obliged to depend on the x ray for a positive diagnosis. Respiratory symptoms, as a rule, are marked. Many patients have had their condition diagnosed as everything but the proper thing. The intrathoracic goitre may be simple or toxic. Many patients show no signs of constitutional disturbances. All symptoms are due to pressure in the simple variety. Pressure on the vagus, blood vessels and esophagus will give rise to the most annoying symptoms. As a rule this variety of goitre involves only one lobe; at times it is bilateral.

Thyroidectomy for intrathoracic goitre presents a number of serious difficulties, due to the position and character of the goitre. Tracheotomy may be necessary at any time during the operation, as the tracheal walls have been subject to constant pressure for a long period. It is well to bear in mind the danger of sudden collapse of the trachea when the tumor is removed.

The operative results in intrathoracic goitre are among the most sensational and gratifying in the realm of surgery, providing the surrounding structures are not damaged beyond repair.

Doctor Sajous spoke of focal infections. I believe all focal infections should be removed previous to doing any surgery on the thyroid. If this is not possible before operation, they should be eradicated as soon as possible after operation. In our work we have been able to locate many foci in the pharynx, tonsils, teeth, sinuses, and other parts of the body. Several days after the removal of these infections you can proceed with the ligation of the superior thyroid and the patient allowed to rest before proceeding with any further operative procedures until the patient has been allowed to rest for two months. At the expiration of this time you will be surprised to find a marked improvement in many cases.

If these focal infections are not removed, they will stimulate the remaining portion of the gland following a thyroidectomy and thus keep up symptoms of thyrotoxicosis.

This is especially true in exophthalmic goitre patients as they have a low resistance to pyogenic infections. The symptoms of this class of patients are much more severe than in the normal individual. In acute infections, metastatic infections of the thyroid have taken place with enlargement and hyperplasia of the connective tissue. A marked degree of intoxication will take place, going on to delirium. These badly infected patients will hold out three or four weeks, providing there is not a fatal termination.

If this class of patients go through, the acute stage will be followed by secondary changes which will occur in the connective tissue of the thyroid, followed by a hypothyroidism or myxedema, making it necessary to resort to thyroid feeding in order to keep the patient in fair health. Such cases have occurred after epidemics of sore throat and other infectious diseases. It seems clear that the etiology of the acute metastatic thyroid conditions is due to the streptococci.

Goitre in childhood is frequently associated with diseased tonsils which often contain cheesy concretions or pus. In the past this class of children have been looked upon as well. A simple goitre being a mere incident in their lives, little or no attempt has been made to make a thorough study of the case. No symptoms stand out so prominently as do the individual symptoms of hyperthyroidism.

The treatment of goitre in childhood is reasonably satisfactory and in most cases belong to the internist; the less encapsulation present the better the result from thyroid feeding. Spontaneous encapsulation takes place when the secretion of the lobule becomes toxic. This type of goitre in children should be removed. Lane, of England, removes the large intestine, and the enormous thyroids disappear. Surgery has gone mad in treating end results and not dealing with the primary cause. A noted surgeon in India has been working along the same lines. He, by using intestinal antiseptics such as thymol, was able to cure many of his thyroid patients.

The amount of gland to be removed at the time of operation is a very important consideration. The best results are found where resection has been done.

I use as a working scale, the age of the patient in deciding the amount of gland to be removed: twenty to forty-five years, four fifths; forty-five to sixty-five years, two thirds. The activity of the gland is much lessened in later life and therefore it is necessary to leave enough of the thyroid gland to take care of the body metabolism.

For the prevention of tetany, the posterior part of one lateral lobe must always be left. In the intracapsular extirpation of a lobe, the recurrent nerve is immune from injury. The posterior part of the capsule might be torn quite easily and the cellular part or plane containing the recurrent nerve may be entered in the dissection and the nerve injured. Thyroid sufficiency will be carried on by leaving the posterior parts of both lateral lobes, resecting the anterior parts with the isthmus.

Not only are the recurrent nerve and parathyroids free from injury, but all sense of pressure is relieved and the neck is left quite symmetrical. This is not true when the entire lobe on one side has been removed. There is a likelihood of recurrence. This method applies to the diffuse colloid goitre; it does not apply to cystic goitre. I am sure there are many who will say it has a very limited field in the exophthalmic variety. But even in this variety, if the actual cautery is used to do the resection, there will be no danger of any thyroid material being liberated. Hemorrhage will be slight as compared with section done with scissors or knife. Be sure that the gland is resected far enough so the actual cautery will not have any action on the recurrent laryngeal nerve or parathyroids.

In simple diffuse goitre this is the operation of selection. In toxic goitre, it is worthy of consideration. The results I have had in this type of case where the actual cautery has been used, have been better than those where other methods were used.

There seems to be no question that double resections meet all indications. It relieves pressure, and the parathyroids and recurrent laryngeal nerve are out of danger; enough thyroid is left to take care of the wants of the body, and allow for a better contour of the neck. There is very little hemorrhage, especially when the cautery is used.

Large goitres of the right side frequently produce paresis of the recurrent laryngeal nerve. It is best to have a laryngoscopic examination made before operation, otherwise you might be blamed for the paralysis discovered later. The proportion of disturbance to the recurrent laryngeal nerve during operation is small, as compared with the number of disturbances caused by pressure of the goitre.

Treatment of Gonorrheal Rheumatism by Intravenous Injections of Antityphoid Vaccine.

Payenneville (*Presse médicale*, October 25, 1919) reports two cases of gonorrheal rheumatism treated and rapidly benefited by Harrison's method, viz., intravenous injections of triple antityphoid and antiparatyphoid vaccine. The results appear to be best in recent, acute cases. One patient, threatened with ankylosis of the wrist, was very quickly enabled to move the joint by this treatment.

THE TREATMENT OF GOITRE.*

By H. L. Foss, M. D.,
Danville, Pa.

Is there a medical treatment for goitre? If we mean by this a definite, well established, specific therapeutic line of conduct, then there is none. If on the other hand by such treatment we mean anything not surgical we may believe there is such a thing. Consequently there has been a world of experimenting with various drugs and methods, with iodine and the iodides, with arsenic, digitalis, atropine, hydrotherapy of all kinds, high frequency currents, the x ray, innumerable extracts of the glands of internal secretion, and other methods of treatment. Everything has been tried from the King's touch to Christian Science. Surely of all the diseases with multitudinous and bizarre forms of treatment, goitre is the prize sample.

In the colloid goitres of adolescents iodine, unquestionably, is of avail. These goitres are medical and surgery applied is meddlesome surgery. In the adenomatous forms, whether toxic or not (and all are potentially toxic), surgical treatment is fairly well established, and I think this is especially true with the definite exophthalmic forms.

As for the surgical treatment of goitre I feel that it is being practised far too often in the colloid forms of adolescence and far too little in the adenomatous types and the cases of true hyperthyroidism. To cut out a diffuse colloid goitre from the neck of a young girl is worse than meddlesome surgery—as well to operate on a lactating breast merely because it is enlarged; but to apply certain of the empirical and thoroughly unscientific and unsatisfactory medical methods at present very popular is just as bad. It is a waste of time to try methods other than surgery with the adenomatous types, and I feel that to depend on medical means in the exophthalmic forms is merely dangerously to temporize with a grave and progressive disease.

No type of surgery is more highly specialized than that of goitre. Surely in no serious surgical condition does the patient have to be more thoroughly studied, the type of operation more carefully selected or the time of operation more accurately planned. All these things must be appreciated to obtain the best results. Goitre surgery should be performed in an institution where the personnel is constantly in touch with this type of patient, where the organization is complete and the team work perfect. Even more important is this in the pre-operative and postoperative stages than at the time of the actual operation. In such an institution the operation is performed by the hospital rather than by the surgeon.

Surgery in exophthalmic goitre offers a great deal. The favorable results are more definite, more immediate and more lasting than from any other form of treatment. However, the patient must be studied with the greatest thoroughness, the operation selected with great accuracy and properly timed. Many operations should be performed in bed, nitrous oxide anesthesia will be the one of

*Original remarks of the discussion at a Symposium on Goitre, presented before the Philadelphia County Medical Society, January 28, 1920.

choice, and the thyroidectomy frequently preceded by ligation of the superior or inferior vessels.

We cannot do better than to follow Crile; to give greater thought to the psychic side of our patients; to reduce to a minimum the element of apprehension and fear; to carry the operation to the patient rather than the patient to the operation; to operate in one, two or even three or four stages; to use combined general and local anesthesia; to substitute gas for ether—in short, to practise anoci-association; not such a bad term and method after all. In his last 200 thyroidectomies for exophthalmic goitre Crile's mortality was but slightly over one per cent., and no patient unless in a stage of dissolution was considered inoperable in this series.

Nothing in surgery is more brilliant and satisfactory than the properly applied treatment in exophthalmic goitre. It is, perhaps, too early for the publication of a large series of end results in patients treated by the more modern surgical methods, but the results even from the comparative crude methods practised up to a year ago would lead us to believe that with the newer technic the final results are to be extremely satisfactory.

At the Geisinger Memorial Hospital we are performing preliminary ligations on over fifty per cent. of our exophthalmic patients. Hot water injections have been discarded. Their real value lies in the fact that they indicate fairly well the ability of the patient to undergo more radical interference with the thyroid. Basal metabolism studies are of the first importance in these cases and to a less degree blood sugar determinations and the various forms of the Goetsch test. By far the most valuable aid, not only in making the diagnosis but in arranging the plan of treatment, is the surgeon's clinical experience and judgment.

ENDOCRINOLOGIST AND INTERNIST.*

By W. W. HERRICK, M. D.,
New York.

If we are good or bad, wise or foolish, tall or short, fat or thin, successful or unsuccessful according to the balance of the varied functions of our endocrines there is in the thought a comforting release from accountability. That the fault may be in our glands and not in ourselves that many of us are underlings may give a measure of satisfaction. However, just as we are unable wisely to dispense with courts because the larger proportion of the inmates of our jails are sick men in one sense or another, so those of us interested in internal medicine may not willingly abandon to the endocrinologist the entire range of medicine. To the internist the glands of internal secretion seem at present the chief field of medical speculation with the majority interest on the long side of the market. A note of conservatism would seem in order and an investigation of underlying values wise.

We are ready to admit the facts concerning hypothyroidism. Long series of clinical observations, supplemented by the findings of the laboratory, capped by calorimetry and the careful work

of Doctor Kendall in the isolation of thyrotin seem to have brought our knowledge to a very satisfactory state, so that therapy is based upon apparent facts and is correspondingly successful. In the obverse condition, that of thyroid intoxication or overactivity, we are less secure. To be sure, the clinical picture is generally clear. The calorimeter enables us to estimate with some accuracy the degree of the disturbance. Rest, certain drugs, irradiation and surgery supply means of treatment that are exceedingly helpful. However, when we attempt to fathom the relations of thyroid intoxications to the sympathetic nervous system, the cardiovascular system, and the other endocrines, we encounter at once a complex too vast to compass with our present knowledge.

In considering the pituitary gland we are taking a still further step into the unknown. To be sure the anatomical divisions of this organ and their function are roughly known and the grosser pathological changes are recognizable clinically. An active principle, pituitrin, is of limited but real therapeutic value. The substitution therapy of diseases of the hypophysis is far from satisfactory, although a certain measure of success has been achieved in the various phases of the so-called Frölich's syndrome. We know even less of the adrenals than of the hypophysis. Again a valuable hormone has been isolated. We are aware of the clinical manifestations of grave changes in structure or function of this gland. The complex relationship to the vegetative nervous system, the cardiovascular system and the other endocrines is again a baffling complex, while the substitution therapy is again disappointing. Consideration of the gonads has been amply taken up by other speakers.

Regarding the thymus one may accept any opinion he may choose. There is a sufficient variety to suit all sorts. The contradictory reports of experimental workers and of clinicians give ample proof of our lack of definite knowledge of this gland. For the present the internist may perhaps content himself with recognition of the status thymolymphaticus and the more marked changes in structure which give rise to mechanical symptoms.

A few days ago a group of senior students presented a young man suffering from asthenia, low blood pressure and a subnormal temperature and who showed a few flecks of subcutaneous pigment. Having acquired what we may call the endocrine bias, these students had adopted a preconceived idea that such a case was necessarily one of hypo-adrenalism. Rather an elaborate study of the blood sugar values and the response to adrenalin injection had been made which seemed to bear out the premises. The only flaw in the argument was that an ordinary physical examination revealed an early tuberculosis of the right upper lobe. No one can deny that the patient may have deficient adrenals, but I dare predict that rest, fresh air and ample food would accomplish much more in this case than treatment with adrenal extract.

This case may serve to emphasize what would seem of fundamental importance; that back of the

*Discussion before the Medical Society of the County of New York, on December 22, 1919.

endocrines and responsible for their disturbance other conditions may lie. These may be infections, metabolic disorders, psychic states which may be entirely overlooked if one's vision is limited. Is it not well to emphasize certain facts with which pathologists are familiar: that the thymus gland diminishes in size, or even largely disappears as a result of prolonged, wasting disease; that posterior basilar meningitis produces disturbance of the pituitary gland, which may be expressed as a diabetes insipidus, that, as Mills has shown, the testes are profoundly affected in pneumococcal infections. The effect of infection, focal and otherwise, on the thyroid gland has been emphasized by various observers. The acute degeneration of the adrenals found in those dying from diphtheria is well known. Those of us who have lately seen hundreds of necropsies in soldiers dying from acute disease were much impressed with the acute degeneration of the adrenals in these cases. The diminution of chromaffin substance, the cloudy swelling, the fatty changes, the not infrequent hemorrhages were notable. The disturbances of the menopause may not always be due to ovarian hypofunction: a possible early renal insufficiency or cardiac disturbance, or the pronounced anemia which often accompanies the menorrhagias of this period, are examples of considerations not to be left out of account. Thus I would emphasize the association of the endocrines with the entire complex of the body frame and the futility of considering these glands as structures apart from the whole.

The specialist in endocrinology is to be encouraged. We need his pioneer enthusiasm. It is for him to draw the clinical picture not of the grosser changes which all of us can recognize, but of the *formes frustes*, the less pronounced variations from the normal. These pictures ought not to be sketched by fancy or imagination, or spring from bare empiricism, but will be prized as they are based not only on clinical observation and impression, but on a correlation of this with laboratory study and necropsy findings.

TOXIC GOITRE.

By J. CHRISTOPHER O'DAY.
Honolulu, Hawaii.

While hyperthyroidism is said to be a condition that is caused by an overactive thyroid gland, and toxic goitre one that imposes its baneful effects through a pathological secretion, our observations rather forbid the acceptance of such distinctions. We are, however, convinced that an oversecretion of the normal thyroid is toxic, but no evidence was found that a pathological secretion was sometimes the cause. Thyroid toxicosis has been described under such various titles as Graves's disease, cardiothyroid exophthalmos, struma exophthalmica, Basedow's disease, tachycardia strumosa, exophthalmic goitre, toxic or hyperthyroid goitre. It is our opinion that the name of Basedow should have been stricken from the list because he did not write his treatise on the disease till five years after the one written by Graves. That he knew nothing of what had been published by Graves was

no justification, as his friends have insisted, for a division of the honors.

The term exophthalmic goitre is misleading, for the reason that the exophthalmos is not a constant symptom. It is no more exophthalmic goitre than it is death dealing goitre, for just as it may result in death may it also result in an exophthalmus. From many of the textbook descriptions the notion is too often conveyed that it is called exophthalmic goitre because exophthalmos is always present. We will adhere to the term toxic goitre and then keeping in mind that the thyroid is actually poisoning the body by an excess of its normal secretion, the resultant symptoms, including the exophthalmos should it appear, are to be regarded as the markings indicative of the course being taken by the toxicant.

Why should the function of the thyroid so sever its relation with the balance of the organism as to threaten destruction? Study of microscopic goitre specimens gave us clear notions of the first cause of all retentive goitres. This did not hold for the toxic variety. This type of goitre has no single thing in common with any of the others. No study of its specimens either by the microscope or *en masse* gives the slightest clue of the factors that underlie hyperthyroid or toxic goitre. Under no other conditions does the gland present such an appearance as it does in hypersecretion. The character of its appearance on section is one that has the suggestion of hyperpyrexia. The entire mass is homogeneous, no areas of retention are to be found. The picture shows a farinaceous looking mass with tiny globular instead of granular particles. Usually the enlargement is unilateral, yet the same picture obtains with the unaffected lobe. Microscopically, it may be shown that this appearance is due to the preponderance of the acini, a preponderance that admits of little or no intervening stroma.

The secretion is thinner, being destitute of those albuminous elements which govern the consistency of that from the normal gland, and, according to the splendid work of Kendall at the Mayo clinic, contains more thyroxin. We come to regard it as more volatile, more pungent and more penetrating. It might be argued that the product of a toxic goitre differs so much in these particulars from that of the normal gland that its toxicity depends on the difference. It is not unreasonable to suppose that because of its volatile and penetrating character it is carried away much more rapidly by the lymphatics, but this is not found to be so. We are convinced that the whole trouble results from the actual hyperactivity where every acini has been put under a rapid fire too great to permit of the usual admixture of such amounts of albumin and globulin as are necessary in establishing the normal consistency of the finished product.

Under these conditions dissemination of such a secretion must, by its very nature, be rapid, until, surcharged with the amount in excess of the needs of metabolism, the resultant syndrome, that has penalized so many in the name of toxic goitre, makes its appearance. There is one point that

seems to have been less clearly settled. It is whether the palpitation precedes or follows the goitre. In Graves's well known clinical lecture, the lecture which justly has placed his name with the history of this disease, he says: "There was palpitation of long duration before the thyroid was seen to enlarge." Stokes, in 1855, writing of exophthalmic goitre, said: "Increased action of the heart, enlargement of the thyroid and then of the eyes." In 1856 and 1857, Charcot, in a masterly description of the disease, said: "Palpitation always develops before the exophthalmus and the goitre." During the year of 1860 Trousseau and Aran announced that the cause of the disease was to be found in the nervous and sympathetic nervous systems rather than the thyroid. Piorry denied that either of these nervous systems could have any part in the cause of the exophthalmos and with splendid argument showed it was the result of retarded intracranial circulation. So far as we have been able to learn, Piorry was the first to recognize and call attention to the true cause of the exophthalmus, i. e., venous stasis and varicosities of the orbital veins from retarded intracranial circulation.

What causes this intercranial retarded circulation he does not state, nor does he leave the slightest inference whether or not he held any definite idea of it himself. Viewing it in the light of our individual experience, we feel that he most likely must have had in mind the general stasis due to the inability of the upper veins properly to drain the continuous engorgement of the unyielding tachycardia below.

Considering what may well be regarded as modern ideas, argument is available in support of either side, namely, is toxic goitre caused primarily by the thyroid gland or is it the result of a nervous-sympathetic disturbance?

While the consensus of opinion holds the thyroid responsible, an embarrassing question may be interposed. It is, Why do some of the distressing symptoms of toxic goitre frequently continue in some patients after removal of each lobe?

In our clinic five such cases were recorded. In each of these five a second operation, and in two of them a third operation was performed. With each lobe removed, the isthmus alone being permitted to remain, this all but complete thyroidectomy failed to give the slightest relief. Fortunately such cases are not the rule, yet the fact that they do occur furnishes a reason for believing that something more than the hyperthyroidism is a factor in the cause.

At the conclusion of all we were able to accomplish, not so much as a tentative clue was given toward a solution of the problem. Indeed, we were less muddled in believing that no specific cause existed. Under what they had pleased to term exciting causes several reliable authors enumerated: Mental and physical shock, sexual excesses, sterility (female), long continued anxiety or grief, fright, fatigue, prolonged anger.

Considering the great number of persons who have experienced the foregoing without goitre resulting, the list appears to be merely speculative.

Von Graefe reported a case in which exophthalmic goitre developed in a man twenty-two years of age almost immediately following coitus with a young woman who had kept him struggling more than half an hour before yielding.

Mann, of the Mayo clinic, recognizing the fact that an increase in the activity of the metabolism is invariably associated with toxic goitre, sought a clue to the cause by a number of experiments on the ductless glands of hibernating animals in and out of the hibernating state. While the report of his endeavor tells of work well done, his summary offers nothing for in his conclusion he says: "It is impossible to state that some of the ductless glands are not of importance in relation to hibernation. New methods of investigation may demonstrate this relationship. However, the results of this study do not justify the assumption of any theory ascribing the phenomena to a lack of the function of all or any one of the ductless glands." Plummer (Mayo clinic), in grouping his cases of toxic goitre, found that in those patients under thirty years of age the course of the disease is more definitely shown. From the clinical onset to the first exacerbation is nine months with the greatest number of deaths occurring at this point.

That the thymus gland might have been a factor of first cause in toxic goitre has been argued from the severity of the cardiac degeneration and violent intoxication noted, especially in the menopause group. Postmortems failed to reveal the slightest support of the theory. While we are working within our rights and exercising the best known treatment when we attack the thyroid for the relief of toxic goitre, we are, nevertheless, aware that something besides the thyroid is playing a part.

Discussing this point, Kendall says: "The typical picture of exophthalmic goitre cannot be produced in the normal experimental animal by the administration of the thyroid hormone alone. It is not difficult to produce the symptoms of hyperthyroidism, but because of the ability of the animal to develop a tolerance the symptoms are very short-lived."

In a case of hyperthyroidism caused by the ingesta of forty-five grains of thyroid extract daily for the relief of obesity, the only case of the kind we had, the tachycardia persisted for nearly three months after the discontinuance of the drug. Considering this case of itself, some argument toward placing the whole responsibility on the thyroid might be shown. It is when we compare the case we find it at such variance with all that goes to make up one of toxic goitre *per se* that we become impressed with the truth of all Kendall has given us.

During 1913 and 1914 we set out to prove that the secretion of the thyroid has to undergo some sort of neutralization before it is acceptable to the general scheme of metabolism. We argued that a shortage of neutralizing substance, whatever that substance might be, permitted too much of the thyroid's nascent product to remain in the blood thereby causing the toxicosis to be felt sooner or later.

We further reasoned that the substance, believed to be mucin, infiltrating the body's tissues in myxedema must by analogy be the element of thyroid neutralization. On this hypothesis we set out to inject toxic thyroids with mucin. Unable to procure mucin from any of the biological houses, at the suggestion of Professor E. Whitney, professor of physiological chemistry of the University of Maryland, enough mucin was obtained from fresh umbilical cords for the experiment—but the result was a complete failure. It is said that mucin is the infiltrate of myxedema. If it is, it is unlike the product of the laboratory. While defeat was the end result of our experiment, there yet remains to be tried the inducing of an extreme degree of myxedema before considering the thyroidectomized animal capable of furnishing a product that will attract the excess from which the victim is suffering. Personally, the whole scheme of such neutralization from the milk of thyroidectomized goats to our own of mucin has nothing beyond its ingenuity to recommend it.

The cause of toxic goitre is not known, nor is it known that the whole cause had to do with the thyroid gland. Experience, however, assures us that lobectomy is the treatment capable of the best results, but to attain these results early operation should be regarded as imperative.

THE TREATMENT OF EARLY HYPERTHYROIDISM.

By FLORENCE L. MEREDITH, M. D.,
New York,

Director, New York Health Centre for Women and Girls; Consultant, U. S. Public Health Service; Medical Examiner, Wellesley College; Instructor in Surgery, Tufts Medical School.

One of the great advantages of routine examinations is the finding of incipient pathological conditions or of tendencies toward pathological conditions, but this ceases to be an advantage and becomes a menace to the patient if for any reason because of its mildness nothing is done to arrest it. We have all had the experience of seeing patients for whom there would have been a good deal of treatment available if the condition had been a little farther advanced, but for which there was nothing at all to do while the condition was in a stage which should have made it all the easier to treat. This is, of course, especially true of conditions in which the etiology is unestablished, and thus impossible of direct attack. Finding the condition well advanced, whatever may have been the etiology, the treatment is often definite. Finding it in its mildest forms, barely possible to diagnose at all, the etiology being unknown, we are likely to leave nature to herself, either to arrest it or to carry it along to a stage where it can be treated, by methods known to be successful.

When we are confronted by a patient with marked hyperthyroidism there is no question in the minds of most physicians as to the form of treatment to be pursued. Surgery has become without question the treatment for such conditions. But in every series of routine examinations there will always be found a number of patients with

early hyperthyroidism. In a recent series of 700 examinations, forty-four such cases were found. From the accounts these girls gave (although undoubtedly somewhat inaccurate) of their previous medical experience, the impression was gained that many physicians either do not recognize early signs, or do not consider those showing them suitable patients for any treatment. Some of the cases mentioned came under the writer's observation bearing certificates signed by their family physicians saying that the patient was in perfect health. To be sure the manifestations of the disease were so mild that no surgeon would have thought of operating. But with the picture in mind of what will result if the condition goes on, the need of doing something for them even thus early becomes imperative.

Since treatment based on etiology is in the present stage of our knowledge impossible, we can under these circumstances fall back on two things; first, the removal of any possible source of bacterial toxemia, and second, normalizing the entire life by general hygienic treatment. Early in his medical school days the student develops a great indifference toward general hygiene, which he is likely to tack on at the end of an imposing list of drugs to be used in treatment, often abbreviating it to G.H. When he gets into practice he is still rather likely to abbreviate it and to put it last in his list of therapeutic measures, until he sees what it will do that drugs alone will not. This is partly because patients have less faith in advice regarding habits of living than in drugs, and partly because patients will take drugs when they will not change their habits an iota. And it is partly because the effect of drugs is more immediately spectacular, the credit going where it belongs, to the doctor who prescribed them. We all have the Jehovah complex enough to be pleased at receiving credit for the cures we make. But the time has come when general hygiene, healthful living, normalizing the life, is being recognized as the first rather than the last thing to be insisted upon in most cases.

So even though we are lacking the knowledge of definite therapeutic measures in early hyperthyroidism, there is something to be done. Out of the forty-four patients in whom this diagnosis was made, fourteen could not be advised because they were in the hands of other physicians, and came to us only for examination. Thirty were treated according to the above mentioned plan, and in all but four, a considerable improvement in condition, and in six of those under treatment a complete subsidence of the symptoms. In the remaining twenty patients there are a number in which the improvement is so great that hope is entertained of an ultimate normal activity of the gland. The size of the gland and the already existent eye symptoms have in no case shown much improvement.

The diagnosis in each case was made most painstakingly in order to be sure that if improvement resulted it was an improvement in a mild yet definite condition of thyrotoxicemia. The measures used would naturally tend toward an improvement

in the general health in the absence of any pathological condition. We wished to prove that a pathological condition, often not so treated, could also be improved. The girls were mostly between the ages of sixteen and twenty-six, and most of them were examined as a routine measure. A few of the girls, however, voluntarily presented themselves on account of subjective symptoms. Most of the girls were unaware of any special ill health, although they felt dissatisfied with their general condition. Most of the patients showed several important symptoms of hyperthyroidism in a mild degree, and some showed positive laboratory findings. Some of the more significant symptoms have been tabulated as follows:

Secondary symptoms other than those tabulated occurred in the series fairly frequently, again mildly, often inconstantly. In the table the plus sign signifies only a sufficient degree of positiveness in many cases to be called present at all. Slight means usually barely determinable. The heart

caries of the teeth did not appear to have any significance as a possible result of the thyroid activity, but seemed to be more logically considered as a possible etiological factor, although one of the dentists who treated two of the patients believed it to be a result rather than a cause.

The outstanding fact about these girls was that not one of them had been living like an intelligent human being for years. Although their occupations were various, ranging from that of a school girl of seventeen to a pupil nurse in a government hospital, they were conspicuously alike in having broken many of the laws of health repeatedly. They broke them in different ways. One practically exhausted herself daily with hard physical work, from which fatigue her night's rest was inadequate to bring about recuperation. Others had never had any physical activity at all beyond that of running a typewriter. Most of them had no notion of a proper diet, and many of them lived almost entirely on carbohydrates. In some the ap-

Case number.	Goitre.	Tachycardia.	Neurosis (compuls.)	Epinephrine test.	Parox. tach.	Nervousness.	Under weight.	Appetite.	Diarrhea.	Menstrual disturbance.	Sexual procrement.
1	Slight R. lobe.	90	Slight.	—	—	—	—	—	—	—	+
2	Slight diffuse.	90+	—	—	—	—	—	—	—	—	Cured (+)
3	Slight.	80+	—	—	—	—	—	+	—	—	Cured (?)
4	+	94—102	—	—	—	—	—	+	—	—	+
5	Slight R.	—	—	—	—	+	—	+	—	—	Cured.
6	—	—	—	—	—	—	—	—	—	—	Cured (+)
7	Slight R.	—	—	—	—	—	—	+	—	—	—
8	—	—	—	—	—	—	—	—	—	—	Cured (?)
9	—	—	—	—	—	—	—	—	—	—	+
10	Substernal.	90	—	—	—	—	—	—	—	+	+
11	—	116	—	—	—	—	—	—	—	+	+
12	—	108	—	—	—	—	—	—	—	+	+
13	Slight R.	90	Slight.	—	—	Slight.	—	—	—	+	Cured (?)
14	—	—	Slight.	—	—	—	—	Slight.	—	—	+
15	—	—	—	—	—	—	—	+	—	—	+
16	—	—	—	—	—	—	—	+	—	—	+
17	+	—	—	—	—	—	—	+	—	—	+
18	—	—	Slight.	Slight.	—	—	—	—	—	—	+
19	—	260	—	—	—	—	—	—	—	—	+
20	—	N. 260	—	—	—	—	—	—	—	—	+
21	—	Parox. tach. up to 160	—	—	Slight.	—	—	—	—	—	+
22	—	360	—	—	—	—	—	—	—	—	+
23	—	260	—	—	—	—	—	—	—	—	+
24	—	120	—	—	—	—	—	—	—	—	+
25	Slight R.	—	—	—	—	—	—	+	—	—	+
26	Slight isthmus.	94	—	—	—	—	—	—	—	—	+
27	—	86	—	—	—	—	—	—	—	—	+
28	—	84	—	—	—	—	—	—	—	—	+
29	—	—	—	—	—	—	—	—	—	—	+
30	Slight diffuse.	88	—	—	—	—	—	—	—	—	+

rates are those taken with the patient at rest. But as most of the girls were especially susceptible to psychic stimulation, and as the examinations were somewhat of an ordeal, on which something was pending in most cases, it is possible that their usual pulse rates were somewhat lower.

Several were referred to hospital laboratories for epinephrine, basal metabolism and thyroid feeding tests. None of them were very markedly positive but several slightly so, as follows: Epinephrine, cases tested ten, cases positive five, basal metabolism, cases tested sixteen, cases positive, eleven, and thyroid feeding, cases tested sixteen, cases positive twelve. As an initial effort in the right direction we sought out any possible sources of toxemia, possibly sufficient to involve the thyroid gland. We found diseased tonsils in seven, which we had removed; fourteen patients with carious teeth, which were either treated or extracted; one with chronic otitis media, which was treated; fifteen with chronic constipation. Two had had severe attacks of influenza within a year. The

petite was voracious, but satisfied in a quite unscientific manner. Most of them drank little water and a good deal of tea and coffee. Many had difficulty in going to sleep at night and also in waking in the morning. A number complained that they never got enough sleep. Some of them always slept poorly, usually in the same bed with somebody else, often with no windows open. Several said they did not feel awake until the afternoon. Fresh air, exercise, sports, frequent bathing, were not included in the régime of any of them. The movies and flirtations were the main forms of recreation. Very few even danced often.

Since surgery was not indicated and treatment by drugs and sera unpromising, and because they needed it anyhow, these girls were given advice leading to the adoption of a more healthful régime. Those who needed special treatment were attended to in these respects first. The constipation was corrected largely without drugs, but by the formation of regular habits of both ingestion and elimination, foods having both a chemical and a me-

chanical effect against constipation, water drinking, abdominal massage, general exercise and special exercises for toning up the abdominal muscles and improving abdominal circulation.

The rest of the girls, all of them in fact, had their daily life scrutinized in detail, and were thereafter given a sufficient knowledge of the conditions of health and the reason for their own lack of it, that they faced about in their down hill path and began to climb back again to health. The chief thing needed for most of them was a better balance between work and play, quiet and activity. Bromides I think were the last thing that would have helped these girls, except temporarily. Some of them unquestionably needed more quiet and more sleep, and were so advised. But in looking back beyond the present condition it was found that most of them had been consistently sluggish, and were so still under the mask of hyperthyroidism. There may occasionally be patients in whom rest induced by sedatives is indicated. But in my experience the cases which do not respond to healthful living and normal activity, have become so advanced that they will ultimately become cases for the surgeon and had perhaps better be so at once.

Disregarding the condition itself in its incipience, and before it is too late to be safe to try it, endeavoring to get the girl into a normal régime has given excellent results in these cases. A reasonable amount of outdoor exercise, begun gradually, noncompetitive athletics, a cool tub and rub in the morning (not cold, because these girls respond as desired to water less cold than the average girl), a warm, not hot, bath at night, sleeping under proper conditions, carefully regulated diet and elimination, and the supplying of healthful forms of recreation, have had so favorable an effect on circulation and metabolism generally that in the cases longest under observation little remains of even the mild symptoms originally present. In some patients still other habits would have to be corrected. It is possible that changes in the habits of living may be responsible for the receding of even advanced cases of hyperthyroidism, as occasionally reported. This occasional receding is so far as I know the only argument, and this a feeble one, against the use of surgery in every advanced case.

The mental health of these girls was also examined with care. Emotional disturbance, nervousness, alternating depression and exhilaration, were the principal subjective symptoms in many. The nature of the girl's work, her home surroundings, her relation to her family and friends, and the amount of maladjustment and lack of satisfaction gotten out of life was ascertained by mental specialists aided by social workers. In a number of cases there was plenty of ground for thinking that storm and stress, sordid circumstances and generally unsatisfactory surroundings were somewhat to blame for the functional mental disturbance, and possibly by its reaction on the physical health helped to promote the hypersecretion of the thyroid gland. But in trying to determine whether the old theory could be substantiated of emotional disturbance being the primary factor in causing hyperactivity of the gland, we were forced

to the conclusion that it could not be in any of these cases. We found that whatever emotional instability was present seemed to be due to the hypersecretion rather than the cause of it, the history in each case except one pointing to simultaneous appearance of the nerve and other symptoms.

In the one case which was the exception, the young woman, now twenty-eight years of age, had been married under unpleasant circumstances at the age of eighteen, had twice been separated from her husband because of quarrels, and had for the past ten years been very nervous and irritable. The enlargement of the thyroid, which is even now barely perceptible, and the other symptoms have come on only within the past three years. She has no children, partly because of the use of contraceptives, and partly because of selfinduced abortions. She has been working as a saleswoman and doing her own housework through the entire ten years. She lost no weight until within the past six months, during which time she has been living and quarreling with her husband. In this case we concluded that mental as well as physical hygiene was needed, their lack of observance being equally responsible for the disturbed secretion. The emotional instability, in addition to the long hours of hard work, and the general lack of hygiene were all good working points in the treatment attempted. While we would have liked to advise her to leave her husband permanently this was not done of course, but she was instead given considerable advice by a specialist in mental health, to help her in getting along with him. She gave up her housekeeping and went to live with relatives who were good housekeepers and helped to keep her husband in a good frame of mind. In so doing she was nearer the store work and had little to do beside. She has improved somewhat since the readjustment was made.

The introduction of more activity into the lives of patients with any degree of hyperthyroidism at all may be said to be unwise, in that increasing the activity of the circulation would result in increasing the production of the thyroid secretion. If the case had gone so far that there was danger of causing any degree of increase in the amount of secretion, danger of overburdening the heart and nervous system, it would of course be a foolish procedure. But in the very early cases there is simultaneously an increase in the thoroughness with which all bodily functions are performed, and the slight overactivity of the thyroid is soon overcome by the general improvement. Sluggishness in some other glands, based on the general sluggishness of circulatory and metabolic activity, may be overcome by the greater activity and better general health, and thus give the thyroid less occasion for increased secretion.

The state of being generally below par we know leads to the acquiring of infection and other pathological conditions. It seems reasonable to suppose that nonobservance of the habits of health over a long period may be a sufficient etiological factor in many metabolic and secretory disorders. The normalizing of the life would thus be a logical procedure in early hyperthyroidism.

Editorial Notes and Comments

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ENFORCEMENT OF THE HARRISON NARCOTIC LAW.

The prosecutions of physicians and druggists for violation of the Harrison narcotic law, which have recently been assuming the proportions of a campaign on the part of the Federal authorities in New York city, have been misunderstood in some quarters, and it seems desirable that a clear statement should be made of the nature of these prosecutions. Many physicians and druggists do not discriminate between the Federal law and regulations and those of the State of New York, and have the impression that they are likely to get into trouble with the United States officials by reason of some technical oversight or carelessness.

Referring to the recent indictment of a physician whose name has been more or less before the public, former State Senator Whitney in a newspaper interview gives voice to this impression by saying that "any reputable physician who attempted to treat addicts made himself liable to technical violation under the present interpretation of the Federal law." To obviate any such misconceptions we are in a position to state authoritatively that all the physicians and druggists who have been indicted or prosecuted in the Federal courts in this district have been selected for prosecution because the officials, and the members of the grand juries who returned the indictments, were convinced that the defend-

ants had been engaged in the practice of pandering to the cravings of addicts without any bona fide attempt at genuine medical treatment.

Not a single physician or druggist in this district has been arrested, indicted or prosecuted by the Federal authorities, in the course of this campaign, for anything which could be in any sense regarded as a merely technical violation of law or regulations. On the contrary, the Federal law, and the court decisions under it, make it clear that no physician can be prosecuted for prescribing narcotic drugs in the course of his professional practice, and no druggist for filling such prescriptions. It is only where the professional license of a physician is used as a cloak for trafficking in these drugs that the physician, or the druggist filling his prescriptions, is rendered liable to prosecution.

As for the statement, in the interview referred to, that addicts should not be regarded as criminals but as sick persons, it may be stated that it is not the practice of the Federal authorities to prosecute addicts, and the prosecutions of physicians and druggists who act as a source of continuous supply of the drugs are in the best interests of the addicts who desire to be cured of their unfortunate condition, and are designed to stop the indefinite perpetuation of it under the guise of medical treatment.

The suggestion has been made in the press, from the source already quoted, that the enforcement of the law is designed to promote the business of private hospitals for the cure of drug addicts. Undoubtedly the prosecution of peddlers, dishonest physicians and druggists, and all other illicit sources of supply will result in addicts going to places where they can be cured, since their cure, as well as the prevention of further addiction, is the ultimate object sought by the law. If this helps the business of those engaged in honest efforts to cure, so much the better. The New York City Department of Health, however, has for some time maintained a hospital where voluntary patients are accepted and treated without charge, and no addict is compelled to patronize a private institution.

It seems that the Federal authorities are doing an important and beneficial work, and we fully share the views expressed in the following resolutions unanimously adopted at a hearing of the committees of the American Medical Association, the Medical Society of the State of New York, and the Medical Society of the County of

New York, held at the Academy of Medicine, February 11, 1920, at which many experts on narcotic addiction treatment were present as invited guests:

Resolved, That it is the sense of those present that the recent activities of the Federal authorities in New York city (U. S. District Attorney—U. S. Internal Revenue), in the enforcement of the Harrison Narcotic law against trafficking physicians and druggists have been of great value in checking this evil and are highly to be commended, and be it further

Resolved, That all physicians and druggists qualified by knowledge and experience should co-operate with the Federal authorities and aid them in every way possible, especially in volunteering their services as expert witnesses and advisers.

THE SYMPTOMATOLOGY OF DEXTRO-CARDIA.

When one is dealing with a case of pure dextrocardia without congenital defects of the heart the patient will only complain of mild disturbances, such as palpitation or shortness of breath, if indeed he complains at all. Many of the recorded cases show that the subjects led active and hard lives without in the least being troubled by the cardiac transposition, which was only discovered by mere chance. The few symptoms noted have undoubtedly been due to nerve compression. The situation is entirely different when a cardiac malformation exists. There are cyanosis of the limbs, palpitations, precordial distress and sometimes serious syncope; but all these are due to the congenital defect, not to the dextrocardia. When the hereditary antecedents of these subjects are examined, one will rarely find a history of rheumatism; diseases of the heart and syphilis are extremely rare. Occasionally, there are cases of other congenital defects in the family, such as clubfoot, but seldom any congenital defects of the heart.

These subjects are likely to be puny, and occasionally cranial asymmetry or scoliosis exists if the patient is an adult, rickets if a child. Sometimes there is a spina bifida, a supernumerary finger, but in about sixty-six per cent. of the cases of dextrocardia the patients are otherwise perfectly developed. About sixty six per cent. of them are left handed. Inspection will show an arching on the right side of the thorax and heart beats that are synchronous with the pulse in the area of the right nipple. By palpation the inversion of the cardiac apex will be felt over the point where the beats were seen, while nothing can be detected on the left side. Bard refers to an important sign in dextrocardia, that Boudet has described for ascertain-

ing the cardiac area. This sign consists of presystolic and systolic click perceptible by palpation of the second intercostal space on the right side consequent upon the closing of the arterial sigmoid. Bard believes that this is an excellent means of making out the base, because the apical shock may be found to the right side, when the heart is pushed aside by pleurisy or any other morbid process, but if one can be sure that the base itself is on the right side, it is certain that a congenital dextrocardia exists, but other workers have not always found this sign. Percussion will reveal an area of dullness over the second and third right intercostal spaces, while on the left side pulmonary resonance will be found.

By auscultation the heart sounds will be distinctly heard on the right side in an area corresponding to what would be normally found on the left side. The sounds will vary according to the presence or absence of a congenital defect or disease of the heart. Thus there may be murmurs accompanied at times by a purring tremor or a mid-cardiac murmur when an interventricular or, more rarely, an interauricular communication exists, a murmur over the pulmonary or aortic areas if there is an arterial stenosis or a patent Botal foramen; and lastly, a presystolic rolling sound or murmurs of insufficiency consequent upon stenosis of the cardiac orifices. Palpation, percussion and auscultation will map out the aortic arch and the ascending aorta, which will be found to the right or obliquely from right to left. To make the examination complete, a careful examination of the lungs and state of the mediastinum must be made. Radiography will show the exact location of the heart by the cardiac, mediastinal and hepatic shadows.

At autopsy the heart will be found lying upward and to the right. Occasionally there are deviations on its longitudinal axis, the borders are placed to the right and there are deviations of its transversal axis. These are the trochocardias of Alaverengo. Frequently the right ventricle, recognizable by its tricuspid valve, will be found on the left side—the aorta will leave the right ventricle, occasionally in the median line and astride the septum. The pulmonary artery will arise from the left ventricle or even from the same ventricle as the aorta, or it may be completely wanting, being replaced by the arterial duct. The aorta may be in front, and the pulmonary artery behind. Frequently communications exist between the auricles or ventricles, or the septums may be absent, the heart having a single ventricle or auricle. Likewise abnormal anastomosis of the arteries and veins may be present.

THE STUDY OF BILIARY SECRETION DURING RETENTION.

If the urine and blood of patients with biliary retention are examined in a routine way it appears possible, in some cases, to obtain interesting data concerning the nature of the causal lesion and its ulterior evolution. In cases of total retention, examination of the urine and blood will give no data whatsoever, since the cause of the retention may be the result of a lesion of the secretory apparatus or one involving the excretory apparatus—a lesion of the hepatic cell or an occlusion of the biliary tract. Retention reacts upon the pigments during the entire duration of the affection or else the dissociation will be secondary, reacting indifferently on the bile pigments or its salts. In these circumstances it is to be concluded that there is no obstruction of the biliary tract, but rather a morbid change in the hepatic parenchyma, so that a search for pigments and bile salts in the urine, and blood if necessary, should be done daily in cases where the diagnosis is doubtful, for example, between catarrhal icterus and a latent attack of biliary lithiasis, or a prolonged catarrhal icterus and a chronic icterus.

A dissociation taking place after retention generally appears to be an indication of recovery in cases of infectious icterus, but when the dissociation does not occur, nothing can be concluded. In primary retention, with isolation of the bile salts, the prognosis would be different. This retention is met with in serious persisting hepatic lesions, such as long standing atrophic alcoholic cirrhosis or hepatic cancer with cirrhosis. In cases of alcoholic cirrhosis at its onset, with hypertrophy of the liver, cardiac cirrhosis and asystolic hepatic congestion, it has not been encountered. Therefore, it can be said that total retention gives no indication as to the nature and prognosis of the icterus, but a total retention, followed by a dissociation of no matter what kind or retention of pigments from the onset of the symptoms, indicates a lesion of the hepatic parenchyma. A retention with primary isolation of the bile salts indicates a profound lesion of the hepatic cells.

It is clear, therefore, that there are many varieties of retention that may be encountered. Besides complete icterus from total occlusion of the choledochus, hepatic duct, or the ampulla of Vater, catarrhal icterus may occur in most varied forms. Retention may be complete or incomplete, and this more or less extensive retention should, in all likelihood, denote the intensity of the lesion involving the hepatic cells. Some observers have compared this dissociation to that produced in the

kidney in the nephritides. Hanot long since drew attention to cases of total or partial acholia, acting either on the pigments—pigmentary acholia—or on the bile salts. In the case of total acholia he noted that the fluid of the vesicle was colorless although there was no icterus. Such cases are due to a nonformation of one or several component elements of the bile by the diseased hepatic cell. Complete or incomplete retention of hepatic origin appears to be due to the same order of things, but with the exception that the hepatic cell is less involved, since it still can elaborate the products of the bile, as is proved by their passage into the blood and circulation. These cases of dissociation demonstrate that the hepatic cell is still productive, but can only imperfectly eliminate, or rather it eliminates by another channel. This failure of the hepatic cell to allow the outflow of the products of formation may be temporary or permanent. Pigment retention is usually temporary; the retention of bile salts lasts longer. At any rate, the permeability of the hepatic cell for bile salts seems to return more slowly, as many cases show. We can, consequently, seize upon the entire series of functional disturbances which objectively indicate the involvement of the hepatic cell, as well as its greater or lesser intensity, from total acholia to incomplete acholia and down to a slighter degree causing a complete or incomplete retention, dissociation of the biliary secretion, either of the salts or the pigments, the latter appearing to be the most benignant of all.

BOTULINUS POISON.

All spoiled food is not infected with the *Bacillus botulinus*, but any spoiled food may be, even though the spoilage is slight. A statement issued by the U. S. Department of Agriculture warns against botulinus poisoning in food showing even the slightest unnatural odor, unnatural color, swelling of the container, signs of gas, or any evidence of decomposition.

The department has used every possible effort and gone to the limit of its legal authority to remove all dangerous foods from the market by seizure under the food and drugs act. Each time when botulinus poisoning has occurred, food inspectors have traced through the channels of commerce the batch from which the poisoning food came, and have used all measures under the law to remove it from the market. Samples from all other brands put out by the packer have been examined. Since the law authorizes seizure in such cases only when the foods are actually found to be decomposed or to contain poisonous ingredients; since only an occasional package in millions is infected with *Bacillus botulinus*, and since it is physically impossible to open and examine more than a comparative few of the millions of cans entering

interstate commerce, it is beyond the power of the authorities to protect the public completely. For this reason scrupulous care should be exercised by persons serving canned foods to discard anything which is spoiled. In products not obviously spoiled, if there is doubt in the recognition of the odor proper to the product, thorough cooking will remove the possibility of danger from botulism.

Nobody knows just how the *Bacillus botulinus* gets into any particular food. It has been found in articles put up in the home by the careful housewife and in goods packed in commercial establishments. It may be present in a few packages only of any lot. There is no method by which the packers or home canners can assure themselves by casual examination before canning that the product does not contain the *Bacillus botulinus*. If the food were in all cases properly sterilized and perfectly sealed the development of poison would be impossible, but no method of preserving food has yet been found that eliminates the occasional spoiled package. Failure to sterilize may not become apparent for weeks or even months after the canning of the article. If signs of spoilage have appeared when the can is opened, it is a clear warning that the product is no longer edible. There is no greater probability of botulism poisoning in olives than in many other food products, either commercial or domestic. Until this year it has been more commonly found in string beans, asparagus, and similar foods. It was originally found in sausage. It has been found in cheese; it is sometimes present in stock food, such as moldy hay and other kinds of spoiled forage, but in the department investigations it has never been found in any kind of food that was not spoiled.

INDEX CATALOGUE OF SURGEON GENERAL'S LIBRARY.

The third series of index catalogues of the library of the Surgeon General's Office, U. S. Army, is in the process of publication, and Volume I (A-Army) has already been issued. In the letter of transmission Colonel Champe C. McCulloch, Jr., librarian, states that at the time of writing (August 1, 1919) a large amount of European medical literature had been inaccessible by reason of war conditions. Not only German medical literature but also Slavic and Scandinavian was shut off by the war, while that of France and England fell off considerably in quantity, and that of Belgium became practically extinct.

Obituary.

ELMER ERNEST SOUTHARD, M. D.
of Boston.

Dr. Elmer Ernest Southard died suddenly on February 8th, at the Prince George Hotel, New York. He had come to New York to deliver two lectures, speaking Tuesday night before the Neurological Society and Wednesday night before the Association for Mental Hygiene at the Academy of Medicine. On Thursday night he became ill. He was attended by Dr. Henry T. Chickering, Dr. Albert R. Lamb, and Dr. Warfield T. Longcope, of the Presbyterian Hospital.

Doctor Southard was born July 28, 1876, in Boston, and received his A. B. degree from Harvard University in 1897, his M. D. degree in 1901, and an M. A. degree in 1902.

He then attended Senckenberg Institute, at Frankfurt, and the University of Heidelberg. The honorary degree of Doctor of Science was bestowed upon him by Georgetown University, Washington, D. C., in 1917. He served as an intern and assistant in pathology in the Boston City Hospital and later became visiting pathologist to this institution. In 1914 he was appointed instructor in neuropathology in the Harvard Medical School and later became assistant professor; in 1909 he was made Bullard professor. From 1906 to 1909 he also served as assistant physician and pathologist to the Danvers State Hospital. Since 1912 he had been a director of the Boston Psychopathic Hospital and of the Massachusetts Psychiatric Institution.

Doctor Southard was an assistant editor of the *Journal of Nervous and Mental Disease*. One of his recent books which proved of great interest to psychologists was *Shell Shock and Neuropsychiatry*. During the war he served as a major in the chemical warfare service and as chairman of the Committee on Psychiatry and Neurology of the National Research Council.

He is survived by his widow, Dr. Mabel Austin Southard, a lecturer at Wellesley College; his mother, Mrs. Martin Southard; two sons, Austin and Ordway, and a daughter, Anne. Among his many interests, one to which he was particularly devoted was chess. He was one of the leading amateur chess players in the country and a member of the St. Botolph and Boston Chess Clubs.

The death of Doctor Southard came as a shock to those who knew him. At his lecture before the Neurological Society, on Tuesday evening before



ELMER ERNEST SOUTHARD, M. D.

his death, he appeared to be in the best of health and was especially brilliant in answering the remarks which his address drew forth. He had been keen in espousing pragmatic psychology, which he held to be an Anglo-Saxon institution, and the evolution of which he had followed from Franklin, Pierce, James, and Schiller. He expressed the hope that it would be the method which neurologists would finally adopt. Everyone was impressed by his sincerity, nimble wit, and adroit reasoning. His charm, his magnetic personality, and his readiness to defend his principles awoke admiration in even his most bitter opponents. He was always striving for progress, reaching out in every direction for something more useful and better adapted to reach the ultimate goal of truth. Once having found a theory to his liking he would battle bravely to defend it, but he was ever willing to forsake it when a better method presented itself.

His death leaves a gap in the ranks of active neurologists. It was reasonable to suppose that with the equipment he possessed and his eagerness for advancement, he would accomplish much in the future. Although his work was abruptly terminated while he was in the prime of life and vigor, the energy he displayed will not be lost, for he has given to his many followers an inspiration and a new impetus.

News Items.

Ripe Olives Kill Six.—Six persons died in Memphis, Tenn., from poisoning due to eating ripe olives.

Influenza in Japan.—Influenza is reported by press dispatches to be taking a heavy toll in Japan, and a number of deaths have resulted.

Baltimore County Medical Association.—At the regular meeting of this society, on January 21st, the following officers were elected: President, Dr. John W. Harrison, of Middle River; secretary, Dr. George S. M. Kieffer, of Morrell Park.

Captain Oscar C. Frundt Honored.—Captain Oscar C. Frundt, Medical Corps, U. S. Army, of Jersey City, has been awarded the Distinguished Service Cross for extraordinary heroism while commanding a hospital train in Eastern Siberia in June, 1919.

Wisconsin State Board of Health.—Dr. William F. Whyte was reelected president of the State Board of Health of Wisconsin at the annual meeting of that body, held January 20th, in Madison. Dr. Cornelius A. Harper, of Madison, was reelected secretary and State health officer, and Dr. Frank F. Bowman, of Madison, was appointed deputy State health officer for the Southern Wisconsin district.

Osler Memorial Meeting.—A memorial meeting in honor of the late Sir William Osler will be held Saturday evening, February 28th, in Hoosack Hall, New York Academy of Medicine. Among those who will speak are: Dr. William H. Welch, of Baltimore; Dr. Thomas McCrae, of Philadelphia; Dr. Harvey Cushing, of Boston, and Dr. Francis J. Shephard, of Montreal.

Yellow Fever Epidemic Ended in Peru.—The epidemic of yellow fever which began about the middle of 1919 has been officially declared as having come to an end.

Liège Médical to Reappear.—It is reported from Paris that *Le Liège Médical*, which during the war was combined with *Le Scalpel*, reappeared early in 1920 as an independent weekly journal.

Kansas to Get Hospital Equipment.—Kansas, the first state to ask for emergency relief from the War Department, will receive emergency hospital equipment of the army to aid in checking the influenza epidemic in that State.

Doctor Biggs Reappointed State Health Commissioner.—The reappointment of Dr. Hermann M. Biggs as commissioner of health of New York State was recently confirmed by the State Senate.

Medical Journal Provision.—The will of the late Dr. Christian R. Holmes sets aside a fund of \$25,000 for the establishment of a journal for the medical department of the University of Cincinnati. Publication must be commenced within a year of Doctor Holmes's death.

New Editor for Pennsylvania Medical Journal.—Dr. Frederick L. Van Sickle, of Olyphant, has been elected executive secretary of the Medical Society of the State of Pennsylvania, and will be editor of the *Pennsylvania Medical Journal*, beginning with the July number.

Factory Test.—Tests of air in a factory at Niagara Falls, N. Y., made by the U. S. Public Health Service revealed the fact that each cubic foot of air contained more than 200,000,000 tiny particles of dust, almost as hard as diamond dust and extremely dangerous to the lungs and air passages.

Influenza in Hawaii.—Influenza is reported to be spreading in Hawaii. On February 13th sixty-eight new cases were reported in Honolulu, with two deaths, 119 new cases on the Island of Oahu, and fifty-two new cases on the Island of Kauai. The situation in Honolulu is said to be rendered critical by the hundreds of Filipinos who are leaving sugar plantations to flock into the city.

Work of Rockefeller Institute Commended.—The Rockefeller Institute for Medical Research has received a letter from Surgeon General W. C. Braisted, of the U. S. Navy, commending the work of the institute in connection with the War Demonstration Hospital at Avenue A and East Sixty-fourth Street, New York.

Personal.—Dr. John F. X. Jones, of Philadelphia, has been appointed to the surgical staff of St. Agnes's Hospital in that city.

Dr. Seymour Oppenheimer, of New York, has been appointed by Governor Smith a trustee of the State Institute for the Study of Malignant Diseases.

Dr. James MacFarlane Winfield, professor of dermatology in the Long Island College Hospital, has resigned.

Dr. Rudolph Matas, professor of general and clinical surgery at Tulane University, New Orleans, has been elected an honorary member of the New York Academy of Medicine.

Council of Red Cross League Meets.—The general council of the League of Red Cross Societies will meet the week beginning March 2d in Geneva. Problems to be discussed include the promotion of international health crusades and methods of financing and organizing for peace time service.

Local Statistics.—The weekly health index issued by the Census Bureau gives the following figures for New York city for the week ending February 7th: Total deaths, 3,502; death rate, 35.0; deaths under one year, 364; percentage of deaths under one year, 10.4. Deaths from influenza are given as 956, and from pneumonia as 1,121.

Influenza Epidemic Officially Ended.—Dr. Royal S. Copeland, health commissioner of New York, has announced that as the influenza epidemic is virtually over, the daily bulletins issued by the health department giving the figures on new cases and deaths due to influenza and pneumonia would no longer be prepared. It was stated by Doctor Copeland that while the total number of cases this year was about the same as in the 1918 epidemic, the death rate from the present visitation was less than half that in 1918.

Influenza in Army Camps.—The summary of health conditions among troops, issued weekly by the Surgeon General's Office, reports that for the week ending February 6th influenza continues at many of the large camps and stations, principally among the Eastern and Southern stations. A decrease is reported in camps in the central part of the United States, where the present epidemic first appeared. Although there were fewer new cases of influenza reported during the week, the number of new cases of pneumonia was double that of the previous week.

Shore Department of Floating Hospital.—The Boston Floating Hospital, which has done notable work in the care and treatment of sick babies, has recently opened an "on shore" department, situated near the Harvard Medical School. The new establishment is designed to keep certain patients after the Floating Hospital itself has gone out of commission for the winter, and to continue the educational work. A complete hospital organization is maintained at the new institution. Infants are received for hospital treatment; there is a clinic for sick babies, where mothers are given instruction, and there are also laboratory facilities for the continuation of special studies.

Public Health Service Appropriations.—An appropriation of \$4,000,000 for the immediate needs of Public Health Service hospitals has been made by Congress. The funds will be used in hospitals occupied by war risk insurance patients. By the same bill \$500,000 is appropriated for expenditure at various government hospitals, and \$15,000 for the propagation and sale of viruses, toxins, and analogous products. The Public Health Service is forbidden to use any of its funds for newspaper or magazine advertising. Forty-three hospitals are now being operated by this department for the care of discharged, disabled soldiers, sailors, marines, and war nurses who are beneficiaries of the war risk insurance act.

Richmond Neurosurgical Unit.—A neurosurgical unit for the treatment and care of war veterans suffering from injuries of the brain, spinal cord, and nerves, will be established at Richmond, Va., the district to embrace Virginia, Maryland, West Virginia, and the District of Columbia. The personnel of the unit includes Dr. Claude C. Coleman, Dr. Paul V. Anderson, Dr. John H. Baird, Dr. William R. Jones, and Dr. William F. Mercer, all of Richmond, and Assistant Surgeon Clavel T. Wilfond, U. S. Public Health Service. Treatment will be given at the Memorial Hospital, Richmond.

Hospital Orderlies Present Demands.—Male hospital attendants, who recently organized a union chartered by the American Federation of Labor, have presented demands to New York hospitals. These include a closed shop, a twelve hour day, recognition of the union, a minimum wage of \$85 a month with board and lodging, or \$100 with board only, one day a week off, and suitable sleeping quarters. No threat of a strike has been made, but the union has requested an answer in writing. A conference of hospital officials was scheduled to take place during the past week to consider the demands.

Philadelphia Health Department Positions.—The Philadelphia Civil Service Commission, having waived the qualification of residence for a number of positions in the health department, announces examinations for the following positions on the dates and with the salaries given: Assistant chemist, \$2,000, March 9th; chemist, \$2,500, March 9th; assistant bacteriologist, \$1,500, March 10th; bacteriologist, \$2,000, March 10th; serologist, \$1,200, March 8th; electrocardiographic worker, \$1,000, March 8th; director and clinical pathologist, \$3,500, March 8th; chief resident physician, \$4,000 and maintenance, March 8th; first neuropathologist, \$1,500, March 11th; superintendent, \$5,000 and maintenance, February 27th; assistant superintendent, \$3,000 and maintenance, February 27th. Detailed information may be secured from the commission, City Hall, Philadelphia.

United States Civil Service.—The United States Civil Service Commission announces that a large number of physicians are needed for employment in the Indian Service, the Public Health Service, the Coast and Geodetic Survey, and the Panama Canal Service. Both men and women will be admitted to examinations, but appointing officers have the legal right to specify the sex desired when requesting the certification of eligibles. Entrance salaries as high as \$200 a month are offered, with prospect of promotion in some branches to \$250, \$300, and higher rates for special positions.

Further information and application blanks may be obtained from the U. S. Civil Service Commission, Washington, D. C.

Announcement is also made of an examination for scientific aid in the division of physical anthropology, National Museum, Washington, to be held March 16th. Both men and women may enter the examination, provided they have been graduated in medicine from an institution of recognized standing, or have had at least two years' training in anatomy and physiology. The salary is \$1,500 a year.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

THE TREATMENT OF SEBORRHEA OF THE SCALP.

BY CHARLES GREENE CUMSTON, M. D.,
Geneva, Switzerland.

Until quite recently the treatment of baldness and loss of hair has been largely in the hands of quacks, but from the interest now evinced by the medical profession and the recent knowledge of the pathology of this morbid process which has been acquired, scientific treatment can now be applied. The treatment is based upon two facts: 1, that the process is one of hyperkeratosis and parakeratosis from hyperoxidation, and 2, that sulphur is the foremost remedy for reduction. This fact became the starting point of a number of experiments which have resulted in the development of successful treatment, and although as yet by no means perfect, modern treatment when properly carried out and if undertaken in time will, in the majority of cases, prevent baldness.

During the past five years, Merz has effected much research with both organic and inorganic sulphur preparations, and at present he especially employs precipitated sulphur, colloidal sulphur, and recently prepared sulphoform. Precipitated sulphur varies in action according to its origin. It is essential to obtain a product both chemically and technically irreproachable, and which guarantees the requisite fineness of the particles of sulphur. The extreme division of sulphur allows it to penetrate deeply, and its fine crystals have, by their mechanical action, tonic properties. Hence the explanation of the better results often obtained with finely crystallized forms rather than with colloidal sulphur. From these therapeutic tests Merz has acquired the certitude that not only the chemical form of the preparation employed plays a large part, but the vehicle as well, also the base of the ointment, and, above all, the technic of its use. As a fatty vehicle, Merz places the various lathery soaps among the first and prefers above all others those of French make. These lathery soaps have the immense advantage of slightly macerating the horny squamæ of the epidermis, rendering the latter more permeable to the medicaments, which greatly increases their penetrating action.

When we consider that in seborrhea parakeratosis is of paramount importance in the pathology of the process, a fundamental significance must be attributed to these macerating properties which are not to be found in any other fatty vehicle. The particles of sulphur imprisoned in the lather can be more readily carried to their proper destination and are not hindered by the horny stratum, as is the case with ordinary sulphur ointments. The lather has also the great advantage of not making the hair sticky, which in women is of no little importance.

Besides the choice of the vehicle, the rational preparation of the scalp and the manner of applying

the sulphur lather play an unquestionable part in treatment. In the majority of cases simple washing of the head is not enough. The thick horny stratum is still very adherent, as are also the deposit of cells with parakeratosis which exist in the follicles and which are not easily removed by this means, so that it is just upon these two important points that proper penetrating action rests. A combination of castile soap (*savon de Marseilles*) with borax should preferably be used, and the skin of the head should be scrubbed with a special scalp brush, or, when the latter cannot be had, a child's narrow toothbrush can be used instead, care being taken to spread the hair apart in regular lines. By this energetic and rational technic, not only is the horny layer removed, but the follicles are freed from their horny cells and thus an opening to the deeper parts is obtained. When the entire scalp has been washed in this way, it is rinsed with hot water—or, when the hair is blond, with chamomile tea—until the scalp is perfectly clean, then it is dried. Immediately after drying, when the scalp is still a little damp, the sulphur lather is spread along the lines between the hair with a special brush. This friction with the brush makes the sulphur penetrate the follicles more easily. During the first four to eight weeks of treatment it is necessary to wash the scalp at least once a week and to apply the lather twice a week. If, at the beginning, the patients do not much fancy the kind of treatment because it requires time, they nevertheless continue willingly on account of the improvement that they perceive. The treatment should last for at least three months, after which one washing every fortnight and two frictions during the interval will suffice. Further reduction is out of the question if the results are to be maintained.

Several modifications may be made in sulphur medication. If cases are refractory to treatment by sulphur lather, or if the improvement obtained remains stationary, sulphur can be applied for some time in the form of rice powder sulphur, or in suspension in alcohol. The powder is spread with a small cotton tampon along the parts made between the hair with gentle massage; this should be done two evenings a week. Besides its chemical action, this powder has the advantage of rendering the hair light and elastic. As in the treatment with sulphur lather, lavage of the head should be done regularly once a week. If the alcoholic sulphur lotion is used, a ten per cent. solution is strong enough, the scalp being rubbed with the lotion three times a week, always along the parts in the hair. At the end of each week the sulphur deposit is removed with borax soap. In the treatment with the powder or alcoholic lotion, the lavage may be advantageously replaced by an egg shampoo—the yolk of two eggs, a soup-spoonful of olive oil and the juice of half a lemon thoroughly mixed together. The scalp is shampooed with this mixture which is

allowed to remain for two hours before washing the scalp with hot water and soap.

In sensitive subjects an irritation of the skin of the face and neck may arise during the sulphur treatment, but this can be controlled by the use of some indifferent ointment, such as boracic cold cream and a dusting powder.

If the technic described is strictly followed, the sulphur treatment of seborrhea of the scalp will succeed in most cases, but let it be repeated, the treatment must be continued for a sufficient length of time and afterwards the toilet of the scalp must be carried out unremittingly.

In serious forms when the seborrhea has been present for a long time, the ends of the hair are broken off or fringed. In these circumstances they should be cut and greased with lanolin. If the seborrhea is complicated with eczema, the lavages are contraindicated at the beginning of the treatment and first an antiseborrheic ointment should be used until the eczema is cured, after which the treatment of the scalp is begun. Merz gives the following as an antiseborrheic ointment:

R Acid. carbolic,	50 centigrams
Hydrag. precip. alb., }	
Bals. Peruv., }	2.5—5 grams
Vaselin. alb. ad.	100 grams
M. f. ung.	

This treatment gives good or even astonishing results, according to Merz, in many cases the falling out of the hair stops rapidly, in others more slowly, and soon the hair assumes its normal aspect. It is in the primary phase of the process that the best and most rapid results are obtained; in the second phase the prognosis must be more reserved. On the other hand, when the papillæ are atrophied, any treatment is useless.

A powerful adjuvant is the ultraviolet rays, quite as much during treatment as for secondary disturbances of the scalp and hair. After amelioration or complete disappearance of the symptoms of seborrhea there is observed a marked atony of the scalp accompanied by an imperfect formation and insufficient growth of the hair. Before the rays had come into use, an attempt was made to give tonicity to the scalp with alcoholic lotions containing cantharides, resorcin, tannin, or pilocarpine, and unquestionably this treatment often gave good results. These tinctures, which do not possess either a rapid or a deep action, are not appropriate in serious cases and they should preferably be employed as after treatment or as a prophylactic measure. It is good practice to use tonic agents after a cure of seborrhea, because even in the mild cases the scalp is often pale and lax to the touch, symptoms consequent upon a disturbance of the nutrition present before the onset of the process of atrophy. If hyperemia of the involved structures can be secured for some time, the nutrition will be improved and a better chance is given to the process of cure, as well as increasing the strength of resistance of the parts not as yet involved. The ultraviolet rays are absorbed in the stratum containing the capillaries and their action occurs in it, a fact made evident by a hyperemia developing some hours after the application of the rays. This hyperemia can be

prolonged for some time artificially, because the parts exposed to the rays react to this external mechanical irritation by dilatation of the capillaries and retain this property for some time, even after the visible action of the rays can no longer be observed. This property can be demonstrated by massaging the skin which is exposed to the rays, as it can readily be distinguished from the parts not exposed. Therefore, the quantity of blood can be increased by massage performed with the sulphur preparations or with a tonic alcoholic lotion. The quartz lamp is now used by Merz and others because it develops less heat than other similar apparatus. The technic is simple but must be carried out exactly if the desired result is to be obtained. Long hair is a barrier to the action of the rays, so that several long parts must be made and at least two portions of them exposed to the action of the rays in order to obtain a sufficient and equal action on the scalp. Reaction will occur within twenty-four hours, often within four to six hours, when redness of the scalp with some sensitiveness will be observed. A lesser effect is insufficient, while a stronger one gives rise to untoward disturbances, such as exudation or the formation of scabs and blisters. Some days after the exposure to the rays the epidermis is shed off in large lamellæ. The face, neck, and shoulders must be carefully protected by black paper or thick cloth during the exposure. The length of time necessary for the exposure will vary, because the intensity of the rays depends upon the age of the lamp; the older it is the more it loses in intensity from precipitation of particles of mercury on the quartz, making the latter less transparent. The same may be said of the distance. If a large field of action is desired the lamp must be placed at a distance of at least fifteen to ten centimetres, while in the case of a rapid and intense action it is placed only a few centimeters from the skin. It should be remembered that the intensity of the rays is inversely proportionate to the distance.

The ray treatment should, in general, be commenced a few weeks after the beginning of the drug treatment and given twice weekly; an average of twelve exposures will obtain results. It is recommended that treatment be stopped for two to four weeks after the first six exposures. As a rule, the hair grows and rapidly reforms after a series of exposures, but the action is not always the same and occasionally the results are only observed after the lapse of three months or more. This should be a warning not to record cases which do not respond promptly as being incurable and consequently stop treatment.

It is natural that intercurrent pathological states and constitutional anomalies exercise considerable influence on the evolution and obstinacy of the seborrhea, and in these circumstances a general treatment must be resorted to. Iron and arsenic give good results in anemia or nervousness, while digestive disturbances must not be overlooked. Since seborrhea has a marked tendency to relapse, the patients should report periodically, and the good results of the treatment will make them docile in this respect.

Results of Treatment of Neurosyphilis, General Paresis, and Cerebrospinal Syphilis.—H. C. Solomon (*Boston Medical and Surgical Journal*, January 15, 1920) reviews ten cases of neurosyphilis in which the patients were reported as having been aided by antisyphilitic treatment, four or more years after dismissal from hospital. Nine of these patients were committed as insane, the remaining case was diagnosed general paralysis, but not necessarily committable. Eight cases were diagnosed as general paralysis, two as cerebrospinal syphilis. The diagnosis of cerebrospinal syphilis was changed from general paralysis in one of these two cases because the patient improved under anti-specific treatment; the mental symptoms were those of paresis. In five of the eight cases diagnosed general paralysis the patients are now living at home. Three patients are apparently entirely well, two while not well are able to care for themselves and live a normal life in the community. Two are dead, and one is in a hospital. One of the two who died had a fair remission with economic efficiency for eighteen months and all laboratory reactions were negative at one time. The one in a hospital had a remission of three years' duration. Two cases were diagnosed cerebrospinal syphilis (nonparetic), but with marked mental symptoms. One patient left the hospital apparently entirely normal and with negative laboratory signs, and has since been lost sight of; the other is now serologically negative and mentally normal after four years. In two cases diagnosed as cerebrospinal syphilis with mental symptoms, one patient has been lost sight of and the other is mentally normal and serologically negative. This report leads the author to feel that it is possible to help some patients suffering from general paralysis or cerebrospinal syphilis with mental symptoms, and that intensive, systematic treatment will change the prognosis of general paralysis.

Lymph Drainage with Buried Tubes in Elephantiasis.—C. Walther (*Bulletin de l'Académie de médecine*, November 11, 1919) adds eight new successful cases to the three already reported by him, in which treatment by means of buried tubes had been applied. In none of these patients could the filaria be found. The disorder is believed to have resulted always from arrest of the lymphatic circulation at the inguinal or iliac lymph nodes. In two cases a lymphangitis appearing to have occurred, judging from the history, and in three an enlargement of certain groups of lymph nodes was stated to have formerly been present. The age of the patients ranged between ten and thirty-two years. In the operative procedure in his later cases, the author passed the tube by means of a long Chassaignac trocar directly from an incision in the thigh to an abdominal incision. Above, the tube is firmly attached with silkworm gut to the margin of the buttonhole made in the fascia, in order to prevent folding and kinking of the tube. Rapid improvement always followed the operation. Already by the next day the tension in the affected limb began to diminish and subsequently all edema subsided. Each patient remained in bed for four or five weeks, with the leg elevated on a cushion

and a soft, elastic bandage applied to produce gentle and regular compression. When reduction in bulk was sufficient, walking was permitted, always with firm compression of the limb. The skin remaining very thick, treatment by daily massage and electric measures was begun. Gradually the skin softened and became thinner, lost its elephantiasic appearance, and in some patients was wholly restored to normal. In cases in which the tube was later removed, swelling of the limb reappeared, necessitating reintroduction. Among the earliest cases the good results procured had already been maintained, respectively, for three and a half years, two and a half years, and eighteen months (two cases).

Empyema.—Alexis Victor Moschcowitz (*Surgery, Gynecology and Obstetrics*, January, 1920) in his study of empyema with special reference to its pathogenesis and treatment gives the following conclusions:

1. Empyema in most instances results from the rupture of a small subpleural abscess.
2. An empyema is the final stage of a process, in which the first stage is a serous pleurisy. The latter is the so-called formative stage of an empyema.
3. The formative stage of an empyema is unaccompanied by recent pleural adhesions. The stage of acute empyema is always accompanied by adhesions.
4. The vast majority of empyema cases are of the encapsulated variety. Few occupy the entire pleural space.
5. The treatment of empyema should be begun in the formative stage before the exudate has been converted into frank pus.
6. It is unwise to perform an operation in the formative stage. The mortality is terrific because the accompanying pneumonia is still in full bloom, and furthermore, because of the absence of adhesions there occurs an acute pneumothorax with fluttering of the mediastinum and consequent embarrassment of the action of the heart.
7. The best surgical procedure in the formative stage is repeated aspiration, done as often as is indicated, in order to relieve the embarrassment due to mechanical pressure of the rapidly accumulating fluid. In a few cases this measure is curative.
8. Feeding with a diet rich in calories is an important adjuvant in the treatment of the formative stage.
9. The treatment in the acute stage of empyema consists of simple intercostal thoracotomy. This operation need not be considered an urgent one, and should be performed when the patient's condition is otherwise perfectly satisfactory. This is the so-called late operation.
10. Urgent thoracotomy is indicated only in acute pyopneumothorax.
11. The Carrel-Dakin treatment has proved of superlative value in the postoperative treatment of empyema, and should be instituted in every case. There are no contraindications to its use.
12. The mortality of acute empyema by these methods is lower than that reported by other methods of treatment.

13. Empyema cavities heal by the following three methods: a, By the formation and absorption of a sterile exudate; b, by the formation and absorption of a closed pneumothorax; c, by the classical method of expansion of the lung and obliteration of the pleural cavity.

14. Chronic empyema should not occur, or should at least become very rare, if the methods of treatment of acute empyema, as formulated above, are practised.

15. Chronic cases may, therefore, be defined as empyemata which are not amenable to treatment with Carrel-Dakin.

16. Recurrences in empyema are usually the result of undue haste in closing the thoracotomy opening. The proportion of recurrences is less after the Carrel-Dakin method of treatment than after any other.

17. The vast majority of operations that have been devised for chronic empyema will have a very limited field for usefulness if the method of treatment advocated are carried out according to the plan outlined by the author.

Inlay Bone Grafts in Simple and Compound Fractures.—Dauriac (*Bulletin de l'Académie de médecine*, November 4, 1919), from war experience, discards practically all metallic devices for the fixation of fractures in favor of inlay bone grafts, installed with the aid of Albee's electrical instruments. He reports uniform success by this method since 1916. The procedure should be avoided in all badly consolidated fractures with marked shortening. Infratrochanteric fractures and fractures of the tibia, united in a faulty position, show particularly good results from the procedure. Of the fixation methods involving the use of metallic devices, the author thinks well only of Treves's aluminum alloy devices. In 1916 he fixed together a badly split tibia with a ring of this flexible alloy; the metal placed in contact with the bone was well tolerated for six months. Its flexibility, which permits of its being molded to curved bone surfaces, is especially serviceable in fractures of the lower jaw. One patient had already worn such a splint for forty days, sinuses developing only at points corresponding to the gold plated steel screws used to hold the aluminum in place. The use of screws made of the same alloy should remedy this defect.

The Present Position of X Rays and Radium in Gynecology.—D. Turner (*Lancet*, December 6, 1919) discusses this subject but does not attempt to distinguish between the relative effects of the two radiations. Choice depends somewhat upon the accessibility of the part to be treated. The rays act to inhibit the growth of the cancer cells and to stimulate the deposition of fibrous tissue. There results an occlusion of blood vessels after radiation, hence the success of the method in hemorrhage producing tumors of the pelvic viscera. In fibroids of the uterus the indications for x ray or radium treatment are the same except that the x ray should not be used in patients under forty. The indications for its use are a not too large fibroid, interstitial rather than subperitoneal or pedunculated, and hemorrhage. Contraindications

are severe pressure symptoms, complicating inflammations, ovarian cysts, and calcification. Radium internally is usually to be preferred. Carcinoma of the cervix is most readily accessible to radium and it is maintained by the Freiburg school that operation in such cases is no longer necessary. If the growth is localized and a sufficient dose of radium is used to kill all the outlying cells, a cure is possible. If extension into the broad ligament has occurred, however, treatment will result only in a retrogression of the condition with subsequent recurrence. Treatment of this condition will be more unsatisfactory because the remaining cells will be less accessible to radiation and the cells will be more immune because of a process of natural selection. Early cases are probably curable and in late cases there is relief from pain, discharges are stopped, and a general improvement in health results. The author's technic is described.

Röntgen Ray Treatment of Acromegaly.—

J. H. Douglas Webster (*Archives of Radiology and Electrotherapy*, January, 1920) states that x ray treatment of exophthalmic goitre has an assured position. By irradiation sclerotic changes can be produced, as subsequent operation in some cases has proved. In acromegaly Röntgen ray treatment is on a theoretical basis. It is especially useful in the early stages, when the anterior lobe of the pituitary would show merely a simple chromophil hyperplasia and before secondary tumorlike formation, local blood pressure damage and much skeletal change have been produced. One patient, a woman, was treated by x ray applications. She was advised that her illness was a serious one, appearing to be progressive, and that the best treatment was operative or x ray applications. As she refused to consider operation, irradiations were commenced. She had sixteen treatments with hard filtered rays from temporal and frontotemporal areas, the first eleven at weekly intervals, then fortnightly, and finally at monthly or longer spaced periods. The severe headache was relieved and soon disappeared. The queer feelings almost entirely left her and appeared only once a month. The irritability and depression almost completely left her. She lost about seven pounds in weight. The most striking changes were in the eyes, the optic discs returning practically to normal, while the fields of vision (especially for red) greatly enlarged. The right eye still presented some irregular contraction, chiefly inferior temporal. Apart from one or two bromide powders there was no treatment beyond the irradiation.

Action of Bromides on Smooth Muscle.—Theophile Kruse (*Journal of Pharmacology and Experimental Therapeutics*, October, 1919) reports experiments upon the action of bromides on smooth muscle strips or segments taken from the intestine of the cat or dog, suspended in oxygenated chloride, Ringer's solution, at 38° C. The conclusion reached was that the bromides stimulate smooth muscle slightly when the tissue is in a normal and rhythmic condition and markedly when it is arrhythmic or in a partly fatigued state. The primary stimulation of the bromides seems to be a property common for many tissues.

Miscellany from Home and Foreign Journals

Functions of the Internal Secretions of the Placenta.—Frederick S. Hammett (*Endocrinology*, July-September, 1919), from a series of experimental observations, concludes that the evidence now available concerning the functions of the internal secretion of the placenta eliminates the probability of the participation of such a substance in the production of eclampsia, in the hyperplasia of the mammary glands during pregnancy, or in the secretory function of the mammary glands from a quantity point of view. The feeding of desiccated placenta to nursing mothers does affect slightly the chemical composition of the milk produced, but not significantly. It is certain that there is in the placenta a substance which, when fed to nursing mothers, is passed on in the milk to the infants and acts as a stimulus to growth and it is this, and this alone, that permits the designation of the placenta as a gland of internal secretion.

Corpus Luteum in Neurological Practice.—H. Climenko (*Endocrinology*, January-March, 1919) offers the following clinical data: 1. Corpus luteum extract is effective only in the female; 2, it acts best where there is every reason to believe that the normal corpus luteum is absent; 3, the administration of the extract cannot replace the function of the normal corpus luteum in pregnancy and probably also not in menstruation; 4, when menstruation is discontinued by virtue of disturbance in the secretion in another gland, such as the pituitary, corpus luteum will not produce menstruation; 5, its action is more or less prompt; 6, corpus luteum, when it is effective, produces almost always the same chain of phenomena. It is reasonable to conclude that corpus luteum has a specific action; the administered extracts probably do not act as a native hormone and the extract, in all probability, stimulates the native corpus luteum to actions. The two contraindications to the use of corpus luteum are the existence of an abnormally low blood pressure and profuse and frequent menstruation.

Functions of the Suprarenal Glands.—Lewellys F. Barker (*Endocrinology*, July-September, 1919) gives the better known attempts at generalization of which various hypothesis concerning the suprarenals were constructed as follows: 1. The tonus theory, which assumes that epinephrine maintains in some way constantly a state of tonus in smooth muscle innervated by the sympathetic nervous system. 2. The emergency theory, which regards the suprarenals as an apparatus for discharging epinephrine in emergencies only. 3. The antitoxic theory, according to which the suprarenal neutralizes poisons; or its variations, which assumes that the suprarenal products themselves are detoxicated substances. 4. The metabolic theory, which postulates that the presence of minute quantities of epinephrine are necessary for the metabolic activities of the tissues, including oxygenation of the blood. Results of laboratory experiments have

given the following information: 1. The quantity of epinephrine present in the suprarenals, in other cromaffin tissues, in the various organs, and in the blood, under certain conditions; 2, the circumstances (pain, asphyxia, excitement) in which epinephrine is discharged into the suprarenal veins; 3, the influence of epinephrine, a, on the body as a whole after subcutaneous injection; b, on perfused organs like the heart, the spleen and the kidney; c, on strips of muscle like the uterus, the intestine, the iris, the bronchial musculature and the bundle of His; d, on the calibre of, and the blood flow through, arteries, veins and capillaries in different parts of the body; e, on the function of nerves and neuronal synapses; f, on the content of the blood in its different varieties of white blood corpuscles; g, on the discharge of red blood corpuscles from the different sinuses of the liver; h, on the secretion of saliva and other digestive juices, and, i, on the mobilization of sugar and the sugar content of the blood.

The following clinical uses of epinephrine are given: 1. In the treatment of asthma, urticaria, and of angioneurotic edema. 2. The administration of suprarenal gland in Addison's disease, and in other states of asthenia, hypotension, and hypothermia. 3. The clinical conceptions of the cromaffinopathies and the interrenopathies and their subdivisions of hyperfunction, hypofunction, and dysfunction. 4. The Loewi test and the Goetsch test in clinical diagnosis.

Function of the Chromophil Tissues.—I. Pearson and Swale Vincent (*Endocrinology*, April-June, 1919) present the following conclusions, based on a series of experiments:

1. The typical blood pressure curve obtained in response to stimulation of the peripheral end of the cut splanchnic nerve has the following characters: There is first a sharp rise (having a hump about half way up). This is followed by a marked dip nearly down to the original level and succeeded by a second rise. The pressure remains high as long as the stimulation is maintained. This curve is obtained in dogs, cats, and rabbits and, although it is, perhaps, the most typical of what occurs in animals under simple ether anesthesia, yet with slight variations, it might be expected to represent the usual sequence of events under morphine and also under curare.

2. When the adrenal veins of both sides are clamped or tied, or when both splanchnic nerves are cut and the adrenals clamped or tied off on the side stimulated, stimulation of the splanchnic nerve gives rise to a simple curve without the dip. This is true in dogs, cats, and rabbits, and is not determined by any damage done to nerves in manipulation of the glands, but to an interference with a pouring out of adrenin into the blood stream.

3. The dip in the normal curve is due to the discharge of adrenin in such doses as to produce a depressor effect.

4. When splanchnic (peripheral) and sciatic (central) nerves are stimulated in such a way as

to give a pressor response, the intact limb follows passively the blood pressure, while the denervated limb becomes constricted. This is due to the fact that in the recently denervated limb the blood vessels of the muscles do not actively dilate (as they normally do) and therefore fail to mask the skin constriction.

5. After elimination of the adrenal bodies the denervated limb also follows passively the blood pressure. There is now no constriction on stimulation of the above mentioned nerves.

6. It would appear that a general result of a discharge of adrenin into the circulation, over and above the amount which normally passes out into the blood, would be a constriction in the skin area and a vasodilatation of skeletal and cardiac muscles. It is obvious that this might be of advantage in certain physiological emergencies.

7. It seems probable that the chromophil tissue, especially perhaps, the so-called medulla of the adrenal, may have important functions connected with the distribution of blood in the body, if not under normal conditions, at any rate in times of nervous and muscular strain.

Function of the Thymus.—Eduard Uhlenhuth (*Endocrinology*, July-September, 1919) concludes that the thymus produces an internal secretion which, so far as is known at present, has only a toxic effect, in that it is the factor causing tetania parathyropriva. There are no facts known at present to warrant the assertion that the thymus gland does not produce an internal secretion which is required to maintain the normal physiological condition of the organism.

Fetal and Maternal Athyrosis.—G. Ennis Smith (*Endocrinology*, July-September, 1919), in a discussion of fetal and maternal athyrosis, arrives at the following conclusions: 1. The occurrence of disorders of the teeth, nails and hair during pregnancy indicates that there is a very wide occurrence of a more or less severe form of maternal athyrosis. 2. The increase of proteolytic enzymes in the blood of the pregnant woman tends to produce a condition similar to that under which fetal and maternal athyrosis is produced among domestic animals—not an abnormal condition, but still one that requires an abundant supply of iodine. 3. Lack of function of the thyroid is a probable cause of albuminuria and toxemia of pregnancy which may be overcome by an abundant supply of iodine. 4. A milk diet for the elimination of toxemia of pregnancy will probably be very disastrous to the fetus unless it is supplemented with an abundant supply of iodine. 5. When either of the parents is suffering from a disturbance of the thyroid, and probably also when they are suffering from a disturbance of the parathyroids, it is imperative that the ordinary diet be supplemented with an abundant supply of iodine throughout the gestation period. 6. To insure the normal function of the thyroid the ordinary diet should be supplemented with one half to one grain of iodine, approximately, daily during pregnancy and menstruation and for a period of seven days each month during puberty, especially during the first three months of the year.

The Action of Adrenalin on the Kidney.—Frank A. Hartman and Ross S. Lang (*Endocrinology*, July-September, 1919) studied the action of adrenalin on the kidney and arrived at the following conclusions: 1. Adrenalin in moderate amounts produces dilatation of the kidney in some individuals. 2. Dilatation is usually preceded by a brief constriction. 3. Adrenalin can produce dilatation by its action on either the semilunar ganglion, dorsal root ganglion, or on some structure in the kidney. 4. Constriction can likewise be produced by adrenalin acting either in the semilunar ganglion, dorsal root ganglion, or the constrictor structures in the kidney.

The Thyroid Gland and the Formation of Antibodies.—J. Koopman (*Endocrinology*, July-September, 1919) states that sometimes it was difficult to get amboceptors with a high titre when making Wassermann tests. There were some rabbits which, after two or three intravenous or intra-abdominal injections of an emulsion of sheep red blood cells, gave a serum with a good titre. At other times, no matter how frequently the rabbit was injected, a good titre could not be secured. It was attempted to find a way to improve the amboceptors of such animals. The formation of hemolytic amboceptor may be considered a special case of antibody formation. The formation of antibodies is a regenerative process. The regeneration is, to a great extent, under the control of the thyroid. When a rabbit was found that did not give a proper titre it was subjected to thyroid therapy. The first intraabdominal injections were taken from the expressed extracts of the cow, but later from the pig as they proved more effective. After nine weeks of treatment the titre was raised from 1:150 to 1:2000. During the administration of the thyroid gland extracts the injections of sheep corpuscles was continued. As soon as the thyroid was given a gradual increase was noted. It was concluded that the insufficient titre was due to hypothyroidism.

Death Resulting from Tying the Adrenal Veins.—F. A. Hartman and W. E. Blatz (*Endocrinology*, April-June, 1919) attempted to produce an artificial Addison's disease by creating an adrenal insufficiency. Epinephrectomy was considered too radical a procedure. Certain infectious diseases impaired the function of the adrenals. Diphtheria produced vacuolization and hemorrhage in the adrenals, and diphtheria toxin was said to lessen the pupil dilating substance in the adrenal venous blood. In view of this it was attempted to destroy a portion of each gland by the injection of sublethal doses of diphtheria toxin into the exposed gland. No symptoms were noted after these injections. As the blood supply to the adrenals was very great it was thought that degenerative changes could be produced if this blood supply could be hindered, and if it could be almost stopped the changes could be brought about slowly enough to produce the desired condition of hyosecretion. The arteries break up into such fine branches that regulating the inflow would be rather difficult. As the outflow was mainly through one large vein by ligation the flow could

easily be stopped. However, a small amount of blood escaped through a rete of vessels connecting the adrenal with the kidney so that occlusion of the adrenal vein did not produce complete stasis of blood in the gland.

The deductions from the results of the experiments were as follows: 1. An animal lived much longer after having the veins to the adrenal glands tied than after double epinephrectomy, but eventually died. 2. There was evidence that the adrenals functioned for a considerable time after the operation, the secretion escaping through the rete of vessels leading to the kidney, and possibly by back flow through the lumbar vein.

The Lymphocyte in Natural and Induced Resistance to Transplanted Cancer.—In a histological study of the lymphoid tissue of mice with induced immunity to transplanted cancer, James B. Murphy and Waro Nakahara (*Journal of Experimental Medicine* January, 1920), studied the lymphoid organs of over 100 mice with induced immunity to cancer in an effort to establish a further link in the evidence associating the lymphocyte with cancer immunity and further to ascertain the source and nature of the blood lymphocytosis. These animals were immunized against cancer by means of an injection of defibrinated blood and they showed a marked increase in the number of mitotic figures in the germinal centres of the lymphoid organs. This increase is noticed usually forty eight hours after the injection, reaching its climax about the fifth day, and declining to normal on about the tenth day. Ten days after the first injection, the immunized animals were inoculated with a cancer graft, following which a more intense stimulation of the lymphoid centres appeared twenty-four hours after the inoculation and lasted for a week. During the establishment of immunity the lymphocytes in the circulating blood showed frequent amitotic division.

Causes and Clinical Significance of Urobilinuria.—Brulé (*Presse médicale*, November 26, 1919) states that certain propositions regarding urobilin can now be considered as definitely established, viz., that close chemical and clinical relationships exist between bilirubin and urobilin; that urobilinuria is in most instances accompanied by the presence of an abnormal amount of bilirubin in the blood; that when urobilin occurs in the urine, it is nearly always present likewise in the blood, and that in the presence of urobilin in the urine, a certain amount of bile salts may very often be found. Urobilinuria is probably the expression of an abnormal retention of bilirubin in the organism—a retention insufficient, however, to lead to the appearance of bilirubin itself in the urine. Urobilinuria supplies the best means of detecting an abnormal retention of bile pigments in the system. Apart from the physiological urobilinuria, always very slight, which is recognized by some authors, urobilinuria is never present, according to the customary tests, in normal subjects. Pigments and bile salts are not always retained in the system in a parallel fashion. When testing the urine for urobilin it is always necessary, therefore, to test it also for the bile salts. If an obstruction in the

biliary passages exists, both urobilin and bile salts will be found in the urine. If, on the other hand, the liver cell itself is diseased, a dissociated biliary retention will in some cases be noted, either the pigments or the bile salts appearing alone. In hemolytic jaundice, only urobilin will appear. Testing for urobilin and bile salts should not be confined to icteric or subicteric cases, for urobilinuria may occur even where cholemia remains practically normal, and systematic testing for urobilin can alone permit of the detection of latent biliary retention—a condition met with not only in any disease of the liver but likewise in various infections and intoxications capable of harming this organ, such as pneumonia, typhoid fever, septicemias, appendicitis, chloroform or ether anesthesia, pregnancy, and alcoholism. These mild biliary retentions are important because they often constitute the sole indication of hepatic involvement, just as albuminuria indicates renal involvement in pneumonia or typhoid fever. In the study of jaundice, testing for stercobilin is equally as useful as testing for urobilin. Stercobilin or fecal urobilin is derived from the transformation undergone by bilirubin during its passage along the intestine. Absence of stercobilin from the stools is important because it shows that bile is no longer passing into the intestine. An actual test for it is necessary, nevertheless, because white stools frequently contain considerable stercobilin. Conversely, in complete obstruction of the bile duct, the stools may remain colored brown by other pigments of intestinal origin although stercobilin and stercobilinogen are entirely absent.

Bladder Stone in Association with Dietetic Deficiency.—R. G. Padua (*Philippine Journal of Science*, May, 1919) states that a large majority of the Filipino people do not receive sufficient nourishment for the maintenance of a stable physiological activity. The diet consists principally of rice from which, at times, most of the pericarp containing vitamins has been removed, vegetables in moderate amount, scarcely any meat or fish, and some other articles of minor importance. The author's investigations were based on a collection of forty-eight bladder stones from Filipino subjects and on ten actual cases of stone in a hospital. A relation apparently exists between the general dietetic inadequacy and the incidence of phosphatic calculi, in contrast with the reported predominance of uric acid and urate calculi in Europe and the United States. The percentages of primary phosphatic calculi were greatest among eleven cases with a positive history or signs of beriberi, and among eighteen undernourished patients without a reliable history of beriberi, viz., 45.4 and 72.2 per cent., respectively. Primary uratic calculi occurred oftenest—43.5 per cent.—among the twenty-three well nourished subjects. A majority of the stone cases occurred in children and young adults, phosphatic calculi predominating in these, while most of the uric stone cases were in patients over fifty years of age. The low daily protein intake and the lessened acidity of the urine resulting therefrom are held to promote phosphatic calculus formation among the Filipinos.

Proceedings of National and Local Societies

SOUTHERN SURGICAL ASSOCIATION.

Thirty-second Annual Session, Held at New Orleans, La., December 16, 17, and 18, 1919.

The President, Dr. JAMES E. THOMPSON, of Galveston, Tex., in the Chair.

The Injection of the Gasserian Ganglion for Neuralgia and Other Conditions.—Dr. CARROLL W. ALLEN, of New Orleans, said that the proper execution of the technic of this injection demanded a thorough knowledge of the osteology of the parts involved, also of the soft parts below the floor of the skull and within the skull adjacent to the foramen ovale, and the effects upon these internal parts of the alcohol injected. This information was only acquired by diligent study and extensive clinical experience. The method most commonly used and the one practised by him almost exclusively was the Hartel route. This had as its external landmarks, the point of entrance of the needle, which was within an area on the cheek opposite the three upper molar teeth; in many cases these teeth had been extracted in efforts to obtain relief, but their former position was easily determined. As the foramen ovale was a fixed point behind and above this area on the cheek, when the needle was entered opposite the first molar it naturally had to follow a more oblique course and traversed a greater depth through the soft parts than when entered opposite the lost molar tooth, which was more nearly under the foramen ovale.

As the needle which was used was long and slender, its point could be more accurately manipulated when advanced through the shorter route and the difficulties encountered were often less, as the route passed through some muscle, the contraction of which served to deviate its point, and this was more marked in the longer route. It had been found that chromium sulphate exerted a curative influence on the keratitis which sometimes followed these injections. Accordingly, in all of his recent cases he had been giving a four grain tablet of this remedy three times daily as a prophylactic, advising its use for about one month. In his last twelve cases there had been no evidence of eye inflammation. From his experience, he was convinced that when the value of these injections in these conditions was recognized, they would be extensively used, as any method which afforded such marked relief was a blessing to these unfortunates in allowing them to retain their mental faculties unclouded by morphine until the disease had advanced to such a point that narcotic oblivion was to be preferred.

Gunshot Wounds of the Brain with Retained Missiles.—Dr. CHARLES BAGLEY, Jr., of Baltimore, stated that during the spring and summer of 1918, 175 cases of gunshot wounds of the skull and brain were studied at General Hospital No. 2, Baltimore. In these cases eighty patients required one or more operations; the total number of operations performed was 108. In this series there were nine patients with metallic foreign bodies in

the brain substance. Of these seven were operated upon for the removal of the foreign body, one was discharged without an attempt at removal because of the small size of the missiles and their position in the brain, and one, who had a metallic foreign body in the right cerebellar peduncle, died as a result of an abscess in the occipital lobe, although no attempt was made to remove the metallic foreign body. Removal of the foreign bodies was undertaken because of the presence or probability of infection. In one patient, with a machine gun bullet in the right cerebral hemisphere, there was a small abscess which contained staphylococcus pus. In another there was a large abscess in the left temporal lobe, which also contained staphylococcus pus. In two others the foreign bodies removed at operation gave positive staphylococcus cultures. The foreign bodies removed from the three remaining patients gave negative cultures. Doctor Bagley was of the opinion that because of the likelihood of metallic foreign bodies of average size giving trouble even several months after the injury, they should be removed if their removal did not offer too great difficulties. He recognized, however, that metallic foreign body substances might remain encapsulated in the brain substance without giving trouble, and he gave as an illustration of this the case of a civilian in whom a large lead bullet had remained in the left occipital lobe for ten years. In the operative cases of the series, all the patients had recovered at that time or were convalescing.

Spermatoceles and Hydroceles Containing Spermatozoa.—Dr. RANDOLPH WINSLOW, of Baltimore, stated that his attention had been directed to this condition by the occurrence of six cases of hydrocele containing spermatozoa and of one of true spermatocele associated with a hydrocele, at the University Hospital, Baltimore, in the course of a few months. In the cases of which he had notes, no mention was made of an injury, except in one instance, that of a man fifty-five years of age, who was struck on the scrotum when he was a boy. He had had a hydrocele for forty years, but there was no way of determining how long the spermatozoa had been present in the sac. He thought it probable that in some cases, at least, true spermatoceles ruptured into hydroceles and in that manner permitted the ingress of spermatozoa into the sac of the tunica vaginalis. In one case there was a hydrocele with clear contents and contiguous to, but not communicating with it, was another cyst containing a milky looking fluid, which showed spermatozoa when examined with a microscope. This cyst might have ruptured into the hydrocele if it had remained longer without operation. The treatment of true spermatocele was usually excision while that of the hydrocele containing spermatozoa was similar to that of ordinary hydrocele, namely, excision of the tunica vaginalis, or suturing the tunica behind the testicle, and the results appeared to be equally as good as those of uncomplicated hydrocele.

Hypodermoclysis.—Dr. WILLARD BARTLETT, of St. Louis, stated that when continuous hypodermoclysis was used the visible dropper and screw clamp were added. An attempt was made to get gravity pressure by placing the container directly above the patient. As to the fluid employed, Doctor McKittrick proposed plain, freshly distilled water. In view of the large amounts of fluid instilled, and the harmful effects which occasionally followed the absorption of abnormal amounts of sodium chloride, he did not approve of its use, especially in patients already weakened by disease or surgical trauma. The water was heated to between 100° and 110° F. and then poured into the warm container. The slender needle was first thrust through the centre of a square fold of gauze and was then ready for use. This prevented the hand touching the needle or contaminating the skin, which had been cleansed with alcohol, and painted with iodine diluted one third its strength with alcohol. The fluid was then started through the tubing, and when all air had thereby been expelled, the tubing was temporarily pinched off with the thumb and finger and the operation begun.

In unconscious patients, the needle was plunged up to its flange into the subcutaneous tissue, at a point near the outer border of the pectoral muscles, midway between the nipple and the head of the humerus. By this method, the fluid extended directly into the subcutaneous tissue of both the axilla and the breast. Absorption was almost twice as fast as it was when the injection was under the breast alone. The needle was held in place by a strip of adhesive, the original piece of gauze being utilized to prevent contamination of the needle wound. If the needle remained in very long, alcohol was dropped over this region from time to time and gauze was then placed over the exposed portion of the needle, adhesive and all. A hot water bag, wrapped in a towel, was placed directly under the axilla and another one over the gauze, which protected the needle. The fluid should not run in too fast but, with the aid of the hot water bottle, the tissues, although very slightly edematous, should be kept soft and pliable. Only one side was used at a time regardless of the amount of fluid to be infused. Usually 800 to 1200 c. c. was given during one injection, though a much larger amount could be given if it was allowed to run in slowly. Between one and two hours was all the time needed in the ordinary case, and frequently one hour was sufficient. The giving of hypodermoclysis was easily accomplished without pain or distress in most patients not under the influence of a narcotic. The procedure had completely supplanted the rectal administration in his service, and where intelligently applied, seemed not to have disturbed the patient unduly, had never been attended by an accident, and had given the greatest satisfaction.

Shoes.—Dr. ROBERT CAROTHERS, of Cincinnati, said that the great majority of adult Americans had some defect or acquired deformity of the feet. Abnormal feet were responsible for many of the other defects in their anatomy, and in most instances the foot deformity was caused by ill shaped and incorrectly designed shoes. There was

an old saying that when your feet hurt you hurt all over. It might as truthfully be said that when your feet were deformed there was likely to be some deformity elsewhere in the body. We have frequently found one knee sprung and bucked knees, associated with flat feet, relieved by the correction of the flat feet. Almost as frequently have we observed some abnormality of the lumbar and sacroiliac regions caused by bad feet and occasionally round shoulders were corrected by the correction of foot deformities. It was quite necessary for one to have good feet in order that he might have good joints elsewhere, that the framework of the body should be correct, and that the musculature of the body be well developed. An examination of athletes would prove this.

Empyema at the Cincinnati General Hospital during the Influenza Epidemic.—Dr. JOSEPH RANSOHOFF, of Cincinnati, drew the following conclusions from a study of the subject: 1. It was not the empyema which killed when it was a complication of influenza. 2. Too early operative measures were to be avoided and limited to simple aspiration. Operations done not earlier than the end of the second week gave the best results; rib resection was indicated only when insufficient room was at command without it. 3. General anesthesia was not necessary in most cases, but from experience at the hospital it did not increase the mortality from the operation. 4. The old methods of drainage should be given up for some type of the occlusion method, by which the entrance of air into the pleural cavity was prevented and the egress of pus facilitated. A suction apparatus attached to the tube was considered unnecessary. 5. Flushing of the cavity with Dakin or other solution was unnecessary, except when defervescence did not occur, thereby indicating that the spontaneous sterilization of the cavity was not progressing normally. 6. The small pneumothorax which sometimes remained after the healing of a cavity, as had been demonstrated by the x ray, was negligible, since it disappeared spontaneously in a short time. 7. Twenty of the operations were performed by Doctor Ransohoff, the remainder by various attending surgeons of the hospital, to whom he was greatly indebted for carrying out the suggestions which he believed were essential in securing a low mortality in the treatment of empyema. 8. The fact that they were enabled to secure satisfactory end results in all but eight cases showed one of the advantages of an efficient hospital social service.

Pseudomyxoma Peritonei.—Dr. M. H. BIGGS, of Rutherfordton, N. C., stated that pseudomyxoma peritonei had received but scant recognition by American observers or writers. It resulted from the rupture of a pseudomyxomatous cyst of the ovary or appendix, the epithelial cells thus discharged being implanted on the peritoneum and producing pseudomucin and tumor formation. It was originally believed to be secondary to a cyst of the ovary, but was now known to originate also in the appendix. The pathology of the condition was reviewed and the author considered that it resulted from cellular implantation. Failure of this condition to result from rupture of a pseudo-

myxomatous cyst, as must often happen, was explained by infrequent rupture of the smaller loculi which contained active cells that were firmly adherent to their basement membrane, and to thinning of the walls of the larger loculi, the cells at the point of rupture being poor plants.

The symptoms were those produced by mechanical interference with function. The findings at operation varied from a small amount of jellylike material with irritation of the peritoneum, to a large quantity of thick, tenacious material and secondary tumor formation of the peritoneum covering the abdominal viscera. The author described a fine pebbly appearance of the peritoneum which he considered the early stage of pseudomyxomatous development. Age was an important diagnostic factor, the lesion occurring in advanced life, after the menopause in the female, at a time when many other conditions could be excluded. The average age of his patients was over sixty years. At operation it was important to remove all the original growth. When this was done and a careful toilet of the peritoneum made, early cases might be cured.

Conclusions: 1. The condition was much more frequent than was generally recognized. 2. It was caused by cellular implantation. 3. It was histologically benign, but might be clinically malignant. 4. If it was considered to be a form of cancer, it must be assumed that pseudomucin inhibited its destructive power. 5. It might originate in the ovary or the intestinal tract, ovarian origin being by far the most frequent. 6. If it was appendiceal in origin, the appendix had been the seat of chronic inflammation. 7. Early invasion of the peritoneum was characterized by a pebbly appearance. 8. In early cases the condition would sometimes be cured, and at any stage it might be inhibited by operation.

Pseudomyxoma Peritonei in Male Subjects.—Dr. M. G. SEELIG, of St. Louis, said that the most striking, outstanding, and characteristic feature of the disease was accumulation in the peritoneal cavity of a colloid exudate, varying in consistency from a syrup to solid colloid masses. This exudate was the only constant accompaniment of the disease. In some instances there was a progressive cachexia, leading to death; in others the disease ran a benign course with perfect recovery after suitable operative procedure and often doubtlessly without operation. In the vast majority of cases the primary cause of the disease was the rupture of a pseudomucinous ovarian cyst. In a by no means small minority of the cases the cause of the rupture was a mucocele of the appendix. Up to date the latter cause was the only one that had been found to be responsible for the disease as it occurred in males. In some cases the colloid material was confined in loculi whose walls were made up of a connective tissue new growth so firm and abundant that it fused all the viscera into a solid mass, molded, as it were, into the peritoneal cavity. Some authors considered this process as a type of plastic foreign body peritonitis; others considered it as secondary myxomatous degeneration of the peritoneum; others as multiple cystic lymphangiomata; others as a type of innocent implantation metastasis; others as frank carcinosis

peritonei, and still others as a specific type of peritoneal infection producing mucin. The important fact was that the appendix itself was the sole agent responsible for the disease as encountered in the male. Treatment consisted in removing the primary focus of disease—the appendix, and scooping out that portion of the exudate which could be reached conveniently and with safety, without any attempt to clear the abdominal cavity of its entire pseudomucinous contents.

Congenital Diaphragmatic Hernia.—Dr. LOUIS FRANK, of Louisville, Ky., stated that a careful review of the literature since Scudder's paper revealed only forty-one additional cases reported, and one of these a personal communication. He was forced to believe from conversation with some of his x ray friends that there had been others, but whether they had occurred in adults or whether they had ever come to operation, he had no means of knowing. Of the additional cases recorded in the literature, only five were reported as congenital, those observed and operated in being accounted for largely by the trauma of war. Most of the cases occurred in soldiers as the direct result of missiles.

A study of these cases indicated that the abdominal method of approach was the most popular. This was easy to understand in the cases of traumatic origin where a missile had entered the abdomen primarily. He found also that one patient with congenital hernia was subjected to gastroenterostomy, this being the only feasible procedure to obtain relief from urgent symptoms which were present. Of the additional cases which he had collected, two were observed postmortem. One patient was advised against operation, the condition having existed without much discomfort, according to the history, for a period of forty-five years.

A Warning against Promiscuous Uterine Curettage.—Dr. J. WESLEY BOVÉE, of Washington, D. C., said it was well to point out the many dangers incident to uterine curettage. Not infrequently was a pregnancy in its first month thus scraped from the uterus and perhaps never recognized. Certainly humiliation had often come to the operator by discovering during curettage that an unsuspected pregnancy had been interrupted. Very often pregnancy had unnecessarily been ended by curettage for incomplete abortion. The literature teemed with reports of cases of perforation of the uterus by the curette with or without dangerous sequelæ and even death. The cervical canal was so constantly infected that it did not seem strange infection might be carried from it into the uterine cavity by the curette, sound, or dilator. Again, it was shown by Curtis that infection of the endometrium was nearly always associated with similar infection of the tubes and most often gonorrheal. Curettement under such conditions was strongly contraindicated. The dangers from curetting were ever present, whether in the hands of the skilled surgeon, the less fortunate confrère, or the midwife, and should be practically excluded from the infected uterus. If chronic endometritis as a clinical entity was to be ruled out, one indication for curettage would be removed.

(To be continued)

Letters to the Editors.

UNIFORM REPRINTS.

1504 PINE STREET, PHILADELPHIA,
February 11, 1920.

To the Editors:

This is a plea for uniformity in the size, shape, and arrangement of printed data which the physician may wish to preserve and file for convenient reference, including both reprints of papers and advertising matter.

The object of collectanea is convenience for filing and reference. I have already made recommendations to advertisers (in the *Journal A. M. A.*) that they adopt a suitable system whereby descriptive matter, memoranda, and so on, could be readily filed. One measure has been extensively adopted, namely, index filing cards of standard size, three by five, also small, closely printed circulars or descriptive booklets of the same size containing several pages of outline. Many physicians now use index filing systems; inquiry and experience teach me that this custom of filing data is becoming nearly universal and will become more so as material is supplied in filable shape. Meanwhile, heterogeneous printed stuff in odd sizes and forms is thrown in the scrap basket, where it deserves to go. Contemplate the millions of money thus wasted! One comes to doubt gravely the commercial wisdom of many business houses.

Reprints of valuable articles suffer in much the same way. To collect and attempt to arrange them for later reading causes suffering, vexation and loss of time. Surely editors or managers of medical journals should be as wise, or at least as cooperative, as some manufacturing concerns have now become. This subject is no trifling matter; it is of fundamental significance.

J. MADISON TAYLOR, M. D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Syphilis. A Treatise on Etiology, Pathology, Diagnosis, Prognosis, Prophylaxis, and Treatment. By HENRY H. HAZEN, A. B., M. D., Professor of Dermatology and Syphilology, Medical Department of Georgetown University, etc. With One Hundred and Sixty Illustrations, including Sixteen Figures in Colors. St. Louis: C. V. Mosby Company, 1919.

Doctor Hazen has been known for many years as an authority on syphilis and dermatology, and it is therefore superfluous to say, in reviewing this book, that its author has placed within its covers practically all that we know about syphilis. He has had the cooperation of other distinguished specialists who have written certain chapters and thereby brought to the author's aid the advantage of their extensive specialized knowledge and experience. These chapters include, among others, the subjects of infection and immunity, by Major

M. A. Reasoner; syphilis of the genitourinary organs, by Dr. H. A. Fowler; syphilis of the central nervous system, by Dr. John Lind; the Wassermann reaction, by Colonel C. H. Craig, and an interesting chapter on the toxicology and therapeutic testing of arsphenamine, by Dr. J. F. Schamberg. One looks in vain in Craig's article, however, for a discussion of the contradictions in the Wassermann test, a matter of considerable importance, which has been brought to medical attention of late by Wolbarst and others. The illustrations are new, for the most part, and are attractively presented by the publishers. This is particularly true of a series of colored plates illustrative of syphilis of the bladder, a comparatively unknown subject which has been receiving much attention of late on the part of urologists. The book is a most valuable addition to the literature of the subject, and one which can be studied with profit by all who treat syphilis in its many manifestations.

Births, Marriages, and Deaths.

Died.

ARNOLD.—In East Orange, N. J., on Wednesday, February 5th, Dr. Edward August Arnold, aged thirty-three years.

BALLERAY.—In Paterson, N. J., on Wednesday, February 11, Dr. George Henry Balleray, aged seventy-two years.

BEST.—In New York, N. Y., on Friday, February 6th, Dr. Sally Robinson Creighton Best, aged fifty-one years.

BUCHANAN.—In Seattle, Wash., on Saturday, January 17th, Dr. Charles Milton Buchanan, of Tulalip, aged fifty-two years.

CLARK.—In Melrose, Mass., on Wednesday, January 28th, Dr. Julius Stimpson Clark, aged eighty-two years.

CONNEN.—In Portland, Me., on Thursday, January 22d, Dr. Thomas F. Conneen, aged forty-five years.

COOK.—In Coffeen, Ill., on Wednesday, January 28th, Dr. William Harvey Cook, aged eighty-six years.

DUNCAN.—In Petaluma, Cal., on Tuesday, January 6th, Dr. Robert B. Duncan, aged seventy-four years.

ELLIS.—In Memphis, Tenn., on Saturday, January 24th, Dr. Hudgins S. Ellis, aged thirty-seven years.

FELDMAN.—In Hammoncton, Cal., on Wednesday, January 21st, Dr. Abraham A. Feldman, aged thirty-one years.

FULLER.—Pawtucket, R. I., on Friday, January, 23d, Dr. Frank Boutelle Fuller, aged sixty-seven years.

GARLAND.—In Wellesley Hills, Mass., on Tuesday, January 27th, Dr. Guy W. Garland, aged seventy-five years.

GRANT.—In Ottawa, Ont., on Friday, February 6th, Sir James Alexander Grant, aged eighty-eight years.

GREEN.—In Muncie, Ind., on Saturday, January 24th, Dr. George R. Green, aged sixty-eight years.

HART.—In Brooklyn, N. Y., on Saturday, February 7th, Dr. George Washington Hart, aged forty-six years.

LIDDELL.—In Greenwood, Miss., on Friday, January 23d, Dr. William W. Liddell, of Carrollton, aged sixty-three years.

OVERLOCK.—In Worcester, Mass., on Friday, January 30th, Dr. Melvin George Overlock, aged fifty-five years.

SOUTHARD.—In New York, N. Y., on Sunday, February 8th, Dr. Elmer Ernest Southard, of Cambridge, Mass., aged forty-three years.

VILLANICENCIO.—In New York, N. Y., on Saturday, February 7th, Dr. Antonio Villanencio, aged twenty-six years.

WARFIELD.—In Baltimore, Md., on Wednesday, February 4th, Dr. Ridgely Brown Warfield, aged fifty-six years.

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WHOLE No. 2151.

Original Communications

OCCUPATIONAL DISEASES.*

By JOHN F. X. JONES, B. Sc., A. M., M. D.,
F. A. C. S.,
Philadelphia.

Instructor in Surgery in the Jefferson Medical College; Surgeon to St. Joseph's Hospital and to the Misericordia Hospital of Philadelphia, Pa.; Lieutenant, Medical Corps, U. S. N. R. F.

Hippocrates and Galen in their works referred to the fact that certain trades were detrimental to health. Other writers, following them, have spoken of the occupational diseases of sailors, soldiers, chemists, bearers of burdens, and other workmen. No treatise, however, dealing with industrial diseases exclusively, had been published before the time of Bernardo Ramazzini who wrote *De Artificum Diatriba* in 1703. This treatise on the diseases of workmen was translated into English in 1705 and into French in 1711. In the library of the Philadelphia College of Physicians I had access to a curious work called *Health Preserved*, which was published in London in 1750 and consisted of two treatises; the first being a translation of Ramazzini's *Diseases of Artificers* and the second, an English rendition of a monograph by Frederick Hoffman, the physician to the then King of Prussia.

Hoffman (1) thrived from 1660 to 1742, and was made the first professor of medicine in the University of Halle, then (1694) just established by the Elector of Brandenburg, Frederick III, who afterwards, on January 18, 1701, at Königsberg, crowned himself King Frederick I of Prussia. Hoffman and George Ernest Stahl were for more than twenty years colleagues as professors of medicine at Halle. Hoffman, in spite of the fact that he lowered his professional dignity by dealing in secret remedies, one of which was the now well-known Hoffman's anodyne, was recognized as one of the best writers, on medical subjects, of his day. He achieved a reputation for ability to cure chronic diseases, was the first to discover the medicinal qualities of Seltzer and Lauchstad waters and, among other notable acts, prepared and recommended an acid cathartic salt from the waters of Seidlitz. In *Health Preserved*, Hoffman writes "on those distempers which arise from particular climates, situations and methods of life, with directions for the choice of a healthy air, soil and water."

Bernardo, Bernardino, or Bernardino Ramazzini,

*Read before the Roman Catholic School of Social Service, at St. Joseph's Hospital, Philadelphia, August 18, 1919.

as he has been variously called, lived between 1633 and 1714 and was professor of medicine at Modena and Padua. It was he who, simultaneously with Sir Samuel Morland, suggested the diagonal barometer. Ramazzini's treatise on *Diseases of Artificers* was translated into German about 1780 by Johann Christian Gottlieb Ackermann, afterwards professor of medicine at the University of Altdorf.

Robert James (2), who translated these treatises of Ramazzini and of Hoffman, was a London practitioner and the son of Edward James, a major in the army. He was born in 1705 at Kinvaston, Staffordshire. Educated at the Lichfield Grammar School and at St. John's College, Oxford, he received the degree of B. A. from the latter institution in 1726. He then studied medicine and, in 1728, was admitted as an extra licentiate of the College of Physicians of London; in the same year he was created by royal mandate M. D. in the University of Cambridge. In 1743 James published *A Medical Dictionary, with a History of Drugs*, which, containing very little original, has been saved, perhaps, from oblivion by the great Samuel Johnson (Boswell, I. 85, ed. 1790), who wrote in it a dedication to Dr. Richard Mead, physician to St. Thomas's Hospital, and the recognized head of his profession. In *A Treatise on the Gout and Rheumatism*, which appeared in 1745, and in his *Dissertation on Fevers*, published in 1748, James praised, but failed to describe, his method of cure—a powder and a pill patented by him November 13, 1746. On February 11, 1747, in the Court of Chancery, he swore to a description of the powder's ingredients as well as to the method of mixing the same. Afterwards, it was proved that the receipt deposited in the Court of Chancery by Doctor James would not produce the powder patented and sold by Doctor James. Furthermore, at that time, there were those unkind enough to state that James had appropriated the powder (now known to have been a mixture of phosphate of lime and oxide of antimony) from a German, one William Schwanberg by name. As a result of these questionable proceedings James's reputation diminished and, to add to his misfortune, Goldsmith, towards the close of his last illness, took a dose of the notorious powder. Mary Ginger, the poet's laundress, communicated this fact in a letter to the *Morning Post*, April 7, 1774, and in the same year, W. Hawes, the apothecary, wrote "an

account of the late Doctor Goldsmith's illness, as far as relates to the exhibition of Doctor James's powders." In spite of this, the popularity of the powder survived because it was prescribed for George III during that monarch's attack of mania in November, 1788, James then having been dead twelve years. In 1746, James not only translated Ramazzini's *De Morbis Artificum Diatriba* and Hoffman's article, but he also published an English rendition of Simon Pauli's *Treatise on Tobacco, Tea, Coffee and Chocolate*, and of Prosper Alpinus's *The Presages of Life and Death in disease*. James's *Pharmacopœia Universalis*, or a *New Universal English Dispensatory*, appeared in 1752, and in 1760 he published his *Practice of Physic*, which was simply an abridgement of Boerhaave. About this time, in 1760, this extraordinary therapist decided, after meagre observation and less experiment, that mercury should be administered in hydrophobia, and so expressed himself in a *Treatise on Canine Madness*. Doctor James's therapeutic activities were terminated by his death on March 23, 1776. In 1778 there appeared a treatise on the disorders of childhood by James, and his *Vindication of the Fever Powder*. Doctor Samuel Johnson seems to have held Doctor James in high esteem because the eccentric author of *Rasselas* said: "No man brings more mind to his profession" (Boswell, Ed. 1781, 1.85); and again at Gilbert Walsley's table in Lichfield: "I enjoyed many cheerful and instructive hours, with companions such as are not often found with one who has lengthened and one who has gladdened life; with Doctor James, whose skill in physick will long be remembered, and with David Garrick." (*Lives of the Poets*, ed. 1781, H.259.)

The most notable work following James's translation was that written by C. Turner Thackrah, of Leeds, in 1822. I have seen a copy of the second edition of this monograph, published in 1831 at the Literary Rooms, 121 Chestnut Street, by one Henry H. Porter. The title of Thackrah's volume is *The Effects of the Principal Arts, Trades and Professions and of Civic States and Habits of Living, on Health and Longevity; with a Particular Reference to the Trades and Manufactures of Leeds; and Suggestions for the Removal of Many of the Agents which Produce Disease and Shorten the Duration of Life*. In this same year, 1822, Patissier published his *Traité des Maladies des Artisans*.

In 1856, in London, there appeared a brochure by Joel Pinney, Esq.; it was called *The Influence of Occupation on Health and Life*. Alexander Layet published his *Hygiène des Professions et des Industries*, at Paris, in 1875. Sir Thomas Oliver, in 1891, published *Lead Poisoning in its Acute and Chronic Forms*, this having been the subject of the Goulstonian lectures delivered in March of that year before the Royal College of Physicians. In 1897 Theodor Weyl edited a work of 1200 pages, by German authors, on the diseases of workmen, the latest edition of which appeared in 1908.

The Risks and Dangers of Various Occupations, by Leonard A. Parry, was published at London in 1900. Sir Thomas Oliver, in 1902, edited a very

important work by various British experts; it was called *Dangerous Trades*. The same distinguished author wrote a chapter on poisoning by phosphorous, by sulphuretted hydrogen, and by carbon monoxide in *Archives of the Public Health Laboratory of the University of Manchester*, edited by A. Sheridan Delépine and published in 1906. Sir Thomas Oliver, in 1908, published his *Diseases of Occupation*, which has passed through two subsequent editions, in 1912 and in 1916, respectively.

Accidental Injuries to Workmen, by H. Norman Barnett, of Belfast, was published in London in 1909. In 1902, in London, Thomas M. Legge and Kenneth W. Goadby published *Lead Poisoning and Lead Absorption. Accidents du Travail*, by León Imbert, C. Oddo, and P. Chavernac, was published in Paris in 1913 and was most interesting in that it endeavored to establish norms of incapacity in accordance with which various injuries were to be estimated. In this same year Thomas M. Legge performed a signal service to the English speaking students of industrial diseases by translating and editing *Industrial Poisoning from Fumes, Gases and Poisons of Manufacturing Processes*, by J. Rambousek, of Prague. In 1914, Rambousek published, in German, "Progress of occupational hygiene in Austria from 1908 to 1913, and outlines of industrial hygiene and of methods of preventing accidents, with an explanation of German and Austrian accident insurance and the method of compensating accidental injury." The latter article appeared in *Die Medizin für Alle*.

Sir Thomas Oliver, in 1914, published *Lead Poisoning*, which was a collection of lectures delivered at the Royal Institute of Public Health. In 1915, in London, R. Prosser White published *Occupational Affections of the Skin*, and in 1916, at Rome, V. Montesano wrote on the same subject, *Le Dermatosi dei lavoratori*. Of the many important pamphlets issued by the British government limited space permits of reference to two only: *Health of the Munition Worker*, and *The Causation and Prevention of Trinitrotoluene (T. N.T.) Poisoning*, both published in 1917, and the latter written by Benjamin Moore.

These are but a few of the writings on occupational diseases which have appeared, from time to time, in Great Britain and on the Continent. The narrow scope of a single paper necessitates the omission of reference to many careful observers whose notes have thrown light upon the relationship of occupation to disease.

Now turning to the United States of America we find here and there, though principally from the Department of Labor, such valuable essays as *Employer and Employee*, by Olmsted and Fessenden; *The Sweat System*, by Henry White; *The Inspection of Factories and Workshops of the United States*, by Willoughby; *The Production of Paper and Pulp*, in Bulletin 23; and *The Protection of Workmen in Their Employment*, by Fessenden, and numerous articles on various labor laws. In 1903 Doehring published a paper on *Factory Sanitation and Labor Protection*. The State Board of Health of Massachusetts, having

been the first State in the Union to recognize the fact that sanitary inspection of factories was essential to public health, submitted a brief report on *The Conditions Affecting the Health and Safety of Employees in Factories and Other Establishments*.

In 1907 E. J. Neisser published an *International Review of Industrial Hygiene*, and in 1908 Kober submitted *A Report on Industrial and Personal Hygiene*. Next appeared *The Mortality From Consumption and Dusty Trades*, by F. L. Hoffman, 1908-1909. *Some of the Relations of Occupations to Medicine* was the title of an article by David L. Edsall (3) which appeared in 1909.

Bulletin 86 of the U. S. Bureau of Labor, published January, 1910, contained an article on phosphorous poisoning in the match industry of the United States, by John B. Andrews; it also contained a translation from the German of a preliminary list of industrial poisons. This list was prepared for the International Association for Labor Legislation, by Dr. Theodor Sommerfeld, in collaboration with Sir Thomas Oliver and Dr. Felix Putzeys; it was to serve merely as a rough draft for a more authoritative list which appeared in 1912, and was translated into English in the United States Bureau of Labor Bulletin No. 100 (May, 1912.) The title of the accepted and completed list, as translated in Bulletin No. 100, read: List of industrial poisons and other substances injurious to health found in industrial processes, prepared at the request of the committee of the International Association for Labor Legislation, by Prof. Dr. Theodore Sommerfeld and Industrial Councillor Dr. R. Fischer, and edited by the permanent advisory council of hygiene of the international association.

Robert H. Ivy (4) wrote *The Prevention of Industrial Phosphorous Poisoning*, in 1911. In the same year (July, 1911), there appeared in Bulletin No. 95 of the United States Bureau of Labor, the following important articles: *Industrial Lead Poisoning, with Descriptions of Lead Processes in Certain Industries in Great Britain and the Western States of Europe*, by Sir Thomas Oliver; *The White Lead Industry in the United States, with an Appendix of the Lead Oxide Industry*, by Alice Hamilton; *Deaths From Industrial Lead Poisoning (actually reported) in New York State in 1909 and 1910*, by John B. Andrews; *Regulations for Factories and Workshops in Certain Industries Using Lead in Great Britain, Germany, France, Belgium and the Netherlands; Laws Enacted During 1911 Requiring the Report of Occupational Diseases in California, Connecticut, Illinois, Michigan, New York and Wisconsin; and Decisions of Courts (in U. S. A.) Affecting Labor*.

White and Jelliffe's work on *Nervous and Mental Diseases*, published in 1913, contains a chapter on the treatment of the toxemias of dangerous trades and of drugs, by Louis Casamajor, (Vol. II, p. 672). In 1914 W. Gilman Thompson produced his *Occupational Diseases*, and George M. Price, *The Modern Factory*. The American Academy of Medicine, in 1915, published *Indus-*

trial Medicine, which consists of the papers and discussions on the practice of medicine and the industries, presented at the thirty-ninth meeting. In this same year appeared *The Health Aspects of the Clothing Industry*, by H. R. M. Landis and Janice S. Reed; also *A Clinical and Sanitary Study of the Fur and Hatters' Fur Trade*, by Louis I. Harris; also *Industrial Health Hazards and Occupational Diseases in Ohio*, by Emery Roe Hayhurst. George M. Kober and William C. Hanson, in 1916, edited *Diseases of Occupation and Vocational Hygiene*, a most valuable work consisting of a series of articles by recognized authorities and containing very extensive bibliographies.

In July, 1918, the United States Bureau of Labor Statistics published *Effects of the Air Hammer on the Hands of Stone Cutters*, in Bulletin No. 238. In the year 1919, Frederic S. Lee published an excellent little book entitled *The Human Machine and Industrial Efficiency*. This work considers certain phases of the industrial question from the point of view of the trained physiologist. It contains a splendid bibliography of the modern writers as well as of the various reports issued by the Health of Munition Workers' Committee of Great Britain, and of the bulletins of the United States Department of Labor.

Last month (July, 1919), *The Pennsylvania Medical Journal* was devoted almost exclusively to reporting the papers and discussions at the eighth conference of industrial physicians and surgeons, held under the direction of the Department of Labor and Industry of the Commonwealth of Pennsylvania. At this meeting the following papers were read and discussed: *Traumatic Hernia and the Workmen's Compensation Boards*, by Francis D. Patterson; *How the Industrial Physician and Our State Department of Health Can Best Cooperate*, by Edward Martin; *Injuries to the Back and Flat Feet*, by James O. Wallace; *Health Hazards in the Manufacture of Dyestuffs*, by Alice Hamilton; *Health Insurance, Its Disadvantages and Advantages*, by John A. Lapp; *Health Insurance and the Public*, by Frederick L. Hoffman; *How the Industrial Physician Can Help in the Campaign Against Venereal Disease*, by Russell A. Jewitt; *Report of a Committee Appointed to Consider the Question of Traumatic Hernia in Relation to the Workmen's Compensation Law*, by A. W. Colcord, Charles A. Lauffer, and S. P. Mengel.

These and several other important articles indicate the growing interest of both the medical profession and the laity in industrial diseases. "Occupational diseases" is perhaps a better term than "industrial diseases," for the conditions to be discussed in this paper. A man who is occupied is not always engaged in manual labor, but he who is engaged in manual labor is certainly occupied. Occupational is the more comprehensive adjective.

Occupational diseases constitute a most extensive subject, including as they do most of the ills that flesh is heir to. Does a disease associated with a given occupation change its identity because of

such relationship? Certainly not. Arteriosclerosis, whether due to great muscular effort with arterial strain (as in a blacksmith), or due to prolonged mental worry (as in a banker), is nevertheless arteriosclerosis. Zenker (5) may assemble the forms of lung ailments common among miners and others who inhale dust and give to these ailments the Greek name of pneumokoniosis, but the pathological identity of fibrosis or change of normal lung elastic tissue into fibroconnective tissue remains the same. Chronic interstitial nephritis or Bright's disease remains chronic interstitial nephritis or Bright's disease even if it should occur in a lead worker. Cancer is none the less cancer even though it be found in gardeners, petroleum or paraffin workers, tin plate workers, rubber workers, lead workers, x ray workers, chimney sweeps and in those who handle pitch, coal, soot and tar. It is but natural then to inquire: When does a disease become occupational? A disease or an injury may be called occupational when it is incurred in a vocation, industrial or otherwise, with such frequency as to compel the physician or other investigator to ask himself: Why are these certain pathological phenomena so often associated with this certain calling? We may find the answer to this question in the obvious dangers of such occupations as firemen, soldier, sailor, miner or diver; but, usually, this question demands a profound consideration of many things. A well known disease, not essentially industrial, may acquire an occupational character because of national or geographical or other reasons. Malaria, for instance, is quite common below the latitude of sixty-two degrees in the Eastern and below the latitude of forty-five degrees in the Western hemisphere, but it assumed an occupational character when it killed 22,000 of the French workmen while they were attempting to build the Panama Canal (6).

Syphilis we could scarcely term an occupational disease did we not know that it is occasionally contracted by glass blowers, performers on wind instruments, and that Scheuer (7) collected 297 cases among shoemakers, paperhangers, painters, dressmakers, saddlers, and other workmen who became inoculated by holding in the mouth such articles as nails, awls, pencils, needles, thread and wire, which fellow workmen had infected.

Ascaris lumbricoides (8), an intestinal round worm, became an industrial factor when in Porto Rico, in 1913, it was found to be the prevailing parasite in ninety per cent. of 10,140 coffee laborers of all ages and both sexes.

As many of the diseases associated with special industries and occupations are due to combinations of causes, any arbitrary classification must be more or less inexact. It would seem that most diseases could become occupational in character if to a trade or industry, indifferent in itself as to health or sickness, injurious environments were to add such predisposing factors as: Insufficient amount of, or bad, or dustladen air, abnormal atmospheric conditions, improper temperature, poisonous gases, abnormal positions of the body, absence of personal hygiene, workman's bad habits, likelihood to

frequent trauma, improper nourishment and insufficient sleep.

The average adult requires 3,000 cubic feet of fresh air an hour (9) in order that there may not be over six volumes of carbon dioxide to the 10,000 cubic feet. Experiment has shown that in winter the air cannot be changed more than three times in one hour without causing a disagreeable draft, hence each person should have a cubic air space of 1,000 feet. While carbon dioxide in itself is not toxic, it causes, if in excess, a deficiency of oxygen in the room and also affects the elimination of carbon dioxide from the system; since, whenever the tension of carbon dioxide in the air exceeds that of the carbon dioxide in the blood, the carbon dioxide cannot be eliminated from the system. Moreover, Brown-Séquard and D'Arsonval (10) discovered that a volatile alkaloid existing in the expired air would cause the death of animals. Dust in the air is a menace to the workmen. Sir Thomas Oliver (11) says that "Much ill health and most of the industrial diseases are caused by the inhalation of dust or by the work people swallowing it along with their food. Dust, if insoluble, may inflict injury mechanically; if soluble, it may cause poisoning, as in plumbism. In the various industries dust of all kinds is met with. It may be inorganic or organic. The dust given off during the chiseling of stone, the grinding of steel, and the packing of pigments is inorganic; while that raised during the manufacture of cotton, silk and jute is organic. Dusts that are harmful might be spoken of as mechanical and irritative, chemical and toxic, or caustic."

The influence of abnormal atmospheric conditions may be seen in the caisson worker, the diver and the subaqueous tunnel workman, as well as in the mountain climber, balloonist, aviator, and those working in great altitudes.

The baneful effects of excessive heat may be seen among blacksmiths, stokers, smelters, blast and electric furnacemen, firemen, men in steel mills, foundrymen, glass blowers, kiln and pottery men, bakers, miners, tunnel workers and cooks. Those chiefly exposed to excessive cold are butchers, icemen, cold storage workers, motormen, aviators, firemen, coachmen, and teamsters.

The victims of poisonous gas are usually found among steel workers, smelters of zinc and some other ores, tin can manufacturers, those handling the byproducts of coke, tailors, workers in canneries, smelters, bakers, those in the engine rooms of vessels, chauffeurs, workers in freight cars where carbon monoxide is used to preserve fruit and vegetables (12), and in several other callings.

Abnormal positions of the body maintained for any length of time may act as contributory factors to industrial disease. The bent over, crouching position assumed by engravers, tailors, watchmakers, steel engravers, cobblers, lithographers and certain other craftsmen, is sure eventually to interfere with the circulation of the blood and the expansion of the lungs. Spinal curvature and round shoulders are common in cabinet makers, locksmiths and blacksmiths. When pressure is combined with abnormal position the result then may

be sciatica, occupation neuroses, or cramps. Personal hygiene on the part of the workmen is absolutely necessary, both for the preservation of his own health and of the health of his companions. A sufficient number of bath rooms, lockers, dressing rooms and toilets should be provided in each factory. The workman should bathe before leaving the factory and should scrub his teeth before each meal. Pure drinking water and proper, uncontaminated food should be available.

The habits of the workmen may play an important part in the causation of industrial disease. He may be an alcoholic and, as a consequence, according to Sir Thomas Oliver (13), "careless and heedless of danger; he runs risks he otherwise would not incur and to this circumstance may be traced many of the accidents that happen in docks and wharves." The insomnia from which excessive coffee and tea drinkers suffer may be instrumental in lowering the workman's resistance to disease. We find drug addicts (cocaine, morphine, and other drugs) among workmen as among other members of the community.

Trauma and irritation have a decided relationship to bone tuberculosis, to bone sarcoma and to skin cancer. Chewing of the betel nut in some countries is held responsible for cancer of the cheek; and in some parts of India cancer of the abdominal wall seems to be caused by the *kangri* (a small stove used to warm the body.) Improper nourishment, overwork or insufficient sleep may lower the vitality of the workman, and thus render him prone to disease, the ultimate result being economic loss from diminished output and inferior quality.

One occupation may furnish predisposing factors for more than one disease or ailment. For instance, the chauffeur is not only likely to suffer from one or many of the surgical ailments resulting from collision or other accident, but he is also subject to gasoline poisoning (14) or carbon monoxide poisoning. One industrial poison may be used in many occupations and so furnish numerous sources of industrial disease. Layet (15), a French physician, tells us that lead is used in 111 industries. A change of process in a certain industry will alter the character of illness to which the workmen of this industry have been liable. For example, those employed in plating mirrors formerly were susceptible to mercury poisoning because in this process the workman poured mercury on a plate of tin foil and placed the glass over it. In 1885 with 7,845 sick days among 160 mirror makers at Fuert, there were 4,563 days due to mercury poisoning. This process, however, has almost completely been abandoned and a solution of nitrate of silver (16) is now used for this purpose; as a result mercury poisoning has disappeared among mirror platers. The new process, however, employs red lead with which to back the plate and is not entirely free from danger. Acetal aldehyde is used in the modern process of silvering mirrors and has certain dangers.

While it is true that almost any disease, under conditions which have been indicated, can assume occupational or industrial importance, there are,

nevertheless, certain industrial poisons such as lead and chromic acid, that we at once recognize as constantly threatening the health of those who work with or in them. Likewise, we know that certain violent infections and inflammatory conditions are strikingly common in certain occupations; anthrax, for instance, in those who deal in hides and hair; erysipeloid (17) (an infection of the hand) in those who handle fish; hookworm disease (uncinariasis) in those who work in the soil—quarrymen, farmers, planters, laborers in construction camps, lumbermen, tunnel workers, brick and pottery workers.

The Bureau of Labor, in Bulletin 100, May, 1912, published a list of fifty-four industrial poisons. Most of these industrial poisons are eliminated by the lungs, kidneys, liver and skin, and hence any derangement in these anatomical structures will have a decided bearing upon the prognosis of the disease. In both infectious disease and industrial poisoning we must consider such important factors as: Gastrointestinal inflammation, individual susceptibility, previous illness, bronchitis, low vitality, and, of course, the probable amount of toxins or poisons absorbed.

It is most interesting to note the apparent diabolical intelligence with which certain industrial poisons seize upon certain tissues of the body—a selective affinity quite comparable with the manner in which certain disease producing bacteria invade certain anatomical structures in some acute infections. White phosphorus selects a decaying tooth root; lead picks out a painter's right wrist, if he is righthanded; arsenic usually selects nerves of the lower extremities; wood alcohol (methyl alcohol) chooses the optic nerve. Carbon disulphide, mercury and manganese, widely differ in their chemical characteristics and yet each of these three chemicals may be responsible for neurasthenia or hysteria. Industrial poisoning may be acute, as by aniline or chlorine; or chronic, as by mercury or lead.

It is not my province to discuss here any medico-legal questions except in connection with industrial poisoning. Many physicians are analyzing that type of social justice which will indemnify the laborer who loses his arm by machinery but will have nothing to do with his claim if his arm has been permanently paralyzed by lead poisoning. They are asking if it is fair to award damages to the family of a working man who dies of acute industrial poisoning and at the same time to deny compensation in the case where a man dies of the chronic effects of the same poison.

It is astonishing the number of different poisons which may be associated with a single industry. In calico printing we find hydrochloric acid, lead, wood alcohol, carbon monoxide, aniline, chromium, cyanogen and chlorine compounds, antimony, arsenic and phenol. The man who works in a blast furnace may be exposed to lead fumes (if lead is present in the iron ore), sulphuretted hydrogen, carbon monoxide, cyanogen compounds and sulphur dioxide. In the dye works are wood alcohol, lead, ammonia, sulphuretted hydrogen (if sulphuric colors are used), antimony, benzol, arsenic, aniline,

chromium compounds, cyanogen compounds, hydrofluoric acid, phenol, oxalic acid, picric acid. In a furniture factory are turpentine, phenol, petroleum, wood alcohol, aniline, arsenic, chrome stains and lead. In a felt hat factory there may be mercury, methyl alcohol, carbon monoxide, dye-stuffs, arsenic, sulphuric acid and nitrous acid. In the tannery the workman may encounter benzine, amyl acetate, ammonia, sulphuretted hydrogen, sulphur dioxide, lead (in the case of white leather), chromium compounds, carbon dioxide (if he works in the tan pits), arsenic and anthrax. In the soap factory there are sulphur, tar, cyanide of ammonia, acrolein, nitrobenzol, sulphuric acid, pyridin. In the rubber industry, including the manufacture of toys, are wood alcohol, turpentine, mercuric sulphide, tar, sulphur dioxide, chloride of sulphur, phenol, lead, carbon disulphide, carbon tetrachloride, benzol, aniline, antimony, arsenic and benzine, (18). These are a few of the trades in which poisons are used. Let us take up as briefly as possible one or two typical cases of industrial poisoning.

Lead is used more than any other poison in trade and, therefore, lead poisoning is more common than any other industrial poisoning. Lead was known to the ancients and is mentioned in the *Old Testament*. Hippocrates described a case of lead colic. Sir Thomas Oliver (19) informs us that Theophrastus (371 to 286 B. C.) referred to the use of white lead by painters; that Dioscorides, about the time of the birth of Christ, spoke of lead poisoning; that Ramazzini, in 1670, mentioned plumbism; and that Correggio, Michel Angelo and Raphael are believed to have suffered from saturnism. Absorption of lead may occur in lead smelting establishments or where lead containing ores are used. Poisoning by this metal may take place in the manufacture of objects made of metallic lead, such as boxes, plates, sheets, pipes, retorts, kettles, faucets, pails, flasks, cans and wire. Lead poisoning may arise in workmen during the manufacture of or use of the alloys of lead; such as type metal, shot (tin foil); and in workers in bottle cap factories, type foundries, file cutting works, tin shops and composing rooms. Such poisoning may occur in the manufacture of lead colors and other lead compounds, such as lead chromates, Krems white, red lead, acetate of lead, white lead, litharge, lead chloride in lead color works, and storage battery factories; among painters and varnishers in gas and water works and in the cut steel industry, etc. At times agents containing lead may be employed in almost every industry. Lead colors and other lead combinations are often sold under trade names. Absorption of this poison or of its compounds seldom, if ever, takes place through the unbroken skin (Kober) but, in the form of a very fine vapor, as lead oxide or as dust, it may be inhaled. It is also taken into the system by way of the stomach when the workman ingests food or drink contaminated by lead, or when he uses chewing tobacco, cigars or cigarettes which have come in contact with the poison. The lead worker occasionally inhales lead dust which may be lodged

in the upper respiratory tract to be mixed with the saliva later and finally swallowed.

Chronic poisoning is the type usually noted. It results from the continuous absorption of very minute quantities during a period of weeks, months or perhaps years. First, there is a general disturbance of the health as manifested by decline of bodily strength and a realization on the part of the patient of a sense of weakness. The skin may be pale yellowish or sallow in appearance. The breath is fetid, there is an uncomfortable feeling in the stomach and there may be a metallic taste in the mouth. Then there usually appears the blue line on the gums. This, however, may be entirely absent even in a severe attack. Lead colic ensues; there may be pain in the joints and very often there is a fine tremor of the fingers. After a sense of anesthesia usually in the upper extremities, there is paralysis of the extensor muscles of the forearm and hand, together with muscle atrophy. The flexor muscles are rarely involved. If this state of affairs is unrelieved, gradual progressive atrophy of the optic nerve, as well as transient blindness, will take place. There will be loss of the sense of smell and taste, mental depression, brain disease, contracted kidney, blood vessel changes, and granular degeneration of the red corpuscles.

Carbon disulphide is used very largely in the rubber industry for vulcanizing and for other purposes. It is used in the refining of tallow, paraffin and wax, in making imitation silk and in other industries. Carbon disulphide does great damage to the red blood corpuscles and to the central nervous system. The victim of this poison may suffer from peripheral neuritis, tremor, hysterical excitement, failure of memory, paralysis of the arms and legs, and Charcot says that mental depression occurs in eighty-seven and one half per cent. of these cases.

Every factory making use of poisons in its process should employ a company physician. Many do so. It is the duty of this physician to be acquainted with the character and symptoms of the poisons used in the particular business to which he is attached; as well as to be familiar with factory sanitation, questions of personal hygiene, ventilation and other problems. Some industries employ so many poisons that when a workman becomes ill it often taxes the doctor's ability to make a differential diagnosis. For instance: E. R. Hayhurst (20) informs us that in rubber factories the "physicians are so confused with the multiplicity of poisons used in this industry that they usually style all patients 'rubber poisoned'."

In discussing the subject of occupational or industrial diseases we cannot escape the consideration of tuberculosis. The constant inhalation of dust (even nonpoisonous dust) by a person predisposed to tuberculosis will often result disastrously. The least harmful dust is that arising from natural soil, except where such soil is sandy or stony or high in alkali content. Stone, mineral, ore, clay, coal, bran and wood dusts are all more or less harmful. Talc, soapstone, flour and starch dusts are practically harmless except as producers of

coughing in those who may be inclined to tuberculosis. The most harmful dust, outside of poisonous dust, is emery and, next to emery in deleterious effect, is sandstone. Tuberculosis may be a specific occupational disease, as in those instances where it is acquired by dairy workers, cooks, makers of autopsies, butchers and veterinarians—the materials which they have handled having been contaminated with the bacilli of tuberculosis. It has even been stated that tuberculosis may be conveyed in clothing and footwear. Perlen (21) says that out of 4,177 tuberculous patients in the Munich Clinic 709 were in the shoe and clothing repair business. Of course, such statistics are by no means conclusive because the 709 repairers of clothes and shoes that he mentions may have been predisposed to tuberculosis regardless of occupation and may have worked in sweat shops and hovels. Nothing short of subjecting these clothes and shoes to a bacteriological examination, finding the bacilli of Koch and, later, making the bacilli traverse Koch's circuit, would prove beyond peradventure that such shoes and clothes had been responsible for tuberculosis in these patients.

Statistics may be maneuvered to prove or disprove almost anything. It has been estimated that over 70,000 wage earners die every year in America from tuberculosis. The death rate seems to be higher in the dusty trades than in the non-dusty occupations. No matter what industry or occupation the individual may be engaged in he cannot have tuberculosis without the agency of the bacillus of tuberculosis. Occupational tuberculosis is the result of a combination of causes, the active agent always being the specific bacillus of Koch. Nearly every authority now admits that almost ninety per cent. of the poor living in cities are invaded by the germ of tuberculosis early in childhood. The continuation of the activity of these germs will depend upon environment. If discouraged by fresh air, sunlight and proper nourishment these germs may remain dormant indefinitely; if encouraged by vitiated atmosphere, darkness and insufficient nourishment, they will establish an active lesion in the lungs or elsewhere. Now then, we shall take for example one of this ninety per cent. of our poor who has contracted tuberculosis, shortly after his birth, but who, by reason of proper environment, arrives at the age of manhood with the causative germs lying dormant. He enters a factory which is overcrowded, not sanitary, to which the sun never penetrates, where the air is seldom changed, where he is exposed to extremes of heat and cold, where he constantly inhales dust, poisonous or otherwise. Add to this the fact that he is overworked and poorly nourished. Shall we be surprised if he manifests symptoms of active pulmonary tuberculosis? I believe with J. Chalmers DaCosta (22) that there is a hereditary predisposition to tuberculosis and that the tissues of a factory worker so predisposed will succumb to the invasion of the bacillus of tuberculosis, when evil environments are furnished, whether in an unsanitary factory, or elsewhere.

Of the obviously dangerous occupations such as soldier, sailor, engineer, miner, lumberman, fire-

man, diver, caisson worker, subaqueous tunnel worker, aviator, perhaps there is none in which there is such a variety of opportunities for disease, traumatic or otherwise, as in the occupation of fireman in a large city. The fireman is exposed to wet in winter and summer; to extreme cold in winter and to extreme heat at all big fires. He has irregular hours for sleep and for meals. He may suffer often from puncture and lacerating wounds the result of falling glass; he frequently steps on nails (23); he takes his chance of being crushed and afterwards cremated or drowned, as a result of being trapped in the burning débris of a falling building upon which powerful streams of water have been forced. He is subject to contusions, fractures, sprains and dislocations as the result of falling rafters, bricks, etc. He is exposed to various wound infections because of the dirt in which he is frequently obliged to work. He runs the risk of hernia from lifting heavy hose and he may be burned or scalded. A powerful stream of water, striking a fireman at close range, may cause him to fall from a ladder or a roof with resulting multiple complicated fractures, grave internal injuries, or even instant death; or such a stream of water may start a meningeal hemorrhage, may dislocate the lens of his eye, may rupture his eardrum or may produce one or more contusions or crushes of any of his superficial, anatomical structures.

The fireman may contract or bring home to his family diphtheria, smallpox, scarlet fever, or any of the contagious diseases—as the direct result of being on duty in a burning building in which such contagion exists. He may acquire conjunctivitis or even lose his sight from irritant or poisonous vapors. He is likely to inhale the vapors of any poison which happens to be stored in the burning building on or in which he may be working. He may be annihilated while working near high explosives. The most common danger, however, that the fireman is obliged to encounter is that of asphyxia from hot smoke, oil fumes, coal gas, turpentine, ammonia, illuminating gas, naphtha, camphor or other highly dangerous vapors. Following such inhalations he may succumb to asphyxia and pulmonary edema or suffer from conjunctivitis and chronic bronchitis and pneumonia. J. Chalmers DaCosta (24) in discussing the various kinds of smoke states: "Smoke from lumber, varnish, furniture, paper, rags and wet hay is difficult to tolerate, whereas smoke from pitch, tar and oils is not so pungent. Smoke impregnated with the fumes of ammonia, sulphur dioxide, chlorine or pepper and other spices is particularly irritant. Smoke containing nitric acid is highly irritating and is apt to produce edema of the glottis and lungs. The hotter the smoke, the more irrespirable it is." The fireman as a public servant is invaluable, being fearless and faithful even unto death.

Limited time has allowed me to touch lightly upon this subject. I have offered a suggestion here, and a hint there, with no other object than to stimulate interest in disease as related to the various ways in which man earns his daily bread.

That the task of the laborer has been made

lighter by the introduction of so-called labor saving machinery into the various industries is certainly debatable. The man who works with the aid of a machine will show the physiological signs of fatigue nearly or quite as soon as the man who works unaided by a machine. Certainly, with a machine he is under more nerve tension and in more danger of accident than without a machine. If speeding up is ordered, as is often the case, in order to increase output, then the workman, as a result of being obliged to attend to more machinery at augmented speed, must stand increased physical strain, endure more nervous tension and run a greater danger from accident.

I am convinced that machinery, as now used, threatens the existence of many useful handicrafts by depriving the workman of a chance to learn a trade and by doing away with the necessity for skilled labor. Instead of permitting a workman to employ his time in learning to become master of his craft, the present factory system forces him to spend all his working hours in traversing a single series of frequently reduplicated motions. To illustrate, the worker on shoes—since we can no longer call him a shoemaker—must now specialize in one branch of this industry to the exclusion of every other branch. He must work on uppers most of his life, or spend all his time on insoles, or some other special part of the shoe. The result of such a system will be that in a few years no single man will be able to make a shoe. This system does not require skilled labor because the most ignorant of men can be trained in a few moments to perform one, simple mechanical act such as boring a hole.

Industrial efficiency, which is the cry of the hour, consists, it would seem, in manufacturing as much as possible by machinery, using man to feed, run and repair this machinery as quickly and as economically as the exigencies of production demand. Leaving aside for a moment what this efficiency does to the workman, I feel sure that when it increases the quantity of the industrial product it, at the same time, lessens its quality. I cannot believe that shoes, for instance, made by the factory system, which demands that all human beings shall have feet of certain arbitrary sizes, can ever equal in comfort those made, after careful measurements of the individual foot, by a master of the craft of shoemaking. It seems to me, then, that industrial efficiency, when trained upon the shoe industry both annihilates a useful handicraft and reduces the comfort of those who must wear shoes. The modern factory system ruins the workman's morale; it destroys his personal initiative; it removes his confidence and takes away his courage. He performs the same act, over and over again, with monotonous regularity until he becomes like an automaton, with no interest in the present and with no hope for the future. The influence of such a system on the whole nation must be evil. Germany has always been cited as the country in which industrial efficiency had reached its greatest development, and yet the price she paid in terms of personal initiative makes us ask, Was it worth while?

In attempting to give you some idea of the part that the human being's calling plays in the determination of his decay—for after all what is disease but decay—I have striven to free this discourse from the mystification of medical terminology. To originality I shall make no claim, having plundered cheerfully from all the writings on occupational disease to which I had access—from Bernardo Ramazzini of Padua, who wrote in 1703, to the authors of the present day. The subject of occupational disease is both vast and interesting. It is vast because it is the history of those who do with hand and brain, and these are still a goodly majority; it is interesting because to many of us who have seen but the triumphs of industry, as graven in massive steel and concrete, it opens the way to a study of the trials of industry and the greatest of these are poverty and disease.

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Posture in Defecation.—L. Duncan Bulkeley (*Medical Record*, December 27, 1919) advises placing the feet on a stool ten or twelve inches high during defecation, in this way providing the compression of the abdomen by the thighs as is the case with aboriginal man. This procedure, in addition to proper care in diet and mastication, with mild intestinal stimulants, gives very great benefit to the constipated patient.

THE EDUCATION OF THE PHYSICIAN.

BY FRANK THOMAS WOODBURY, M. D.,

Edgewood Arsenal, Md.,

Lieutenant Colonel, Medical Corps, U. S. Army.

It is with much chagrin that the practitioners of medicine, graduates of regularly licensed schools of medicine, are compelled to witness all sorts of isms and pathies receive the same State licensure as themselves after little or no educational tests and for reasons not susceptible of demonstration. They believe that the legislator has no more right to stamp the charlatan and the reputable physician with the same stamp and so send them forth as equally qualified to practise medicine, than he has to fix the State's endorsement alike to a charter for a fake gold mine and to a reputable business corporation without discrimination. If the public cannot tell the difference between the lead dollar and the silver dollar the legislator has no right in equity or law to label both legal tender for a gold dollar knowing that the U. S. Treasury will not so accept it.

There are a number of reasons for this state of affairs: The ignorance and credulity of the public, the organized activity of the charlatans, the unorganized inactivity of the medical profession, commercialism within the medical ranks, therapeutic nihilism loudly acclaimed by those whom we judge to be leaders in our profession, the leaning toward mind analysis and psychic cures by neurologists who are unable to cure eighty-five per cent. of the neuropathological conditions from which their patients suffer, the scornful neglect of those remedial measures known collectively as physiotherapeutics, thereby relegating them outside the pale to whatever irregular practitioners will take them up and use them.

The physician exists as a response to a demand for relief from disability and suffering. If he does not afford the relief desired and the patient goes elsewhere and gets relief or is cured it is a demonstration that he is not qualified to advertise himself as a physician. This condition in medical experience which permits a patient to drift successively into the hands of several physicians without benefit is the one directly responsible for the irregular practitioner. The regular practitioner has brought it upon himself. He has lost prestige and remuneration.

Every day we hear people remark that they have been given up by several physicians and finally went to a practitioner not of the regular medical school and were cured. I formerly thought that it was a case of exaggeration or of selfdelusion, but I feel that we cannot dismiss these testimonies with a learned bromide. The results of irregular practice are all around us. Ten Christian Science Churches in New York city alone cannot be blown away with a laugh. We have to admit that these sects and cults possess a knowledge of healing which we do not recognize. That knowledge is the understanding of human nature and of physiotherapy. If the physician's education were broad and deep, and if he were truly learned we would not see him proud in the do nothingism of thera-

peutic nihilism, laying the burden of the cure upon nature and a nurse, or making therapeutic stabs in the pathological dark with drugs of unknown action.

It must be a lack of knowledge on the part of the physician which causes these failures otherwise every patient who is cured would be cured by the first physician to whom he might apply. I wish to eliminate the class of patients restless and impatient under any treatment however skillful. It may be replied in extenuation of this charge that the amount of knowledge now required by a physician, if he were to take all that medical experience affords, is so encyclopedic and is of such a detailed and heterogeneous character that it cannot be contained within the experience of any one man nor compressed within the mind of even the most learned, and further, that the medical profession has endeavored to meet this difficulty by dividing up the knowledge among the specialties.

Can the general practitioner stand the acid test of general practice? Apparently he now stands like the porter at the gateway of the Therapeion of Æsculapius to meet the sufferer, learn his complaint, and direct him whither his pathy can find its appropriate ology to prescribe and administer the requisite therapy. Several new developments have tended to reduce the general practitioner's estimated value. In the Life Extension Institute we find groups of specialists making a diagnosis by consultation and referring the patient to his family physician for treatment. Then there is the diagnostic clinic idea springing up where examiners prescribe and treat after making a diagnosis. Unfortunately these are only for ambulant cases. A diagnostic clinic cannot climb the stairs and surround the bedside of the acutely ill who desire treatment at home and not as yet does every specialist on the staff visit and examine every patient admitted to the hospital ward. Then there are the rural districts.

The general practitioner must bear the burden of medical practice among the majority of our citizens and to discharge this duty faithfully he must be a learned man with a deep fund of knowledge. He should have a wider knowledge of the science of medicine than any specialist. His learning must be based upon a scholarly foundation. He must build the outlines of his education upon this foundation, rearing a symmetrical edifice during his term in the medical school, and he must continue the building after graduation and licensure until he dies or retires from active practice. He may build a tower of specialization, but he must have the original building from which it springs. A specialty without the foundation of general medical experience is like a tower built upon the ground; it has no support and but a limited outlook.

The education of the physician must be deep rooted in a cultured soil of preparatory college training. It should have the sturdy trunk of medical education in a college whose teachers are specialists and research workers, talented and enthusiastic. It should bear the umbrageous branches of the specialties as a late postgraduate accomplish-

ment and then should drop the ripe fruit of healing to whoever comes to pluck. So far we have said no more than to allegorize the course of many of our distinguished medical men, but I would emphasize that they are what they have come to be because of themselves. An acorn will bring forth an oak in varying soils and climates. What shall we say for the rank and file; the men who do the bulk of medical practice and who must thereby earn a living for self and family? They may be called the average. Is not the public entitled to a higher average? Would not the physician himself like to average higher? Would it not produce results to dignify the profession as a learned profession which would thereby be of profit to the public who would respect its counsels? Would it not insure cures and keep the patient from the charlatan?

The questions are unnecessary but for two things; first, the medical profession is rapidly receding from the healing art, even in surgery, and tending to become a student of animated human pathology, and secondly, I intend to answer these questions by suggesting a revolution in medical education that shall put *healing* as the goddess of the temple and *cure* as the assured word in the mouth of every physician.

We will divide our physician's education into three stages following our analogy of the tree.

THE PREPARATORY COLLEGE COURSE.

The preparatory college course should teach the following subjects: Mathematics: arithmetic, algebra, geometry and trigonometry. Physical sciences: chemistry, through organic chemistry, physics, geology, botany, including plant physiology, zoology, including comparative zoology, anthropology, and astronomy. Accomplishments: literature, especially of nonmedical writings of medical men; history of races of peoples, of nations, of religion, of medicine. Languages: elementary Greek and Latin composition, the classics in English, French and Spanish fluently. Drawing, sculpture, painting, architecture, the works and names of artists. Music: musical literature, composers and their compositions. Business law, finance and economics and finally gymnastics.

This college course is intended to store the mind with knowledge and with entertainment. If there is one thing that a true physician must be it is open-minded. He must be able to receive and properly evaluate new ideas, to form correct judgments even to the point of acknowledging and casting out error in himself. Nothing but a broad foundation of culture will give him this breadth of view. He must also be humble. Only the ignorant are arrogant. "Ye shall know the truth and the truth will make you free." Remember also its corollary, "Ye shall know error and it will enslave you."

In the face of the great mysteries of nature no man can exalt himself nor his opinions. Theories which are not built upon the demonstrated laws of the universe fade away as mist in moonshine and are forgotten. This preparatory college should give our physician an insight into nature, an insight into mankind and an insight into human nature. It will enrich his mind with the lineaments of the

beautiful in art as in nature. It will give him a critical and analytical sense whereby he will weigh new problems. He will be able to handle scientific instruments intelligently, to see through the spurious fallacies of advertisers. He will be able to draw what he sees, to perform mathematical operations connected with scientific researches, figure out statistics, make graphic charts. Business law will make him a better protector of his family's and his own interests, and French and Spanish he will speak in medical conventions and read the medical journals of the world. Gymnastics will develop his own body and teach him how to train the bodies of others.

THE MEDICAL COURSE.

The medical course should grow out of the preparatory college course as the trunk rises from the roots drawing strength from all their fibres. The medical course I would divide into four stages. Each stage would follow the former and would not consist of arbitrary periods as at present extending from opening fall to closing spring lecture in every year for each stage, but the stages would each extend until the subjects allotted to that stage were exhausted. They would comprise the following topics and arranged in the following sequence:

First stage, corresponding to freshman class: Heredity, growth, including embryology, comparative anatomy, gross anatomy, dissection, microscopic anatomy, histology, physiology, including reactions to stimuli vibration, heat, light, electricity, x ray. Second stage, corresponding to the sophomore class: Etiology, infectious causes, bacteriology, helminthology, noninfectious causes, pathological histology, pathological anatomy, pathological physiology, causes of death, and medical jurisprudence. Third stage, corresponding to junior class: Differential diagnosis, to include symptomatology, methods, instruments, and laboratory aids for physical examinations. Fourth stage, corresponding to senior class. 1, therapeutics, electro-mechano, actino, radio, pharmako and psychotherapy, dietetics, nursing, orthopedic gymnastics (surgery is included in mechanotherapy); 2, prophylactics, a, physical development, b, sanitation, and, c, institutional management.

We now complete our scheme by requiring that the subjects shall be taught by specialists, not by specialists in embryology or anatomy or pathology as at present, but by the specialists in therapeutics, a very great distinction, and the crux of this argument. The specialists who will do this instructing will be the internist, the neurologist, the ophthalmologist, the gynecologist, the surgeon, etc. For example, in the first stage each specialist teaches the embryology, growth, comparative anatomy, gross anatomy, histology and physiology of his specialty, and in the same way through the other stages. The bacteriologist, the chemist, the physicist stand by with laboratory technic and instruction appropriate to the stage as adjuvants. The present method crowds the specialties into the last year of the course, which requires each specialist to hurriedly review embryology, histology, anatomy, physiology, pathology, differential diagnoses, treatment—all in condensed form.

By the suggested scheme the groundwork would be laid in the first three stages in every specialty leaving the final stage for the crowning study, therapeutics and treatment. The treatment of disease is the objective of all medical education; it should have the most time spent upon it. It is time we rid ourselves of the German habit, which many have brought back from early studies abroad, of looking upon the patient as an interesting pathological specimen for study and classification. We want to look upon him, or her, as a suffering human being whom it is our privilege to treat and cure and we should omit no search, refuse no assistance, no matter what its source, so that it is proved the measure which will effect the cure.

Since the leaders of the profession have assured us that few drugs have therapeutic value and that, except in surgical cases, most patients get well anyhow with a good nurse, the newly graduated physician is perfectly correct in retorting: "Then why did I go through so much to learn so little?" If there is no science of therapeutics, treatment becomes of less worth.

Therapeutics should be taught rationally, proceeding from the known to the unknown—heat, cold, light, food, are solved by their effects in health—what are their effects in disease and what instruments, apparatus or forms shall be invented to administer them in proper doses in selected conditions? Physical exercise, massage, vibration, static electricity, all forms of induced motion, some passive, some active, must be studied in their effects on normal conditions and in disabilities. And so we proceed until we come to drugs whose action we least understand, but of whose clinical results we have made judgments from experiments which we call experience.

I do not think it an overestimate to say that ninety per cent. of the newly graduated physicians who shall come before the State boards for licensure this year will be unable to give the proper physiotherapy for arthritis deformans, fibroids of the uterus, sprained ankle, writers' cramp, gonorrheal rheumatism, carcinoma of the esophagus, arteriosclerosis, peritonitis, gallstones, acute parenchymatous nephritis, erysipelas, dysmenorrhea, shock, nevus, beginning cataract, otitis media, pneumonia, neurasthenia, sciatica, cirrhosis of the liver, and many more conditions, all of which are relievable and all curable if taken early, by physiotherapeutic treatment.

The criticisms which have been made of charlatans are: They promise what they cannot perform; they are ignorant and therefore do more damage than good; they take money for it.

What shall we say of the man who calls himself a physician and who takes money for telling a patient he can do nothing for him, only to have the patient cured by an osteopath, or who performs a perilous mutilating operation for a condition readily curable by the static wave current and charges one thousand dollars for it, in addition to endangering the patient's life, or who prescribes a patent medicine because ordered to do so by an advertisement, and takes money for his recommendation? We hear a great deal about the fee

splitting surgeon, but these others we pass silently over because many who we know are tainted with this corrosion. Let us then insist upon a thorough course in therapeutics, omitting the study of no agent which promises relief or cure.

The postgraduate course comprises of necessity several features which I believe should be more valuable to all physicians. The first postgraduate course is the period as intern in a hospital. In my opinion every graduate should be given a place in a hospital and paid for his services. The public should be taught at once that the graduate of a medical school is a consultant who gives service and this service is worthy of remuneration. The habit of forcing interns to bestow charity is pernicious and belittling to medical science. There are not enough interns in the hospitals. There should be enough so that each patient might have concentrated attention instead of being one of a ward full of bed occupants, and interns might give due and adequate weight to anamnesis, physical examinations, laboratory examinations, progress and treatment. Intensive study and care will benefit the patient and intern alike. As it is, the nurse gets much experience which she cannot appreciate which the intern loses.

After the hospital term and State board licensure the physician looks back upon six to nine years of hard mental labor without even the remuneration necessary to keep him fed, clothed and sheltered, and hopes to be able to earn his living while serving humanity. Surely "the laborer is worthy of his hire," and "the ox that treadeth out the corn shall not be muzzled." He is a busy man but he finds as his clientele increases that he needs spare time for rest, recreation and an opportunity to become acquainted with his family and it is with a faint heart he strives to satisfy his scientific hunger by quick snatches at the banquet spread in a host of medical journals and a daily crop of medical books. He is forced to avoid magazines dealing with specialties if he is a general practitioner, because of their technicalities, and appeal to specialists, or he takes his own special journal and builds his library accordingly, which, however, grows old ere he has read to the index of each new volume.

What can we do for this man? He is greatly in need of education to meet the daily problems of his practice. He must keep abreast of medical progress otherwise he will become a Bourbon, forgetting nothing, learning nothing; a mile stone on the road to the future.

I propose that something be done. I propose that his alma mater shall not merely call him an alumnus and permit him to attend the annual alumni banquet, if he can get there, at five dollars a cover. I propose that his alma mater shall have a graduate faculty of specialists who shall publish monthly, or oftener if necessary, a digest of the world's medical information according to their specialties with editorial comment upon their relation, applicability and significance to medical practice. I propose that it shall be a real digest, omitting repetition, cutting down information to statements, facts and results even to the bare lives

of tables and charts. *Cacoethes scribendi* is the real cause of the diagnosis "talked to death." This postgraduate medical digest would very shortly drive out the commercial medical journal and banish, I hope, the endless repetition so prevalent in our present day medical journals.

Postgraduate work should also be afforded at the medical college and the faculty should be as important as for the undergraduate courses. I would require it as compulsory by law that no physician be permitted to announce himself as a specialist to the public without first having pursued a course of study at his own or some other reputable postgraduate medical school and an examination, especially as to his knowledge of physiotherapy, and he should have a diploma to show in evidence. We need to be more learned, both for our own satisfaction and the benefit of our patients.

COMPULSORY HEALTH INSURANCE.*

Its Defects as a Method for Solving the Sickness Problem.

By E. MACD. STANTON, M. D., F. A. C. S.,
Schenectady, N. Y.

The problem of sickness and the incidental hardships produced by sickness is as old as the human race. Long before the dawn of civilization it was a problem of the savage tribes and ever since the first beginnings of what we now know as civilization the problem has been constantly before every ruler and every legislature. In the year 1920 we are being told in this country that this age long problem can be largely solved by a system of compulsory health insurance. The advocates of this method tell us that because there is a certain amount of irregularity in the distribution of sickness, that insurance will offer an efficient and satisfactory method of equalizing the burdens incident to sickness. At first glance it would appear as though the insurance method might offer a means of solving many of the major problems associated with this subject. However, when we approach the actual study of the problem of sickness insurance, we are at once confronted by a number of perfectly obvious facts which can lead us only to the conclusion that the sickness problem does not lend itself readily to solution by the insurance method.

One of the first facts that we encounter is that although the group of men responsible for the compulsory health insurance propaganda in this country have for more than eight years been struggling with the problem of trying to devise a workable bill which would produce a small fraction of the benefits which they assert that this method will bring about, up to the present date they have made essentially a complete failure. This fact in itself suggests that there may be something radically wrong with the materials with which they are trying to work.

The proponents of compulsory health insurance tell us that fire and life insurance are recognized as being of the very greatest economic and social

value, and that, therefore, sickness insurance is equally valuable. However, when we come to study the subject of insurance we find that sickness insurance has never been able to take its place alongside of fire and life insurance. In Schenectady, approximately ninety per cent. of the insurable risks are protected by fire insurance. The Illinois report shows that more than seventy-seven per cent. of the male heads of wage earning families carry life insurance, with an average protection of \$850 for each man. On the other hand the Ohio and Illinois reports both show that less than three and one half per cent. of the costs of sickness are covered by insurance. Sickness insurance in the form of mutual benefit associations is one of the oldest forms of insurance. If sickness insurance is really the solution of the sickness problem which its advocates assert, why is it that without compulsion, fifty per cent. subsidies, and various other tonics to help it along, it has not been able to reach a position of more than three and one half per cent. usefulness?

There are two chief reasons why sickness insurance has never been able to take its place alongside of fire and life insurance. The first of these reasons is its excessive costs as measured by the protection afforded. The other reason is the excessive waste which is inseparable from this form of insurance, whether it is voluntary or compulsory. Insurance is purchased for the protection afforded, and is cheap or expensive according to the amount of protection which can be bought for a given sum. When one can insure a six thousand dollar building against loss by fire for ten dollars a year, there is no question of the advisability of carrying the insurance. On the other hand, if it were to cost one thousand five hundred dollars a year to insure a six thousand dollar building against loss by fire, almost no one would carry fire insurance even though the hazard were such as to justify the risk. The difference between the rates mentioned above is, however, approximately the difference between the cost of fire and sickness insurance. Fire insurance is almost universal and this is because there is no question as to its economic value. In a city such as Schenectady the ratio between cost and protection is for the average risk about one dollar premium per annum for six hundred dollars' worth of protection. Insurance against death is another typical example of insurance of unquestioned economic value. The death of the head of the family is an irreparable damage. The chances of this occurring in any given unit of time are small. For instance, between the years of twenty and forty-two the risk for any one year is less than one in one hundred. If we set aside the investment features of the average policy, we find that life insurance during the years of the average man's economic activity costs only about one dollar a year for each one hundred dollars of protection.

In sickness insurance we find conditions absolutely different from those encountered in fire and life insurance. Instead of six hundred dollars and one hundred dollars, respectively, of protection purchasable for one dollar premium, we find

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under the best individual type of sickness insurance an average protection of below five dollars for each one dollar paid as premium, while in the family type of compulsory health insurance, as proposed in the so-called model bills of the American Association for Labor Legislation, this average protection for real cases of illness must of necessity sink to but little, if any, over one dollar average protection for each one dollar paid as premium.

The reasons for the low insurance value of sickness insurance are not difficult to ascertain. The economic value of insurance decreases as the occurrence against which the insurance is carried becomes more frequent and the distribution more uniform. For illustration, suppose that each individual could count upon being sick once a year for an approximately uniform length of time. Then it would be the height of folly to attempt to carry yearly term sickness insurance because from the very nature of things the returns from this insurance could only be the amount of the premium paid less the overhead costs of conducting the business. Stripped of superfluous detail this is the insurance problem actually encountered by the so-called model bills championed by the compulsory health insurance advocates. The model bills provide for the medical care of all members of the family. The compulsory health insurance advocates are particularly fond of quoting the Ohio family statistics, so we will take these studies as a basis for our illustration.

The U. S. Bureau of Labor Statistics ascertained the costs, in 1918, for medical care in 719 families in Cleveland, Lorain, Toledo and Columbus. Because seven families out of the 719 had medical expenses amounting to over three hundred dollars it is argued that the entire group of 719 should have been insured for the purpose of protecting the seven particularly unfortunate families. This is typical of the mental attitude which concentrates on the one per cent. and overlooks the ninety-nine per cent. As a matter of fact, 716 of the 719 families had sickness expenses during the year, averaging \$41.97 to a family. Not only was there sickness in more than ninety-nine per cent. of the families, but the distribution of sickness is so nearly uniform that only five and one half per cent. of the families had sickness expenses in excess of one hundred and twenty-five dollars, which is only three times the average expense for each family. Only twenty-five families, or three and one third per cent., had sickness expenses in excess of one hundred and fifty dollars, and less than one per cent. had expenses amounting to over three hundred dollars. In the face of the distribution of illness as shown by these figures, the family unit type of sickness insurance can only be justified from an economic viewpoint if it can be shown that the cost of conducting the insurance is insignificant as compared with the benefits to be given to the families having abnormally high sickness costs. As I will show later the overhead costs and economic waste incident to this form of sickness insurance has never been less than forty per cent., and from the very nature of things, can

never be much less than this figure. For purposes of illustration, however, we can assume that some miracle will take place and that the waste incident to politically controlled compulsory health insurance would be only thirty per cent. Assuming only a thirty per cent. loss, we are still confronted with the fact that in order to insure the twenty-five families who had expenses over one hundred and fifty dollars against an aggregate loss of less than six thousand six hundred dollars the remaining 694 families would have had to raise by compulsory contributions to the insurance fund not only their proportion of the six thousand six hundred dollars, but an additional seven thousand and seventy-three dollars, to make up the waste of the system. With these facts in mind, is it any wonder that the compulsory health insurance enthusiasts have been unable to construct a workable bill of the family insurance type? Also is it any wonder that compulsion is the first principle of the proposed system?

If we dismiss, as entirely impracticable, the universal family health insurance of the type proposed in the so-called model bills, and turn our attention to the limited wage earner type of compulsory health insurance as illustrated by such measures as the Davenport bill, we are at once confronted by certain definite facts. The chance of the individual worker becoming sick during the year is not one in one hundred, or even one in fifty, but actually about one in five. In fact, the ratio between cost and possible benefit is such as to make the normal cost of insurance, covering only loss from wages, almost prohibitive, and, I believe, scarcely justifiable as an insurance proposition in any but special circumstances.

For purposes of study we can take one of the best sickness insurance policies ever offered which is that of the General Electric Mutual Benefit Association of the Schenectady works. The company contributes the overhead costs of maintaining this insurance. During the past six years the policy holders of this association who have been sick have received an average benefit of eighteen dollars and fifty-four cents, and the average premium paid has been three dollars and eighty-three cents, which gives a ratio of one dollar premium to four dollars and eighty-four cents sick benefit with a maximum possible protection of twenty-one dollars and ninety-four cents for each one dollar paid as premium.

Owing to the fact that compulsory health insurance of the Davenport bill type covers different periods of sickness and loads a large share of the expense onto the first week of illness, it can be readily shown that had the 5,276 who have received sick benefits under the General Electric Mutual Benefit Association been insured under the Davenport bill they would have received only two dollars and twenty-four cents in benefits for each dollar paid as premium. Even with the company paying half of the premium, the ratio would still be four dollars and eighty-four cents for the General Electric Mutual Benefit Association against only about four dollars and forty-eight cents for compulsory insurance. Any trade by which the work-

ingman of Schenectady gives up even a fraction of his present liberty for a return of a loss of thirty-six cents in benefits for each dollar paid for health insurance seems too preposterous for serious consideration.

The question of excessive cost is really the root of practically all the difficulties encountered by the compulsory health insurance advocates. By excessive cost I do not mean that the total cost would be beyond the reach of the American workingman if he were offered a really good value for the money spent. I have heard it said that compulsory health insurance will cost from two to four per cent. of the workman's income. Figured on the twelve dollar a week basis of the Davenport bill the benefits promised could cost not less than seven per cent. of the twelve dollar a week wage, but this is entirely beside the question. The really important thing is that the insurance is itself so costly in proportion to the benefits offered that it is not a good investment for the workingman. Consequently for the workingman to be compelled to pay for State controlled sickness insurance giving the benefits promised by the Davenport bill, or similar bills, is entirely out of the question. The American workingman simply would not submit to any such form of compulsion. His business instincts are too good.

The question of costs at once forced the compulsory health insurance advocates to some sort of subterfuge, and the scheme adopted is to attempt to bribe the workingman by some sort of a promise of something for nothing. In the case of the Davenport bill, and similar bills, this takes the form of compelling the employer to pay half the costs of the so-called insurance. To beguile the workingman into accepting the compulsion part of the program, even this promise of half for nothing is not sufficient, and the committee of health of the New York State Federation of Labor has adopted a policy of claiming that the total expenses for administering the benefits of the law will be only about half what they must of necessity be if the benefits promised are actually to be given to the insured.

Like the quest for perpetual motion, attempts to get something for nothing did not begin in the year 1920. The results of at least forty centuries of attempts to get something for nothing are fairly well known and common sense should tell us that the outcome of this attempt will not differ materially from past experiences. In other papers on the subject (1), (2), I have emphasized several of the dangers inherent in the compulsory health insurance attempts to get something for nothing. I believe that it will be well worth our while to go into some of the financial aspects of the scheme.

For purposes of this study we will take the Davenport bill as a basis, and assume a fund of five thousand insured employees, each employee contributing by compulsion the sum given in the estimates of the so-called committee on health of the New York State Federation of Labor, namely, twenty-four cents a week. This will give us a total yearly fund of \$63,650 contributed by employees. Employers will be compelled to contribute a like

amount, making the total fund \$127,300. Now let us see how this money will be spent and how much of it will actually be available for cash benefits and medical care in cases of real illness. The first item encountered is that of the overhead costs. The General Electric Company is noted for the efficiency of its management and certainly it has never been accused of extravagance in its overhead costs. The company pays the overhead costs of the General Electric Mutual Benefit Association which is a model of efficiency and yet the overhead costs of conducting this insurance is over twenty per cent. As far as known the overhead costs of the German and English compulsory insurance have never been under twenty per cent., and they have been considerably above this figure. In order to be on the safe side, we will assume that political compulsory health insurance could be conducted in this country with sixteen per cent. overhead costs.

The next item is that of the reserve and guarantee fund (Sec. 64 and 65 of the Davenport bill.) This item is not altogether waste, but for a period of at least ten years at least, two per cent must be withdrawn from the available funds for this purpose.

Third, human nature is a very real factor in all matters pertaining to sickness, including sickness insurance, and all past experience has shown that in all sickness insurance schemes there is a very considerable economic waste, due to overemphasized illness, and malingering. The actual effect of this factor upon the duration of illness in insured individuals is well shown by the following table compiled by the United States Bureau of Labor Statistics:

WORKMEN'S SICK AND DEATH BENEFIT FUND, 1912-1916.

Distribution of Period of Disability per 100,000 Cases.

<i>Duration in days.</i>	<i>Number of cases.</i>
0 days	3,455
7 days	9,234
8 days	3,632
13 days	2,231
14 days	4,609
15 days	1,982
20 days	1,255
21 days	2,630
22 days	1,126

These figures can mean only one thing, and that is that patients recovering on the fourth, fifth and sixth days continue to be ill for several days longer in order to complete their insurance week. In the fraternal type of insurance only a negligible part of this loss is due to intentional fraud, but nevertheless in this type of insurance the waste from overemphasized illness amounts to thirty per cent. Actual malingering is much more common under compulsory than under voluntary insurance, and in the compulsory health insurance countries the aggregate loss from unintentional and intentional malingering has often reached tremendous proportions. For the purposes of our illustration we can, however, reduce our assumed loss from this cause to a point never actually reached in practice—namely, twenty-four per cent.

I believe that it is by this time clear to all that before a single nickel can go for cash benefits and

medical care in cases of real illness, that we must subtract from our fund the loss due to overhead and the waste due to having to carry the reserve and to overemphasized illness and malingering. At the very lowest possible estimate these total at least forty-two per cent. of our fund, or \$53,466, leaving but \$73,834 available for cash benefits and medical care in real illnesses. The something for nothing has dwindled to less than eight per cent., but our story is not half told.

Under our present system as it has been developed in this country, the \$63,650 would not have been taken out of the pay envelopes of the employees, and what is equally important, the \$63,650 of company money is now available for increased wages. I believe that there is no doubt about the question as to under which plan the average American workman will prefer to take his chances. But still the story is not all told.

In this country we have developed a very extensive system of State medicine, endowed medicine and gratuitous medicine which does its work quietly, with almost unerring accuracy, and with an efficiency almost undreamed of by the compulsory health insurance advocates. We have heard lately a great deal about the compulsory health insurance method, but very little about the American method. It will probably surprise even the medical profession to learn that in Schenectady in the year 1918 each group of five thousand gainfully employed persons, together with the dependent members of their families, actually had at their disposal and made use of more than forty thousand dollars' worth of State medicine, endowed medicine and gratuitous medicine.

Under State medicine is included the school medical service, the health department service, the tuberculosis sanatorium, the health centre, and the county laboratory service. Under endowed medicine is included five per cent. interest on the cost of and endowments of the Ellis Hospital, the day nursery, and in small part the old ladies' home and the children's home. Under gratuitous medicine is included the cost of the medical services given through the department of charities and the unpaid bills of the medical profession as determined by their income tax returns.

In conclusion, let me emphasize the fact that in the attempt to get something for nothing under the compulsory health insurance scheme any group of five thousand employees in Schenectady contributing twenty-four cents a week to a compulsory fund would be trading their liberties and a sure increment of more than forty thousand dollars which is now distributed where it will do the most good, and also the chance to obtain \$63,650 in increased wages for a paltry \$8,184, which represents the eight per cent. of the employers' contribution not already dissipated, and which even then would not be theirs until they got sick to get it.

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THE BILL OF RIGHTS OF THE CHILD.

BY ISAAC W. BREWER, M. D.,
Watertown, N. Y.

In the struggle for betterment group after group of individuals have asserted their rights and usually after a conflict of some kind have established them. There is one class of individuals, however, who are unable to assert their rights and as a consequence little attention is paid to them. I speak of the children. They are neither a political nor a commercial factor in the community and yet upon them depends the fate of the nation. In so far as the children of the present generation are properly trained, physically and mentally, just in that same measure will the welfare of the community be affected.

The rights of a child may be summarized as follows:

1. Every child has a right to be born of parents who are mentally, morally, and physically sound and healthy and approximately the same age. It is well known that mental defects are transmitted from one generation to another. The case of Martin Kellikak proves that. By a union with a feeble minded woman he had an illegitimate child, who was the ancestor of 480 persons. Of these seventy-three per cent. were undesirable citizens, including 143 who were feeble minded. By a legitimate wife, who was mentally sound, he had 496 descendants and none of them were feeble minded, and only two were insane, the insanity in each case came from a collateral line. The mother of the illegitimate child was immoral and of her descendants fifty-six were illegitimate, thirty-three sexually immoral, three were criminals, and eight were keepers of houses of prostitution, a total of 100, or more than one in five. It is well known that certain diseases, notably syphilis, are transmitted from one generation to another. Other diseases, while not actually transmitted, predispose the children to those diseases, especially is this true of tuberculosis. Breeders of cattle know that where there is a great difference between the ages of animals they will not produce the best offspring. What is true of animals is also true of human beings.

2. During pregnancy the mother should not engage in an occupation that requires long hours or that exhausts her, and during the last month she should do no work excepting the lightest kind of house work in her home. That a woman is not at all times physically able to undergo prolonged labor is apparent. This is especially true during the time she is pregnant. Studies made in several English cities proved that the number of premature children and of miscarriages was much greater when the mother worked outside her home. For instance, in Birmingham, it was found that where the mother was employed prior to her confinement the rate of premature births was fifty-two to the thousand births, while among women who did not work the rate was thirty-eight to the thousand. In Massachusetts the law prevents women from working in factories for two weeks before her expected confinement and for four

weeks after the child is born. In Switzerland the period of enforced rest is two months prior to confinement and an equal time after delivery. When we consider that from three to six per cent. of the pregnancies result in stillbirths the reasonableness of such measures as proposed above is apparent.

3. During her pregnancy the expectant mother should have the constant advice of a competent physician. This is an imperative demand and one that can not be neglected without grave danger to the mother as well as to the child. During the five years from 1906 to 1910 the death rate of mothers, due to accidents of pregnancy, in the registration area of the United States was 1.7, and for the period from 1913 to 1916 it averaged 1.4. Most of the deaths here recorded were due to conditions that could have been prevented by proper medical supervision. As regards the child, the Children's Bureau of the National Department of Labor has shown that between seven and eight per cent. of the pregnancies result in a dead child. There are many factors that contribute to this terrible mortality but most of them could be prevented by proper supervision. A community is not doing its full duty by its people unless it provides such supervision for those expectant mothers who can not afford the services of a physician.

4. At the time of delivery the mother should be assisted by a physician skilled in obstetrics. In 1916 in the registration area of the United States 11,642 women died of conditions incident to child birth and the death rate from that cause has increased from 14.2 for the period from 1901 to 1905 to 16.3 in 1916. Of these 4,786 women died from childbed fever, a condition which is preventable by care and cleanliness. Three thousand and eighty-seven women died of puerperal convulsions and albuminuria, conditions which most always cause the death of the child and which can generally be prevented by proper prenatal care of the mother. Many of the deaths recorded were due to the carelessness of midwives, who are generally ignorant of the care of a woman during her labor. To overcome this there should be a rigid supervision of the midwife and the State should investigate all deaths due to childbirth with a view of fixing the blame.

5. Immediately after birth a silver solution of proper strength should be instilled into the child's eyes. This is done to prevent ophthalmia neonatorum, which is largely due to infection with the germs of gonorrhea, received during the passage of the child through the birth canal. The importance of this is apparent when we recall the large number of men who, when examined by the draft boards, were found to have gonorrhea. Practically twenty per cent. of the blind children suffer from this condition because one or both of their parents were, at the time of birth, suffering from gonorrhea, and the simple proceeding indicated above was not followed. The blind child is educated at great expense and is rarely self-supporting.

6. The child should be nursed by its mother for at least nine months and where this is impossible the feeding should be directed by a phy-

sician skilled in the treatment of children, assisted by a competent nurse. This at once presupposes that the mother shall not engage in work that prevents her from nursing her child. In Birmingham, England, an investigation of the health of children under one year of age showed that the health of the children whose mothers did not work was much better than where the mother was employed. This means a living wage and proper expenditure of the wage. Ignorance of feeding and improper hygienic conditions in the home cause more deaths than we are aware of, and it should be the aim of all health officials to secure proper medical and nursing supervision for all children during the first year of life. The time is not far off when the schools will insist that every girl shall know something of the care of children and of home nursing. At present the education of the mother generally begins after the child is born and not infrequently not until it is sick.

7. During the preschool period the child should be under the supervision of a competent physician, who should make such periodical examinations and such recommendations as seem best for the child. During this period the feeding of the child is of the greatest importance. Dr. Thomas D. Wood, who has made a special study of the nutrition of school children, says that from fifteen to twenty-five per cent. of the children of the country are undernourished. In numbers this means between three million and five million children. Dr. A. F. Tredgold, an authority on mental deficiency, says that in some cases the retardation of the child, due to malnutrition, is so extreme that it is almost impossible to distinguish it from acute mental defect. Examinations made of the children before they enter school has shown many physical defects which in several instances could be quickly cured by proper treatment.

8. During its school life the child should be under the observation of a competent physician who gives his entire time to the school child. Such physicians must not only supervise the child but must oversee the heating, ventilation and lighting of the school, and take the precautions necessary to prevent the introduction of communicable diseases into the school. It seems unwise to expend a large sum of money for education and practically nothing to correct those physical defects which prevent the child from receiving the benefit of the education offered him. There should be clinics in all large cities where children can be treated free if their parents are unable to secure the services of a physician. There should also be laws which will prevent the ignorant parent from refusing to have the physical defects of the child remedied.

9. The school curriculum should be so arranged as to teach the child how to live, which means that there shall be adequate instruction in hygiene and sanitation, subjects which are conspicuous by their absence from the course of study in most schools. This instruction should be given by persons who have made a special study of the subject, and not by the grade teachers.

10. No child under eighteen years of age should be allowed to work, unless it was clearly

proved that the maximum benefit had been received from the available school facilities or that the child was mentally unable to profit by such instruction. In the latter case due consideration must be given to the physical condition of the child and where possible manual training should be substituted for the regular courses. Where for any reason a child is allowed to work all of the wages over and above that necessary for its support and clothing shall be placed to its credit in a savings bank. It should no longer be possible for the parent to take all of the child's earnings.

11. During its minority the child should have proper guardianship. It should no longer be possible for the immoral, degraded parent to bring up its child in degradation and immorality. The community must especially safeguard the child against the problems of puberty. This means that we must have better literature for the child, better plays in the theatres and above all better moving pictures. Without doubt much of the juvenile crime can be traced to improper pictures and improper books. The study of a considerable number of boys who were committed to an industrial school showed that in every instance the fault was really one of improper guardianship.

The importance of guarding the child against sexual vice is shown by the fact that 5.4 per cent. of the men examined for the army during the years 1917 and 1918 were found to have one of the venereal diseases.

CLINICAL INTERPRETATION OF SCARLATINOID RASHES.*

BY MOSES SCHOLTZ, M. D.,
Los Angeles, Cal.,

Instructor in Dermatology, College of Physicians and Surgeons, University of Southern California; Dermatologist to Graves Dispensary, Los Angeles Medical Department, University of California.

Scarlatinoid rashes constitute a large clinical group of great interest, both because of their frequency and because their nosological position has not yet been definitely established. It is important to keep in mind that the term scarlatinoid rashes is merely descriptive, signifying a certain dermatological syndrome deriving its name from its resemblance to scarlet fever rash. The clinical picture of scarlatinoid rashes occurs under so many diverse associated constitutional symptoms and under such manifold and widely different etiological factors; it varies to such extent in the morphological details of localization, distribution, shade and degree of intensity of color, and the mode of involution, that a correct interpretation of scarlatinoid rashes, as a whole, presents a complex and difficult problem.

It is convenient for clinical purposes to divide the whole group into subdivisions, local and generalized erythmata. The main reason for this division is that only generalized scarlatinoid rashes give rise to confusion and difficulty of differentiation from scarlet fever. The group of erythmata local in

origin and distribution (the representatives of which are erythema caloricum, erythema intertrigo, and erythema venenum) can be properly omitted in this discussion, as they hardly ever give rise to a confusion with scarlet fever. Moreover, their pathogenesis of a local irritant factor is so different from that of toxic generalized erythmata as to constitute an entirely different group.

Definition of scarlatinoid rashes.—It is of importance to state that the group of scarlatinoid rashes should comprise not all generalized eruptions which may have some resemblance to scarlet fever but only scarlatinoid erythmata. The term erythema should be used here, as strictly as possible, within the limit of its pathological meaning of hyperemia, without any additional factor of infiltration, exudation, etc. Hence any form of acute generalized dermatitis, with any amount of infiltration, exudation or vesiculation, irrespective of etiology, should be eliminated from the class of scarlatinoid erythmata.

Scarlet fever.—In describing different types of scarlatinoid erythmata it is but proper to put at the head of the list scarlet fever rash, the name of which is taken as a generic characteristic for the whole group. The clinical importance of establishing definitely clinical characteristics of scarlet fever is easily deduced from the fact that it is the only infectious exanthema in the whole group of scarlatinoid erythmata and that in the early stage of this highly contagious disease skin manifestations are the main and occasionally the only available data.

Diagnosis of scarlet fever rash.—Reviewing the problem of the differential diagnosis of scarlet fever in the light of clinical experience, as it is recorded in the literature, one outstanding fact impresses itself, that scarlet fever cannot be considered a well defined clinical unit, much less a distinct dermatological entity. Schamberg's (1) statement that scarlet fever gives rise more often to mistakes in diagnosis than any other exanthema is shared in various degrees by all writers. The fact that well developed cases of scarlet fever, particularly in times of epidemics, are so easy of recognition as to be recognized even by laymen, does not militate against this contention, as the typical cases are rather the exception than the rule. Not only may the individual symptoms present a great variety in intensity or grouping, but some of these symptoms, considered to be the most essential and characteristic, may be absent altogether. This is observed in scalled larval or abortive cases of scarlet fever; scarlatina afebrilis, scarlatina sine angina and scarlatina sine eruptione. In these cases the final diagnosis is established only retrospectively on the subsequent development of glomerular nephritis, profuse desquamation, or of new cases of infection among exposed persons.

Not one of the numerous symptoms and clinical features making up a composite picture of scarlet fever, taken singly, is constant or distinctive enough for scarlet fever to be called pathognomonic. Sudden onset, vomiting, fever, angina, rapidly spreading rash, subsequent desquamation, and well known complications are merely suggestive and

*Read before the Los Angeles County Medical Association, October 16, 1919.

relatively characteristic. They are missing in many cases, and on the other hand, they may be present in other conditions than scarlet fever. The final diagnosis is made rather on the grouping of these symptoms, the course of development, and the sequelæ. Possibly the most distinctive and constant symptoms are streptococci borne complications and a high degree of contagiousness, but even these two symptoms fail in many individual cases.

Dermatologically speaking the identity of scarlet fever is still less definable. The writers on the subject are a unit in maintaining that the positive diagnosis of scarlet fever can not be made on the skin symptoms alone. Whitfield, Pisek, Schamberg, Somerset, Bell, all hold that scarlet fever rash, in neither its eruptive nor its desquamative stage, is characteristic and distinctive enough to be an absolute differential feature. Confluent measles and rubella may present a picture indistinguishable from scarlet fever. Anomalies of scarlet fever rash, according to Hyde (2), are numerous. The skin may exhibit mottlings and macules; the rash may be characterized by miliary papules, minute vesicles, blebs and purpuric lesions. Pusey (3) also states that a frequent complication of scarlet fever is the appearance of sudaminal vesicles.

As early and authoritative an observer as Kaposi (4), has noticed many striking variations of scarlet fever rash. He states that it may appear first on the trunk, over the joints and those parts which are kept warm and are subject to pressure, or it may be scanty and unilateral, or it may appear suddenly over the entire body. In some cases the eruption lasts barely a few hours so that often it is entirely overlooked. On the other hand it may continue over an unusually long period with a frequent fading and recrudescence of the eruption. In variations of morphological characteristics Kaposi recognizes the following: *Scarlatina lævigata*—where patches are prominent and shining; *scarlatina variegata*—with large patches which start from the individual red spots and by their darker color contrast distinctly with the paler color of the general eruption; *scarlatina papulosa et miliaris*—with a distinct formation of papules and vesicles; *scarlatina hemorrhagica s. septica*.

Kerley (5) after reporting a number of atypical and most puzzling cases concludes that scarlet fever is the most inconstant of exanthemata. Hartzell (6) states that at times the eruption of scarlet fever is blotchy resembling measles. Even the diffuse and generalized character of scarlatinal erythema, commonly looked upon as a constant and indispensable diagnostic feature, according to Pusey, is not constant, as it may occur in patches separated by areas of normal skin. Stellwagon (7) also testifies to striking variations of the scarlatinal rash, stating that it may be in ill defined patches or may be general. Somerset (8) goes even further, stating that the greater part of the skin surface may be free from eruption in scarlet fever.

A popular notion that scarlatinal rash starts from the neck is challenged by Crocker (9) who states that it comes out suddenly on the upper part of the body first, as a rule, and also by Bell who says

that it appears first on the chest. Bell (10), in his recent contribution, presenting an analysis of 300 cases of scarlet fever, decisively refutes the classical and rigidly drawn picture of scarlatinal rash. His conclusions are: The face is rarely invaded, in fact, only in the most intense types of rashes. The punctate erythema is merely an erythema with a goose flesh on the top of it. Pastias's sign of accentuation of the rash in the normal folds of the body is missing in many cases. Rumpel Leeds's phenomenon, hemorrhages at the elbow from the compression of the upper arm by means of a bandage, is present also in measles and other exanthemata. In the presence of angina, strawberry tongue, and erythema of the soft palate, the rash on the body need not be looked for to make a diagnosis and need not be present. Not even the strawberry tongue remains unchallenged, as a distinctive and exclusive feature of scarlatinal rash, and, according to Schamberg, it may occur also in scarlatinoid erythema.

Other refined features of dermatological differentiation of scarlatinal rash, such as circumoral pallor, punctate type of lesions on the diffuse erythematous background, Pastias's sign, Rumpel Leeds's phenomenon, pinhole desquamation, transverse desquamating lines under the finger nails, etc., are, it is true, found in many cases of scarlet fever, but they are also missing in many cases and they are not definitely proved to be absent in other erythematous. Their greater incidence in scarlet fever is likely to be more apparent than real, as Schamberg rightly remarks, due to the fact that these symptoms are more often looked for in scarlet fever than in other noncontagious exanthemata. Thus, dermatologically speaking, scarlet fever can not be regarded as a well defined and easily identified clinical syndrome.

Scarlatinoid erythema.—The previous statement is particularly well borne out in all attempts to establish a differentiation of scarlet fever from similar appearing rashes. The condition most likely to be confused is so-called scarlatinoid erythema. The study of the literature on scarlatinoid erythema reveals a most unusual diversity and confusion of opinion on all its clinical characteristics. The only feature on which all writers agree is that it is not contagious. Many writers have attempted to establish the clinical picture of scarlatinoid erythema as a distinct dermatological entity, but the pictures described by these writers are so ill defined and vague, of such wide range in intensity and mode of distribution, and of such variety in etiology, pathogenesis, and clinical course, as to make it evident that these observers had in view entirely different conditions which have in common the one symptom only—scarlatinoid rash. Thus, according to Pusey, scarlatinoid erythema is always a generalized, abundant eruption and is usually universal, leaving no unaffected skin. Hyde, Stellwagon, Hartzell and Pisek, on the other hand, state that it can be localized as well as generalized.

Many writers, and particularly the French, as Vidal, Besnier and Brocq, emphasize the tendency of a certain type of scarlatinoid erythema to recur, and insist on isolating it as a distinct clinical type,

without being able to present a single clinical differential feature or a distinct pathogenesis. The acme of divergence and confusion among the writers is reached, however, in the discussion of etiology and pathogenesis of scarlatinoid erythema. Pusey, for instance, regards it as a macular erythema of intense type followed by an intense desquamation. He considers it rare. Hartzell considers it a manifestation of toxemia of diverse kinds. Pisek (11) defines it as a noncontagious dermatitis secondary to infectious diseases, drugs or food intoxication. Colcott Fox (12) regards it an erythematous type of erythema multiforme. Brocq considers it a mild form of dermatitis exfoliativa. Sabouraud (13) holds the unique view that scarlatinoid erythema is scarlet fever without angina.

One of the best definitions in its frank admission of the lack of precise knowledge is given by Sutton (14) who says: "Under the heading of scarlatinoid erythema may be grouped a number of ill defined conditions which may result from any of the number of causes and which clinically are characterized by redness and desquamation." The nearest to the author's views is expressed by Hyde, who says that scarlatinoid erythema is mostly symptomatic and its existence, as an independent entity, is to be doubted.

Etiology.—As to the etiology, all writers agree that scarlatinoid erythema is a manifestation of some kind of toxemia. An incredible number and variety of causes have been adduced. One of the most comprehensive classifications has been suggested by Whitfield (15) who divides it in four groups as follows:

1. Rashes of infections—diphtheria, influenza and Duke's disease.
2. Septic rashes—surgical operations, confinements, tonsillitis and gonorrhea.
3. Drugs—enemata (soap), antitoxin serum rashes and belladonna, quinine, mercury, salicylates, etc.
4. Erythema scarlatinoid recursens. Strangely enough, Whitfield omits from the list of etiological factors food and intestinal intoxications. Stellwagon adds to this list albuminuria, sewer gas, ptomaine poisonings and autointoxications.

Differential diagnosis.—A differential diagnosis of scarlatinoid erythema from scarlet fever, as emphasized above, cannot be made on purely dermatological grounds, but only on the clinical associated symptoms. Even then a well marked differentiation can be drawn only between a typical fully developed case of scarlet fever and a typical case of scarlatinoid erythema. In view of the fact, however, that in a large proportion of scarlet fever cases various deviations from a regular type are presented and that scarlatinoid erythematosa present also an infinite variety in clinical course, the differentiation is well nigh impossible in many cases. The early diagnosis of scarlet fever is made essentially on the greater intensity of constitutional symptoms and the presence of angina, later on the greater persistence of rash and fever, the development of streptococci born complications, such as suppurating glands, otitis media and glomerular nephritis and the spreading of contagion. The attempts of so many writers to base differential diag-

nosis on the finer details of distribution of the rash and later on the mode of desquamation betray their weakness and futility in the final admission that in many cases differentiation is impossible, and their advice is to err on the side of safety by quarantining every doubtful case.

Pathology.—A clear understanding of the pathology of scarlatinoid rashes is, obviously, an essential requisite for a correct nosological classification of these clinical forms. In looking over the literature of the subject one is struck by the paucity of the available references. The writer has been able to find in the American and English literature only two references—Hyde and Hartzell. Hyde states that cutaneous lesions of scarlet fever, like those of measles, depend on hyperemia, due to the vascular dilatation of blood and lymph vessels and a moderate degree of exudation in the rete and the papillary layer of the corium. Hartzell states that the eruption of scarlet fever is due almost entirely to a tremendous hyperemia of the skin, the histological changes being comparatively very slight. Hartzell's findings in one case of scarlet fever were parakeratosis, disappearance of the stratum granulosum and the abundant exudate round cells in the papillary layer. He quotes also Unna's findings in scarlet fever: "An enormous dilatation of all the vessels of the cutis with a very slight cellular exudate; in the epidermis there is parakeratosis which leads to scaling, but the rete shows neither the edema of the cells nor the intercellular emigration of leucocytes.

This striking paucity of data on the pathology of scarlatinoid rashes can be largely accounted for by the fact that these rashes are of such acute and rapidly transient character as to give very few opportunities for a biopsy. On the other hand, the fact that most of the writers omit a discussion of the pathology of scarlatinoid rashes may be explained by the apparent accord of all observers in this regard. They all seem to consider scarlet fever rash and scarlatinoid erythema as erythematosa (active hyperemia of various degrees of intensity). It is plain, however, that the term erythema does not express correctly the whole range of pathological changes occurring in scarlatinoid rashes, since in all cases exceeding the very mildest degree of intensity the erythema gradually merges into an exudative erythema, i. e. a dermatitis of various degree. The very fact of desquamation characterizing the predominant majority of scarlatinoid rashes is an indication that the process goes beyond the stage of erythema which, as a pathological conception, does not imply an epithelial exfoliation. It seems to be more correct pathologically to regard scarlatinoid rashes as a generalized form of dermatitis, of which the erythema is the initial, but in many cases, not the final stage.

Pathogenesis.—While the pathology of scarlatinoid rashes is essentially the same, varying only in the degree of intensity, the pathogenesis of different types is strikingly manifold and variable. Scarlet fever is admitted on all sides to be an infectious exanthema of an unknown bacteriological identity. In spite of the clinical and experimental demonstration of streptococci in the blood of scar-

let fever cases by Gabrichewsky, D'espigne, Baginsky and Sommerfeld, the microbe of scarlet fever has not been identified as yet. The streptococci playing such an important part in the complications of scarlet fever are generally regarded to be merely secondary invaders. It is of interest to note that desquamating scales have recently been proved not contagious. On the strength of these bacteriological findings and the clinical fact that the rash is one of the earlier symptoms developing commonly before the streptococci borne complications, it seems plausible to assume that scarlet fever rash is due not to streptococci or their toxins but to the specific heretofore unidentified microbe.

One of the most interesting types of scarlet fever is so-called surgical scarlatina, the pathogenesis of which is not clearly established. The conception most generally accepted is that there are two kinds of these cases. The first, a true surgical scarlatina, when the specific contagium invades the system not through the usual place of entrance, the throat, but through the site of a wound or a surgical incision. The second kind is a pseudosurgical scarlatina and should be regarded really as a septic rash, thus forming a true link between scarlet fever and scarlatinoid erythema.

As to the pathogenesis of scarlatinoid erythema it is unquestionably a clear cut type of a toxic erythema, the toxins being of most diverse etiology—bacterial, chemical or metabolic, endogenous or exogenous in origin. The exact mechanism of the production of erythema is not definitely established. Probably it is due to the central or peripheral irritation of cutaneous vasodilators by various toxins.

Scarlet fever versus scarlatinoid erythema.—To establish a clinical relationship between scarlet fever and scarlatinoid erythema we must weigh the summary balance of their symptomatology, pathology and pathogenesis. As to the symptomatology, both conditions present two constant symptoms: an active erythema and subsequent desquamation. These symptoms are always present though they may vary greatly in intensity. All writers agree on these two characteristics, but whenever an attempt is made to differentiate between these two conditions on some finer points of distribution, the mode of development or desquamation, the firm ground of incontestable clinical evidence is left for a field of fruitless and hair splitting differentiation which may cover a large number of typical cases and fail in as many other atypical cases. The insufficiency and unreliability of these finer points of differentiation are amply demonstrated by the general acceptance of a final diagnosis on the associated clinical symptoms, the development of streptococci borne complication, and the spreading of contagion.

These futile attempts, well showing the practical impossibility of differentiating dermatological syndromes of scarlet fever and scarlatinoid erythema, in the writer's opinion, are the result of a wrong interpretation of the clinical relationship of these conditions, and this in turn is due to a misconception of scarlatinoid erythema, as a clinical entity. Of all the essential requisites constituting a clinical dermatological entity none is more im-

portant and more indispensable than a specific etiology. The mere fact that scarlatinoid erythema is of a most diverse etiology and can be produced by an almost infinite variety of systemic pathogenic factors seems to the writer conclusive and incontrovertible evidence that it can not be regarded as an independent dermatological entity but only as a dermatological syndrome.

Of all the clinical features of scarlatinoid erythema the presence of a diffuse scarlatinoid rash is the only constant one. It has no other definite or constant features, neither in the morphological makeup nor in the distribution of this rash. The visceral symptoms may vary indefinitely in kind and intensity, according to the pathogenetic factors in the individual case.

As a dermatological entity, scarlatinoid erythema must be properly regarded rather as a symptom than as a syndrome, since erythema and desquamation cannot be taken as two separate symptoms independent of one another, but only as one erythema, presented in two different stages. Desquamation is merely a logical sequel and continuation of erythema, just as excoriation is a sequel to scratching, or crusting is a pathological sequel to a weeping lesion. Desquamation is merely an indicator of the intensity of erythema and is entirely of subordinate clinical significance to erythema, being its secondary lesion. From this viewpoint scarlatinoid erythema, while admitting many variations, is not a definite nosological entity, but merely a generic term signifying a toxic erythema of systemic origin. In the writer's opinion, this represents the only correct and comprehensive interpretation of the symptomatology, pathology and pathogenesis of scarlatinoid erythema, and the efforts of various writers to draw up a definite picture of scarlatinoid erythema and to sustain it as a distinct clinical entity are foredoomed to failure, as they are based on a wrong assumption. In the light of this interpretation the relationship of scarlet fever and scarlatinoid erythema becomes at once simple and obvious. Since the symptomatology, pathology, and pathogenesis of these cutaneous syndromes are essentially identical, scarlet fever rash cannot be regarded as anything but a specific type of the generic group of toxic scarlatinoid erythemata.

Nosological classification.—Assuming that the contentions outlined above are correct and that scarlet fever rash is merely a specific type of the large group of scarlatinoid erythemata, what should be the nosological position of this group? Erythema, the name of the condition, implies its pathological content. It has been emphasized above, however, that in a large number of cases the pathological process goes beyond the stage of erythema and merges into a distinct inflammatory stage, so as to fully justify the name of dermatitis; but the pathogenetic element of toxicity common to this large group of generalized erythemata seems to the writer of such clinical importance as to justify separating them into a distinct clinical group.

From this viewpoint no other dermatological group could offer a nearer pathogenetic relationship to the scarlatinoid erythemata than the group of erythema multiforme. Erythema multiforme

is more expressive of a toxic pathogenesis than any other dermatological group. While ordinarily erythema multiforme is taken as a certain morphological type, yet its very name multiforme implies that its morphology can vary greatly and is rather subordinate in importance to its pathogenesis. It seems to the writer that erythema multiforme could be taken as a broader clinical conception, as a generic type of toxic rashes, and that scarlatinoid erythema could be properly incorporated as a generalized erythematous type of this large group.

CONCLUSIONS.

This interpretation of scarlatinoid rashes is offered by the writer as the result of a study of their symptomatology, pathology, and pathogenesis. The theoretical justification for it would be the advancement of the dynamic biological viewpoint over the static, morphological, which is still too much in evidence in dermatology. The practical advantage of its adoption is the simplification of the nosological conception of the scarlatinoid erythematous and the avoidance of an unnecessary and practically impossible differentiation. The advanced views can be summarized briefly as follows:

1. Scarlet fever rash is not a well defined and distinct dermatological entity and cannot be differentiated from the rest of scarlatinoid rashes; it is merely a specific type of toxic scarlatinoid erythematous.

2. Scarlatinoid erythema is not an independent clinical entity but merely a symptomatic erythema caused by all varieties of systemic toxins.

3. The differentiation of scarlatinoid erythematous cannot be made on purely dermatological grounds but essentially on the associated clinical symptoms and the mode of development.

4. Nosologically scarlatinoid erythematous should be regarded as an erythematous type of the great generic group of erythema multiforme.

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718 BROCKMAN BUILDING.

Remarks on the Treatment of Malaria in England.—S. P. James (*Lancet*, December 6, 1919) reports that deaths from malaria in England have doubled and trebled in number in the past three years and points out the lamentable fact that the deaths are most common among the young men in their prime. He considers that the reason for the increase is largely the use of inadequate doses of quinine in the treatment. Large doses not only cure the individual patient but also to prevent him from becoming a carrier to infect new cases.

METATARSALGIA AND ALLIED CONDITIONS.*

BY ARTHUR D. KURTZ, M. D.,

Philadelphia,

Lecturer in Orthopedic Surgery, Medical Department, Temple University.

Metatarsalgia is pain about the heads of the metatarsal bones, also referred to as anterior metatarsalgia. Investigation has shown that there are a number of causes involved in the etiology and that these causes may be divided into four groups as follows: 1, Static; 2, fixed; 3, pathological, and 4, traumatic.

The static variety is due to improper foot gear, a narrow shoe with a high heel, transferring the weight of the body from the heel to the anterior part of the foot and at the same time preventing the anterior part of the foot from spreading and accommodating itself to the weight. The commonly accepted theory is that the digital branch of the external plantar nerve winds about the inner side of the fifth metatarsal head in such a manner that when the foot is compressed laterally and the anterior arch depressed, pressure is brought upon this nerve. The symptoms, usually occurring in young females, are a sudden lancinating or burning pain about the head of the fourth metatarsal bone, being of such severity as to cause the individual to remove the shoe and rub the foot, which relieves the pain, but there is a tendency to recurrence as soon as the faulty shoe is replaced. Persistence in wearing faulty shoes will bring about a chronic condition. The treatment is usually easy and satisfactory and consists in ordering a properly fitting and properly shaped shoe.

The fixed type is generally found in females who are about middle age, their weight having increased and their activities lessened, and further, persistence in wearing shoes that are not properly fitted to their feet. We may say that an etiological triad of improper shoes, increased weight, and lessened activity has been established. Our own experience bears out Whitman's, that these cases are more common in private than in hospital practice.

The pathology of this condition is fairly definite. Normally, the metatarsal heads form the transverse or anterior arch of the foot. This arch is lowered on weight bearing, but returns to its normal position when weight is relieved. The third and fourth metatarsal heads are slightly higher than the other three members of the arch normally, but, in the person whose activities are lessened the muscles become weakened and the arch loses its elasticity. The increased weight causes an added strain and soon the fourth and third metatarsals assume a fixed position which is lower than they normally occupy. The plantar skin thickens under the displaced heads, from the increased pressure, and callus is formed, either in a large mass or in several smaller areas. This callus is tender and plantar warts may form, which add to the discomfort.

The symptoms are, pain in the anterior part of the foot, disability, and callus formation. The pain is increased by walking in the stockinged or bare

*Read before the Samaritan Hospital Medical Society, October 13, 1919.

foot about the house, or by walking in soft earth or sand; in summer, walking on the boardwalk also increases the pain. Examination discloses a lowering of the anterior arch and the formation of callus on the sole, the callus being thicker under the head which is bearing the most pressure. If the callus is displaced the head of the bone will be found to be tender, due to a periostitis, the result of the increased trauma on the displaced bone.

Treatment consists in ordering a shoe that has a low or medium straight heel, with a broad bearing surface. The Thomas heel has not been of any distinct advantage. The inner line of the shoe should be straight or slightly incurved, the broadest part being across the metatarsal heads. The sole should be thin or of medium weight and the shank and uppers should be of soft pliable leather, so as to allow all possible activity to the foot. An important point in fitting these shoes is that the width be great enough to accommodate the full spread of the foot, when the body weight is thrown upon it. The stockings should be large enough to accommodate the full spread of the foot, but should not be so large as to wrinkle inside the shoe. The callus should be kept trimmed as close as possible; this alone is often a great factor in relieving the pain. Pads of gauze, felt, cotton or other material fastened to the sole by adhesive straps or some non-irritating substance, in such a manner as to relieve the pressure on the heads of the bones and force them back to their normal position, are also useful. Local applications of ointments, accompanied by heat and massage will relieve the periostitis. Instruct the patient in the proper manner of walking, in proper exercises, and order massage of the feet and calf muscles, these latter measures assisting in building up the muscles, so that their normal elasticity may be regained. Steel foot arches and hard leather pads attached to the sole of the shoe under the arch have their advocates, but often they increase the periosteal irritation and render the patient more uncomfortable than before. The treatment is often long drawn out and hearty co-operation of the patient is a necessity. All these patients can be relieved and most of them cured by proper management.

The pathological group includes arthritis of the metatarsophalangeal joints, exostoses on the heads of the bones, resulting from gonorrhea, syphilis and so-called chronic rheumatism; symmetrical enlargement from a productive osteitis causing the bones to impinge on one another; tuberculosis of the metatarsal or proximal phalanges; syphilitic osteitis, with overgrowth and destruction, going hand in hand; new growths of the bones; neuritis of the plantar nerves; certain central nervous conditions causing pain in this location. It is in differentiating these various diseases that the x ray is of the greatest value, except in the arthritides.

A recent writer states, and personal experience bears him out, that pain on plantar flexion of the corresponding toe or toes is pathognomonic of arthritis. Pain in the anterior part of the foot is again the chief symptom, this being coupled with the typical symptoms of the disease that is present.

Treatment is both local and constitutional. In

arthritis the teeth should invariably be examined as a possible point of focal infection. Proper measures directed toward the teeth will often cure the most stubborn arthritis, but it is usually well to apply local applications, heat, and massage. Exostoses require surgical intervention and removal. Surgery accompanied by constitutional treatment is indicated in the tuberculous and syphilitic cases. New growths also need surgical treatment. Neuritis may be part of a generalized condition or may be local and due to long continued pressure on the plantar nerves, in the fixed variety. If the neuritis is part of a general condition, measures directed toward its cure will also relieve the foot symptoms, whereas, if it is a local manifestation, the treatment advised under the fixed variety will relieve.

Traumatic metatarsalgia results from fractures of the metatarsals or proximal phalanges, dislocations at the metatarsophalangeal joints, severe bruises resulting in periostitis. Stubbing of the toes is an injury to which often very little attention is paid, but may cause fracture or dislocation resulting in bad cases of anterior pain. The x ray is again our greatest asset in determining the true condition. Treatment in fracture and dislocation should be directed to securing immediate replacement. Failing this, resection of the fractured or dislocated head is advisable. Amputation of the toe has been required in several cases of long standing dislocation, this being done in preference to resecting the head and permanently affecting the arch. Chronic periostitis may be treated along the line previously advised.

CONCLUSIONS.

1. Pain in the anterior part of the foot is due to a number of causes.
2. These causes may be classified under four divisions.
3. Improper foot gear is the most common etiological factor in its production.
4. Treatment consists in removing the cause, proper foot hygiene, and surgical or therapeutic measures tending toward the eradication of the disease or deformity.
5. No one type of operation, as, for example, the resection of the head of the fourth metatarsal, is necessary or applicable in all cases; each case should be treated according to its individual cause.

2520 NORTH TWENTY-SECOND STREET.

Radium Treatment of Uterine Hemorrhage.—Thomas C. Kennedy and W. H. Kennedy (*Medical Record*, January 24, 1920) consider that in the treatment of excessive hemorrhage from small fibroids, radium is the ideal treatment; it will not only stop the hemorrhage but will cause a retrogression of the tumor. Radium has not displaced surgery in the treatment of fibroids, but in selected cases it has proved of great value. In the treatment of uterine carcinomata it is invaluable, and in all forms of uterine hemorrhage it has proved a valuable agent, and as its technic becomes standardized, it will be more effective.

THE TREATMENT OF SYPHILIS BY A NEW MERCURIAL PREPARATION.

By J. LEWENGOOD, M. D.,
New York.

At present, the whole world is agog over the spread and ravages of venereal disease, and any suggestion or method for controlling or ameliorating this disease, other than through the known channels, and especially when such suggested treatment shows marked results, must be welcome to the medical profession. I will therefore give a short statement of my experience with this new treatment and its results. The preparation used is a combination of mercury with mineral and vegetable matter in the form of a spongy tablet like ordinary punk, weighing from eight to ten grams, and is administered by inhalation of the smoke and vapor of the burning, smouldering tablet. The treatment consists of from six to nine inhalations, given daily until six are taken, and the rest when necessary.

TECHNIC OF ADMINISTRATION.

It is safer and better to give a cathartic the night before the first treatment. The patient is seated naked in a chair under a sheet and the tablet placed between his feet on the floor, or on a raised bench. The mercurial tablet is ignited by holding it over an alcohol stove, or any other alcohol flame, and the alcohol is kept lighted until the tablet begins to smoulder. Then the flame is extinguished, the tablet placed on a plate between the feet, and the patient inhales the smoke and vapor until the tablet is burned out. In case it goes out before being entirely burned up, it is relighted as at the start.

This process usually takes from fifteen to twenty minutes, and causes no inconvenience except a burning sensation in the eyes which can be avoided by keeping them closed or bandaged, and an occasional choking sensation which may be stopped by raising the sheet for a few moments for fresh air. The patient should be cautioned to use no acids or raw fruit during the administration period, and to keep the mouth and all the teeth well cleaned, as in the continued use of all mercurials. After the fourth to the sixth treatment the patient is likely to be more or less salivated.

This mercurial preparation has been improved, altered and perfected to its present state, and called for want of a better title, spirocide, on account of the rapid action, and I will hereafter allude to it by this name. When I first began to use spirocide, this form of administering mercury appealed to me as a much easier and more pleasant way than the usual hypodermic, intravenous, stomatic, or inunction methods of treatment in daily use, and although rather skeptical of the results, I became so impressed by its action and value that I became anxious to enlarge my field of observation and experimentation.

Through the courtesy and able assistance of Colonel H. D. Thomason, commandant of Fort Ontario, U. S. General Hospital No. 5, at Oswego, New York, I was enabled to try and thoroughly test this method of treatment for syphilis in a great variety of cases, in all forms and stages, at this hospital. The administration of mercury by inhala-

tion, is by no means a new method of treatment, but the mercurial preparations heretofore used have proved inefficacious, but when this combination, has been employed, the volatilization and the absorption of the mercurial is rapid, certain and extremely efficacious.

That this is due to the combination of the drugs employed is proved by the separation of this preparation into its component parts, and these tried separately, each alone, or in other combinations than entire, which produce no results, whereas the preparation in its entirety gives the desired results. In every case in which I used spirocide, the Wassermann test having been taken before and after, with the result of ameliorating the existing active symptoms, and has negatived former positive Wassermans, in from three weeks to six months, without any further treatment than the original six to nine inhalations. In many of these cases salvarsan had been administered previously and the treatment had failed.

I will illustrate briefly by giving a few of the results in a variety of cases of different character and stages.

CASE I.—N. N., aged twenty-five, chancre, two months' duration, mucous patches in mouth and throat, macular eruption over entire body and head, Wassermann strongly positive. On February 24, 1918, the inhalations began and were given daily for six successive days. The eruption began to fade on the fourth day, and the chancre was healed with a slight scar on the seventh day. The eruption gradually faded until ten days after all treatment was stopped, when it had entirely disappeared. Two months later, the Wassermann was negative. This patient still shows a negative reaction and is well, with no further treatment than the original six tablets.

CASE II.—J. O., aged twenty-eight. Primary chancre of the glans penis, with secondary macular eruption in back and chest. Patient had had two injections (presumably mercury) in the buttocks before I saw him, without apparent result. The Wassermann was positive. On January 30, 1918, I started treatment, six tablets daily for six successive days; on the third day the chancre had cicatrized and the eruption began to fade, and on the seventh day the chancre was healed with a slight scar. The eruption disappeared ten days afterward. I did not see the patient again for three months; found him entirely free from symptoms, with a negative Wassermann which is still negative.

CASE III.—A. M., aged twenty-eight. The patient had a chancre six years ago; no present symptoms; Wassermann positive. On February 28, 1919, he was given six treatments daily; three months later the blood gave a negative Wassermann, with no further treatment.

CASE IV.—Showed a chancre of the prepuce September 10, 1918, which progressively enlarged to September 10, 1918, when he began treatments, which consisted of six for six successive days. Healing commenced immediately, and was complete on the fourth day of the treatment, leaving practically no scar, and very slight adenopathy.

CASE V.—G. D. showed a chancre on the pre-

puce, March, 1917. At that time received five salvarsan injections, and three mercurial injections. No other symptoms until August 8, 1917, when treatment began. The patient has tonsillar ulcers and the Wassermann was positive. On September 16, 1917, treatment began with spirochete. Six successive treatment were given daily, the ulcers began to heal after the third treatment, and in one week they disappeared.

CASE VI.—E. P., aged twenty-three. Denies infection. Had ulcer on left leg about the ankle since twelve years of age. Admitted to hospital October 21, 1918, with an ulcer on the right pillar of the tonsil (scraping showed spirochete), enlarged submaxillary glands on right side, ulcer present for thirteen days. On October 22, 1918, spirochete inhalations were begun. He was given six treatments daily for six successive days. Considerable salivation, which persisted for one week after treatment. November 1, 1918, ulcer of tonsil healed, submaxillary glands almost normal. Ulcer of leg healed rapidly.

CASE VII.—W. M., male. Aged forty-seven. Had a chancre twenty years ago, with moderate treatment. Complaints of basilar headache for the past three months. Wassermann strongly positive. From June 23d to June 29th he was given six administrations of spirochete. On July 10th his headache disappeared, and the Wassermann was weakly positive. On July 21st it was negative.

CASE VIII.—R. H. Male. Aged forty-seven years. The patient had a compound fracture of forearm for one year with three large tertiary lesions on the forearm, which did not yield to treatment. The Wassermann was strongly positive. He received three arsphenamine administrations from June 2d to June 17th, and on June 23d to June 28th six administrations of spirochete. On July 14th the Wassermann was strongly positive.

After the administration of the spirochete, the lesions on the arm healed very rapidly, so that August 17, 1919, the arm was entirely healed. This patient was moderately salivated after four or five administrations of spirochete.

These cases are only a few of the many treated, and under treatment, and are simply taken at random. The advantages of the treatment is that in all cases the results were satisfactory, and the amelioration of the symptoms in a majority of the cases have been earlier and much more decided than in similar cases treated with salvarsan or mercury injections.

The treatment is easily administered and appeals to the patient. It is limited to from six to nine treatments (rarely requires more than six). It can be given in the office or at home. Causes very slight salivation in most cases, which yields to treatment even when severe, much more quickly than the same degree of salivation resulting from the use of mercury in other forms.

In giving this preliminary report of the spirochete treatment, I have used as examples only a few cases taken at random from a few hundred cases of my own and other observers, in different parts of the country, and the conclusions arrived at by all who have used this method of mercurial treat-

ment, is that it is far more rapid and certain than any other method that has ever been tried or used before, and can be given without danger of any kind, except possibly salivation, which rapidly disappears.

I will shortly publish the results of several hundred cases from many observers in different localities, together with the formula of the preparation.

160 WEST EIGHTY-SEVENTH STREET.

MY FRIEND, THE CONSULTANT.

By L. MILLER KAHN, M. D., F. A. C. S.,
New York.

It would seem that once in every cycle comes the perfect consultant. Perhaps you have been fortunate, as I in having known him. And after having been with him in the room of a sick friend I carefully considered just what he did and said that left me with that high sense of regard for him, that perfect sense of security in his judgment, that I have since felt whenever I have met him at the bedside or elsewhere.

The "elsewhere" explains more, perhaps, than I am willing to admit in this little article, for it comprehends all that the man is fundamentally, aside from his being a physician. Emerson says something to the effect that "what you are speaks out so loudly that I cannot hear you tell what you are," and it may be that what he is speaks out so softly and so surely that he need only be that, and we hear without his saying it.

We are attempting, however, to examine, something much less subtle than character, something which might even be acquired or at least susceptible of change, and that is manner. If it is true that style in writing is intrinsic—a part and parcel of the writer—it may be equally true that manner and manners are not subject to change. This I cannot believe, for many men and all children may outgrow bad faults—by taking thought. The rules for public speaking may be simply to have something to say and to feel it deeply, and the result will be perfect.

Such, however, is not the usual effect produced upon an audience listening to an untrained and unaccomplished speaker. No more is it true with consultants in medicine. If the requirements of a consultant were simply to know his special work and be convinced of the soundness of his judgment, the art of the consultant would require no special thought. The ways of our friend, the perfect consultant, are not past finding out. That he is an earnest student of medicine and a true expert in his work can be admitted at once. The quality of sureness that he possesses might be equally the property of the learned or of the ignorant. The benefit derived by the sick in believing that their physician knows what is the matter with them, is inestimable. "True," you say, "but how is this sense of security of your consultant conveyed to the sick man?"

Let us start afresh. Our hero is a humane optimist, that is to say, his optimism does not force its way upon one, but, quietly within him, seems to endow him with a pellucid reasonableness and right-

mindfulness which naturally takes the most hopeful side of any situation. And this is evident in all that he says and does. Then, too, he is a "humanist," for nothing concerning the patient is foreign to him. He is interested in this man's ailment only because it is a part of this man. Without meaning to do so he almost conveys to the patient that in the future this disease will bear the patient's name. All this is done very quietly. He has never talked to me about it, but we may be sure that he has thought it all out.

Risking the danger of subdivisions, one may say that there are just three things that a patient and his family want to know: First, often and sadly enough the most important, that the sick person will recover; second, that the physician knows what the trouble is, and third, not the least important, that the physician is interested.

"Wabbling," says the dictionary, "is moving unsteadily from side to side." Mental wabbling is unknown to our friend, for, remembering that all his words are precious to the family, he says little, so that what he says may have full weight. He always explains, but with a fine reserve, as if what he tells is only a part of what he knows. I do not wish to be understood as saying that he is a sort of play actor who "appears" at the bedside, expecting to have all his "actions glitter in the limelight of romance." Nothing is further from his purpose. On the contrary, he lays aside all factitious aids and deals only by direction and in the greatest simplicity. There seems to be no doubt that therein lies a large part of his success.

One is likely to think of the era of the gold headed cane as of a series of formal pictures; gentlemen in ruffs, stalking from house to house, and with unbending demeanor conversing (not talking) with their patients somewhat after the manner of the written works of Dr. Samuel Johnson.

We are assured by no less an authority than the late Dean Shaler that human expression has not improved greatly in the last five thousand years, and he refers us to the Book of Job for the proof of his assertion. I am not aware of the existence of any records of the dialogues between Hippocrates and his patients, but we may be quite certain that, as the first consultant of his time, his manner varied little from that of the best of our modern physicians. It seems hardly necessary to cite the Hippocratic oath in support of our belief. One can only picture our Greek master carefully listening to the sick man's history, all alive with interest and enthusiasm, telling him in turn that he had seen many similar cases and that the illness was curable, and later, perhaps informing the family and the family physician that the case was hopeless—and all the time the most humane of men. I am certain that like all else that he did, Hippocrates had thought it all out, just how the consultant was to act, and how to vary his conduct to meet varying conditions.

It cannot be gainsaid that many of us are too likely to disregard the disturbed mental state of our patients in our eagerness to determine upon and deal with the palpable pathology, meanwhile often inflicting a severe mental trauma which may long outlast the original disease. Placing the patient in the cor-

rect mental attitude to his disease should attract our keenest efforts and here our consultant reaches the high water mark. Perhaps I ought not to divulge his greatest secret but to him, all his patients are curable, their diseases may not be.

His sympathy is of that fine kind that needs no laying on of hands and it serves the patient well, for through it he obtains that priceless thing to the sick, an interested hearing. The extra minutes taken up in this way may have a greater money value elsewhere, but we are describing our ideal.

After the patient the family has to be considered, and perhaps this is the consultant's most difficult task. I have purposely omitted his conference with the family physician, for there he is merely one experienced medical man discussing with another the patient's condition—always without bombast or pretence and he is able to do that which is so difficult for most of us—to admit frankly when he doesn't know. But the family! Their acute mental distress, their innumerable questions, their eagerness for hope, and their faith that in this man lies their salvation. Our friend tries hard not to destroy their hopefulness, but if need be, making it as gentle as he can, he tells the truth as he sees it. He uses his best judgment as to what the patient is to be told, holding that to be a part of the treatment, but to the family he does not falter. To them he makes a "reasoned" statement that is so clear that questions are superfluous, but his answers are none the less courteous for all that. He often says that it would be difficult to gather together a like number of people who are more incapable of connected thought than the family of the sick when a consultant is in the house.

The only way in which he differs from the consultant of say twenty-five years ago is in the cut of his clothes, that he smiles a trifle oftener and perhaps has a slightly more human flavor. He possesses all the courtesy and kindness of his elders and, knowing their splendid traditions, he preserves them.

LONDON LETTER.

(From our own Correspondent.)

Influenza in Great Britain—Chair of Physics for the Middlesex Hospital—Medical Women—Compulsory Health Insurance in Great Britain—Opening of the New Headquarters of the British Dental Association—Obituary.

LONDON, February 14, 1920.

There has been no sudden or great increase of influenza in this country; in fact there have been no particular signs pointing to abnormal conditions in this respect, but it is the time of the year when an outbreak may be expected and especially when the experience of former epidemics of influenza are considered and the prevalence of the disease in America, in Poland, and in Asia is taken into account. At any rate the Ministry of Health does not intend that the inhabitants of Great Britain shall be caught unawares, or rather unwarned. Accordingly the ministry made the following announcement recently. The latest returns for England and Wales, with a few exceptions which may be mere chance occurrences, do not at present show any sudden increase either of deaths attributed to

influenza or notifications of infectious pneumonia. The ministry, however, has kept under close observation records of epidemic sickness at home and abroad, and in view of the almost simultaneous increase of influenza in great American cities, in Europe, and also in the Far East, Japan, the ministry considers that there is a good deal of probability of another wave of influenza developing in Great Britain at an early date. This may be due to direct introduction by infected persons arriving from abroad or to the independent development of the epidemic from the influenza usually present. In these circumstances the ministry desires to draw special attention to the memorandum on the prevention of influenza issued to local authorities last month, and to emphasize the following matters for public guidance.

Influenza is particularly infectious during its incipient stage and while the person who has contracted it is still able to follow his vocation and to mix with his fellowmen. Almost everybody, therefore, is exposed to infection at one stage or another of an epidemic. While no certain safeguard against the disease is known to exist, there are certain precautionary measures which it behooves one to take. The measures recommended are practically identical with those advocated at the meeting of the American Public Health Association in the autumn of 1917. All local authorities are urged by the ministry to consider in advance of an epidemic the following measures especially: The immediate appointment of an emergency committee for coöperation with medical practitioners and voluntary health workers; provision of nursing; subdividing the district for antiinfluenza work; provision of home help; the utilization of the local authority's staff; emergency hospital provision, and the prevention or migration of overcrowding, especially in public vehicles and conveyances. Employers are advised that workers who are obviously sick should be sent or taken home at once. Their continuance at work is dangerous for them and a menace to others.

A vaccine against influenza has been prepared by the ministry, and is now being issued on demand to medical officers of health for distribution, free of charge, among medical practitioners within their districts. It is not guaranteed that this vaccine will necessarily protect against attack, but the experience of the military authorities and of the bacteriologists consulted by the ministry justifies the belief that the use of the vaccine will in many cases act as a preventive, and should an attack occur, the individual who has been vaccinated will be less exposed to the risk of complications. It should be added that steps have been taken to protect the country as far as may be from the introduction of influenza through the ports. In the meantime much active research continues by the medical officers of the ministry into the causes of epidemics of influenza. Special inquiry is being made in selected districts into such questions as immunity, the effects of overcrowding, incidence according to age, and so on. The medical officers who are conducting these investigations are in close touch with the work that is being carried on by

other investigators, and are making their inquiries in collaboration with the medical research committee.

* * *

Through the munificence of Messrs. S. U. and J. B. Joel, a chair of physics is to be endowed at the Middlesex Hospital. The importance of physics in medicine is two fold. First, its importance rests in explaining to students the fundamentals of the subject. This object can be most thoroughly achieved by enlisting the services of a physicist who is also interested in medicine. The second aspect of the matter, and one of no less importance, lies in the application of new discoveries in physics to medicine and surgery, and the application can only be brought to a practical and successful end by the collaboration between physicians and surgeons and the physicist.

The good results ensuing from such collaboration have been exemplified in the researches which have been conducted at the Middlesex Hospital for some years now in the employment of radium in the treatment of disease, and especially of cancer. Of course by no means all the physical properties of radium have yet been learned, but striking progress has been made in this direction. The defects of radium treatment lie to a considerable extent in the destructive action of the rays upon healthy tissue as well as on the cancer cells. The value of radium therapy depends on the selective action of the rays, that is, that certain varieties of cancer cells are more greatly affected by the rays than are most of the healthy cells of the body. It is in order to put this knowledge to the best account that prolonged and elaborate researches are essential. These remarks apply with equal force to x rays and to the various types of electric current now used, both in medical diagnosis and treatment. Consequently, the collaboration of physicists and medical men is needed if the best results are to be obtained, and the new departure of the Middlesex Hospital is to be highly commended. Great service to medical scientific advance and to the human race by another step on the road to conquest of disease will have been performed if the action of the Middlesex Hospital should lead to a wider recognition of the value of physics in medicine and of the benefits which will accrue from the cooperation of these two sciences.

The gift of the brothers Joel gives one to ponder over the inadequacy of the endowments for scientific and especially medical scientific research at the British universities and medical schools. During the past few years the rich men of America have given with a profusely lavish hand in aid of scientific research and of medical scientific research in particular. They fully comprehend that in so doing they are helping their country and incidentally their own descendants in the most effective manner possible. It is undoubtedly the fact that the land the inhabitants of which are best grounded and versed in scientific methods will make the most rapid and surest progress. The country, too, of which the medical men have the most thorough knowledge of science will possess the healthiest population and in consequence the most prosperous

and contented population. Therefore, to help science is to help one's country and oneself, for it is only by generous aid that medical research can be carried on to the best advantage, that is, the best results obtained and new knowledge gained. Individual generosity like that of Messrs. Joel is required in Great Britain, if she is to hold her own in medicine and maintain her old time prosperity.

* * *

More students have been enrolled in the British medical schools during the past year than ever before. This has been as noticeable with women as with men students and according to the editor of the *Medical Press*, January 28, 1920, it is estimated that within a few years there will be as many as 3,000 medical women practising in Great Britain.

The prejudice against women medical practitioners seemed to have died out, although it may be said that they appear to shine more in public appointments, as inspectors of schools and factories and in research work than as general practitioners. This, however, is not to be wondered at as they are manifestly well adapted for this kind of work. In recent years, some British women doctors have done markedly brilliant research work, and with all due respect to Sir Almroth Wright's estimate of women's mental powers and limitations, it appears they can do brilliant original research work. Women's potentialities have as yet not been accurately gauged.

* * *

The new headquarters of the British Dental Association were opened by Doctor Addison, the minister of health, at 23 Russell Square on January 23rd. Doctor Addison in formally opening the new home of British dentistry said, in part, that dentistry had not yet come into its kingdom. The report of the Dentists' Act Committee had indicated what it was necessary to do as a minimum in the interests of the public health, but as developments went on it would be found that there was an insufficient supply of skilled men. Medical research had shown that the health of the nation's children was being undermined in consequence of defective teeth. In the proposals that would be put before the country by the government in due course it was essential that everyone should understand that the organization and trained personnel for an adequate service would take many years to provide. The aim should be a coordinated service of medical men, dentists, nurses, midwives and others working in a common center.

* * *

Compulsory health insurance as far as the British medical profession is concerned has not been altogether the success that its advocates prophesied for it. It has been a partial success. Some panel doctors have profited exceedingly by the enforcement of its provisions, while to others it has been a dubious blessing. Perhaps those who have profited pecuniarily have done so somewhat at the expense of their patients. As a rule, these fortunate ones have had more patients than they could properly attend to. Since the end of the war, panel doctors have suffered considerably financially, for while the cost of living has increased twofold

their fees have remained the same. A short time ago they rebelled against existing conditions and against the continuance of an unbearable situation and demanded a large augmentation of the fee.

A conference was held the other day between Doctor Addison, minister of health, and the Insurance Acts Committee of the British Medical Association, and as a result a provisional arrangement has been arrived at with regard to the fees. Doctor Addison stated that the government was prepared to seek the authority of parliament for a grant adequate to pay an increased yearly capitation fee of eleven shillings (\$2.75, former fee nine shillings \$2.25), together with a mileage fund of £300,000 (\$1,500,000) per annum for rural doctors in England and Wales. The committee said that the doctors had resolved to stand out for a fee of thirteen shillings and six pence (\$3.37) but would accept arbitration. Doctor Addison acceded to this request. The arbitrators' award will operate as from April 1, 1920, the government agreeing to pay in the meantime a capitation fee of eleven shillings (\$2.75) as from January 1, 1920.

* * *

Charles Louis Taylor, who for longer than thirty years was on the staff of the *British Medical Journal* and who for twenty years was assistant editor, died on December 21, 1919, aged seventy years. He was the only child of a medical man, Doctor Charles Taylor of Reterhead, Aberdeenshire, and was educated in Scotland, Spain, and France. He knew French, Spanish, and Latin well, knew a good deal of Greek, Italian, and Portuguese, and some German. For a few years he was secretary to Sir Morell Mackenzie, the famous nose and throat specialist, and largely assisted him in the preparation of the second volume of Mackenzie's well known *Manual of Diseases of the Nose and Throat*. Taylor became a member of the editorial staff of the *British Medical Journal* in 1886, assistant editor in 1897, holding that position until 1917, when he resigned through ill health. In most respects he was an ideal editor, his wide learning and linguistic attainments serving him in good stead. He was most careful in reading proof and it was seldom indeed that a mistake or misquotation evaded his lynxlike eye. Taylor was a writer of great ability, besides being an authority on the literature of several branches of medicine. He wrote excellent English and his style was witty, humorous, erudite, and, when needed, caustic and ironical. He was essentially a student of the reserved type, shunned publicity of any kind, but was withal of genial kindly nature and well liked by his colleagues and by all those with whom he came into contact. It appears that so brilliant and accomplished a man, his special gifts of literary knowledge and facility of conversation, was marked for public distribution. However, there is no doubt that he lived as he liked best to live, in comparative seclusion with his beloved books and consorting with a few friends of like taste. The knowledge that he was appreciated at his full worth by these and by his coworkers on the *British Medical Journal* was sufficient reward for one of his modest and retiring character.

Editorial Notes and Comments

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THE QUESTION OF PROPHYLAXIS.

When referring to the question of prophylaxis it is at once understood to be that of venereal prophylaxis. It is a question which simply and veritably bristles with difficulties and the successful solution of the problem seems almost impossible. Some progress has been made in the direction of what may be termed direct prophylaxis in this country, but as a matter of fact, merely the fringe of the subject has been touched. So far as applying or attempting to apply the method to the civil population nothing has been done. In Great Britain, where possibly the situation in this respect is more serious and acute than in America, the matter is being wrestled with.

There are at the present time two opposing camps in the medical profession which are striving for mastery and for the establishment of their respective views. At first, selfdisinfection was severely frowned upon by the British National Council for the Prevention of Venereal Diseases and its members declared that they would have no share or part in the promotion of measures of the prophylactic order. They stated that the legalizing of such methods would be placing a premium on immorality, that they had not been proved to be effective, and lastly, that they could not be carried out among the civil population. When, however, it was demonstrated that prophylaxis had been effective in some of the armies engaged in the war, notably in the Australian forces, the opponents of the proposed novel methods, to some extent shifted

their ground, and said that even if it had been shown to prevent syphilis and gonorrhea among troops, this by no means meant that similar results would be gained in civil life.

The Society for the Prevention of Venereal Disease, formed for the purpose of furthering the views of those who pinned their faith to direct prophylaxis, took an altogether different stand, basing their championship of direct prophylaxis on the remarkably good results which had followed its properly conducted use. This society pointed out that immorality was on the increase and that unless steps were taken quickly to prevent, as far as possible, the spread of infection, the results might be calamitous. Education in the form of moral propaganda had done little to stop or stay irregular intercourse, nor had education by terrorism. Such being the case the members of the society held the view that the wisest course to pursue was to allow the use of certain drugs which should be put up in a convenient form to be employed as soon as possible after intercourse.

Of the members of this society none have been more active in promulgating the prophylactic aspect of the question than Sir Arbuthnot Lane and Sir Archdall Reid, and two more doughty advocates could not be found. Sir Arbuthnot Lane has contributed a paper on the subject to the *Medical Press*, February 4, 1920, in which the position taken by the society is stated in succinct and uncompromising terms. For instance, he points out that the universal consensus of intelligent opinion of all those who have had unlimited experience, both in the army and navy and in civil life is that it is possible to avoid disease by employing in a proper manner, suitable germicides after exposure to contagion. These germicides should be used properly as soon after intercourse as circumstances permit. The sooner the better, for the longer the delay the more opportunity the infection has for gaining a hold and the less likely the germicides are to act efficiently.

The British surgeon emphasizes the fact that the chief function of medical men is to prevent disease, and as time goes on and the public is rendered more familiar with the conditions underlying venereal, as well as all other communicable diseases, such preventive treatment will become more generally taught in the schools than it is at present. If it is desired to raise the standard of the medical profession in this direction, the general public must be educated simultaneously, so that the mass of the people will understand the necessity for

proper hygiene, and will demand more skilled treatment. It seems that Sir Arbuthnot Lane may have hit the nail square on the head. The trend of the practice of medicine is assuredly in the direction of prevention.

Prophylaxis of venereal disease, if it can be applied effectively in civil life and the results from its use are as good as they have been in armies, will prevent diseases, the most insidious and far-reaching in their effects of all diseases that have cursed mankind since disease first appeared in the human species. A real preventive of venereal disease will occupy the first place among all preventives. It is to be hoped that the matter will be thoroughly sifted and the chaff winnowed from the grain; the outcome will be eagerly awaited in this country. In fact, there are several medical men here who have had considerable experience of venereal prophylaxis and who could give their British brethren valuable advice. Perhaps some of them will make use of their stored-up knowledge, as the prevention of venereal disease is of worldwide concern.

PREVENTABLE DEATH IN COTTON MANUFACTURING INDUSTRY.

The conditions and contributing causes of premature death among cotton mill operatives of Fall River, Mass., are shown in a report on Preventable Death in Cotton Manufacturing Industry, by Dr. Arthur Reed Perry, issued by the United States Bureau of Labor Statistics. Cotton mill work was selected for special investigation because it employed a larger number of women and children than any other industry and because it, more frequently perhaps than any other large industry, subjected its workers to the inhalation of irritant vegetable dust, which in the underfed and overworked elsewhere had generally been found to be specially conducive to bronchitic, asthmatic, and tuberculous disease. Doctor Perry found that the death rate among operatives of all ages was larger by nearly one fifth than that of nonoperatives; operatives between the ages of fourteen and forty-four were forty-six per cent. more likely to die than were non-operatives of the same age, their hazard from tuberculosis being 100 per cent. and from all non-tuberculous causes twenty per cent. greater than the hazard of other persons. Women operatives showed a higher death rate than men.

Tuberculosis was shown to be the commonest single cause of death, and in four of the five year age groups into which the operatives had been divided for convenient study, it was responsible

for more deaths than all other causes combined. In the case of married women the excess of operative over nonoperative hazard was always large and sometimes enormous, varying in respect to tuberculosis from 105 to 617 per cent. In one third of the deaths from tuberculosis among married female operatives, the disease was complicated with parturition, and the data obtained make it seem probable that mill work is generally a factor in early death from parturition. First pregnancies, in particular, make a heavy drain upon a woman's strength, and this combined with mill work often allows a latent tuberculosis to become active and is sure to accelerate existing tuberculosis. Either cotton mill work by mothers conduces to a high percentage of deaths among children, or the very high percentage of deaths among children suggests probable economic stress in the family. Operative employment, plus the economic stress responsible for the presence of mothers in cotton mills, plus the additional housework outside the mill, almost always necessarily to be done by the married operative whether she has children or not, is generally inimical to the longevity of these mothers.

Other factors listed by Doctor Perry as influential in causing early death were alcoholic addiction, tuberculous kindred, unhygienic housing conditions, low income, long mill service, short life of parents, additional work of mill workers, and prolificacy. The intimate relation of these various factors is shown by his statement that the proportion of female wage earning descendants between the ages of fifteen and forty-four who are characterized as having last lived in unhygienic apartments are also characterized by their having had: one quarter less income, one fourth the less rent outlay for apartment, one fifth the greatest prolificacy, double the average number of infants dying under the age of one year, one fifth the greater proportion dying from tuberculosis, and by one fifth the greater bulking of descendants between the ages of fifteen and twenty-four.

THE HISTORY OF ARSENIC.

Arsenic has met with very unequal fortunes in human therapeutics, and since it has given the many modern preparations now so freely used in the treatment of syphilis and other trypanosomiasis, a short survey of its history is not devoid of interest. Arsenic has issued forth from long periods of oblivion from time to time, consigned there by the souvenir of the bad tricks it had played, only to occupy the stage entirely, usually in a rather noisy manner.

It has been thought that arsenic belonged among the poisons, the use of which the Greek laws forbade with the penalty of death, and that Hippocrates made his disciples swear they would never give it into the hands of others. In reality, the first use of arsenic exhibited internally began only at the commencement of the Christian era. Dioscorides made pills with white arsenic obtained by sublimating the yellow and red sulphides, orpiment, and sandarac. He combined them with fumigations in the treatment of inveterate cough and dyspnea. Galen, during his great vogue at Rome in the second century, A. D., resorted to this medication and applied it to emphysematous patients, whom he afterward sent to complete their cure at spas like that of Mont Dore in France, although he does not attribute the benefit derived from such waters to the arsenic they contain. The Arabs, who adopted the doctrines and practice of Galen's school, employed arsenic among other remedies, and Avicenna, the most celebrated among them, speaks in the tenth century of sandarac, "which possesses the virtue of making the thin grow fat when drunk in a liquid in which it (the red sulphide) is mixed with oxymel." Avicenna also prescribed arsenious acid combined with hydromel in cough and chronic asthma. He even had recourse to a method of administration which had become obsolete, namely, enemata containing arsenious acid, which he believed cured hemorrhoids.

The vogue of arsenic vanished with the reign of the Arabists. The Middle Ages relegated it to the apothecary's laboratory or that of the charlatan. Paracelsus, whose "doctoral cap even knew more than Galen and Avicenna," gave a reputation to "a poison which surpasses all other poisons," and in the following (sixteenth) century arsenic had not been restored to its former reputation, since Ambroise Paré regarded its usefulness as about equal to that of an amulet and advised wearing some over the cardiac region when the plague was prevalent, "in order," he says, "that it accustoms the heart to the poison and therefore it (the heart) will be less injured, because all kinds of poisons endeavor to reach the heart." Paré unconditionally rejects arsenic for any other use.

The seventeenth century witnessed the return of arsenic to favor. In the first place, it was thought to be the much desired specific for cancer. Lefebure de Saint-Hildephon published an article on "a well tried remedy for radically curing cancer." This was arsenious acid, and the

writer had demonstrated, after two hundred experiments with the drug, that it was "better to prescribe this remedy than any other, although it was not so much in favor." The success was mediocre and soon the drug was forgotten.

It was arsenic prescribed for the treatment of intermittent fevers that caused discussion to wax high. The opinion comprised exalted partisans and resolute adversaries, as well as circum-spect minds, such as some justly reputed French and German physicians who quietly experimented with the drug and whose approbation contributed not a little to the general use of the new therapeutic method. Regardless of this, a certain Austrian physician of influence opposed with all his might the use of arsenic in malaria because he had had two unfortunate results, and Thiebaut likewise proclaimed that "arsenic should never have figured in books excepting in reference to its antidote." And Van Helmont also proscribed the use of arsenic. But the eighteenth century came, and Fowler and Pearson decided upon the proper dose of the drug in solution, the first with potassium arsenite, the latter with sodium arsenate. A little later, Boudin formulated his liquor of arsenious acid and arsenic entered permanently into pharmacology and therapeutics.

ENCEPHALITIS LETHARGICA EPIDEMIC IN WINNIPEG.

In a very comprehensive paper, Dr. William Boyd sets forth at considerable length a complete historical account of the recent encephalitis lethargica epidemic in Winnipeg, Manitoba. It is published in the *Canadian Medical Association Journal* for February. Of sixty cases reported with twenty-three deaths—a mortality of thirty-eight per cent.—the following were the characteristic symptoms: Fever, drowsiness, strabismus, ptosis, diplopia, tinnitus, some degree of facial weakness, constipation and perhaps some urinary and spinal fluid changes. Examination of the brain was done in eighteen cases. This revealed marked congestion, perivascular infiltration with lymphocytes and plasma cells; occasionally hemorrhage. Degeneration of the nerve cells was variable, the changes being most marked in the mid-brain. Marked lesions were also found in the kidneys. The ages of the patients ranged from eighteen months to seventy-two years.

The particular feature of the disease, lethargy, was not observed in all cases, but in others it is usually associated with great drowsiness. Sometimes lethargy was only noted with a rise of tem-

perature, which generally ranged from 101° to 102° F. Asthenia hardly proved a cardinal feature of the disease in these cases. During the course of this epidemic in Winnipeg there was also a remarkable outbreak of hiccoughs. This condition also developed among doctors, the attacks lasting usually forty-eight hours. In many of these cases this was persistent, and as many as fifty were reported, but it is probable that there were many more. Two of the cases of encephalitis displayed this condition of hiccough at the beginning of their illness, and whether there is any connection between the two affections remains to be established. At no time was it possible to trace any connection between the different cases of encephalitis, and never more than a single case occurred in any one household. Several of the patients were sent in from isolated farms in the Province of Manitoba. The question might well be asked: Is there any single primary condition of diminished tissue resistance which could render individuals susceptible to these unusual maladies?

ILLNESS AND INDUSTRY.

The extent to which industry is a contributing factor in sickness is almost unrecognized, even by industrial physicians. Royal Meeker, U. S. Commissioner of Labor Statistics, in the *Monthly Labor Review*, September, 1919, says that in his opinion the industrial hazard of ill health is vastly greater than the industrial hazard from accidents. It is much more difficult, however, to determine responsibility for illness because home conditions, bad food, bad housing, insufficient sleep, bad social conditions, infected water supply, and other conditions outside of the plant are contributing causes to the breakdown of health. Nevertheless, industries can not disclaim responsibility for illness because factors outside of industry are contributing causes of ill health.

Mr. Meeker is convinced that by far the most important of all industrial diseases is fatigue. Of course, not all fatigue is caused by work. The fatigue due to keeping late hours, dancing, drinking and carousing, however, is utterly negligible compared to the accumulated fatigue of hard, monotonous work in factory or store under bad conditions of light, ventilation, temperature, and humidity. It must also be borne in mind that workers are human beings and that amusement and relaxation are just as essential to men as are food and raiment. Most of the dissipation workers are accused of is the result of the monotonous fatiguing character of their work. They seek relief in the only forms of amusement available to them.

The effects of fatigue are most insidious. Fatigue is cumulative, and although a young, vigorous man or woman may work long hours under unfavorable conditions for a long period without seemingly suffering any ill effects, in the end a settlement must be made. Most of the nervous disorders suffered

by workers come from the employment. An ascertainable amount of disease not usually connected with industry at all is undoubtedly due to the accumulated fatigue of employment which has broken down the victim's power of resistance. Mr. Meeker believes that not less than half of all illness in the United States originates in and grows directly out of employment. Probably the contribution of industry to the ill health of the nation is much greater than half, but the estimate is meant to be conservative.

News Items.

Spotted Fever in Galicia.—Spotted fever is reported epidemic in Eastern Galicia, where there are said to be more than 100,000 cases. It is stated that 10,000 deaths have resulted.

Rhode Island Medical Journal.—The *Rhode Island Medical Journal*, which suspended publication in 1918 because of the war, resumed publication with the January issue. Dr. W. A. Risk, of Providence, is managing editor.

Addition to Hospital for Women.—An addition to the Hospital for the Women of Maryland was opened January 25th to be used for the treatment and care of women in moderate circumstances. The new addition is known as the Davis-Whitridge Memorial.

Medical Faculty Directs Memphis Hospital.—The College of Medicine of the University of Tennessee, by the terms of a twenty year contract with the city commission, has been given control over the medical and surgical staff of the Memphis General Hospital.

Bill to Abolish Narcotic Department.—Abolition of the State Department of Narcotic Drug Control and the transfer of its functions to the State Department of Health were recommended in a bill introduced into the New York State Legislature by Assemblyman Oscar J. Smith, of New York city.

Postgraduate Course for Colored Physicians.—A postgraduate course in the early diagnosis of tuberculosis was given in January at Piedmont Sanatorium, Burkeville, Va., for colored physicians of the State. This was the first attempt to give such training in Virginia and, so far as is known, in the South.

Annual Congress on Medical Education and Licensure.—The Annual Congress on Medical Education and Licensure will convene March 1st to 3d, at the Congress Hotel, Chicago. This is a triassociation meeting of the Council on Medical Education of the American Medical Association, the Association of American Medical Colleges, and the Federation of State Medical Boards.

Merger of Virginia Colleges Contemplated.—The appointment of a commission to pass on the merging of the University of Virginia and the Medical College of Virginia has been endorsed by the two institutions in question. The commission, which will have seven members, will be appointed by officers of the State government, but two are to be members of the faculties of the two schools.

Influenza in Germany.—Influenza, accompanied in many cases by pleurisy, is reported to be spreading alarmingly throughout Germany. The number of cases in Berlin has risen to over 700 daily, and the situation is complicated by overcrowded hospitals and a scarcity of nurses. Epidemics are also reported in Breslau, Dresden, Hamburg and Bremen.

New Department for Volunteer Hospital.—A urological and syphilological department has been added to the Volunteer Hospital, of New York, the funds for installation and equipment having been given by Colonel H. A. Metz, president of the H. A. Metz Laboratories. The department is designed to engage in research work as well as the treatment and care of patients, both in the hospital and dispensary.

Bulletin of Medical Guilds.—The *Medical Herald*, official bulletin of Bronx and Harlem Guilds, of New York, makes its initial appearance with the February issue, its purpose being the "intelligent, systematic discussion of the economic problems as they concern the medical profession." Dr. Louis Greiner is editor; associate editors are Dr. A. A. Himwich, Dr. Paul Luttinger, Dr. Kalman Eisenbud, and Dr. Sol Berger. Dr. George D. Wolf is managing editor.

Health Instruction Conference.—The annual conference on public health and legislation, called by the Council on Health and Public Instruction, of the American Medical Association, will be held March 4th, at the Auditorium Hotel, Chicago. Among the speakers will be Dr. Victor C. Vaughan, chairman of the Council; Dr. Frederick R. Green, secretary; Dr. Allen McLaughlin, U. S. Public Health Service; Dr. Haven Emerson, New York, and Dr. Charles V. Bolduan, director, Division of Public Health Education, U. S. Public Health Service.

Appropriation Asked for Feeble-minded.—The State Board of Institutions and Agencies, of New Jersey, states in a report submitted to the governor and the joint legislative appropriations committee, that there are approximately 10,000 feeble minded, epileptic, insane, unstable, and unadjusted persons and incipient and advanced tuberculous patients at large in New Jersey and unprovided for. The board asks that \$2,500,000 be provided for 1920, and \$1,500,000 for each year thereafter until 1931 for a construction program giving adequate facilities for the treatment and care of such persons.

Governor Smith Asks Health Measures.—Governor Smith, in a message to the New York State Legislature, has urged liberal financial provision for the support and expansion of the State Department of Health. He also recommended the enactment of legislation to broaden the scope of the child welfare act of 1915 so as to make mandatory upon counties the duty of making proper appropriations in cases passed upon favorably by boards of child welfare. He suggested that the scope of the law be extended to include children born in this country of alien parents and wives and children of men committed to hospitals for the insane or to prisons for more than one year.

Prevalence of Diphtheria.—The prevalence of diphtheria is causing some concern to health officers. New York city has had 2,773 cases of diphtheria since the beginning of the year, with 274 deaths, and cases are now averaging sixty a day. For the thirteen weeks ended December 27th, St. Louis showed a death rate of sixty-seven in 100,000 population, Chicago a rate of thirty-eight, and the District of Columbia thirty-five, all of which rates are well in excess of what these cities have had in recent times. The statistical bureau of the Metropolitan Life Insurance Company finds that in December, 1919, the diphtheria rate was 37.0 and in January 32.3 in 100,000 lives, as compared with a rate of 20.5 for the whole year 1919.

Insanitary Conditions at Fox Hills Hospital.—A charge that insanitary conditions have obtained in the U. S. General Hospital, at Fox Hills, Staten Island, is reported to have been made by East Orange Post No. 60, American Legion, and corroborated by the Surgeon General's Office. The report of the post committee says that kitchen floors were not properly scrubbed; cutlery was greasy; the walls were dirty; cups, plates, and trays were dirty and chipped; the food, though good, was often spoiled in the cooking. Following the report an inspection was made by the surgeon general, whose reply states that the findings of the committee were correct and that the poor sanitary conditions were due to a recent change in hospital personnel. They are to be corrected at once.

Personal.—Dr. David R. Melen, who has been working under Dr. Leo. B. Meyer, of New York, and Dr. Hugh Young, of Baltimore, has opened offices in the Professional Building, Rochester, for the practice of genitourinary surgery.

Dr. S. Floersheim, of New York, has opened an office for the diagnosis and treatment of digestive diseases in the Story Building, Broadway at Sixth Street, Los Angeles.

Dr. Malcolm F. Lent, formerly medical director of Stony Wold Sanatorium, Lake Kusaquua, N. Y., has been appointed supervisor of the Division of Tuberculosis of the New York State Department of Health.

Colonel H. D. Thomason, Medical Corps, U. S. A., recently retired, has assumed the duties of superintendent at Flower Hospital, New York city.

Conference of Industrial Physicians.—The State Department of Labor and Industry of Pennsylvania will hold its tenth conference of industrial physicians and surgeons on March 25th, in the State capitol, at Harrisburg. This conference will be the final day of a four day safety congress held by the Department, in which speakers of international prominence will participate. Dr. Francis D. Patterson, chief of the Division of Industrial Hygiene and Engineering of the Department, will preside at the industrial conference. Among the speakers will be Dr. Harry E. Mock, of Chicago, president of the American Association of Industrial Physicians and Surgeons, and Dr. Alfred Stengel, professor of medicine in the University of Pennsylvania. Physicians are invited to attend the safety congress and especially the conference of industrial physicians.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

(Continued from page 208.)

An important feature of rheumatic disease, which must be borne in mind if mistakes and dangerous delay in diagnosis are to be avoided, is the frequent difference between the manifestations of the disease in children and those in adults. Not only are there, among children, many instances in which the joint symptoms of acute rheumatism are relatively inconspicuous, but in some these symptoms play no part at all, and endocarditis or, less frequently, pericarditis, constitutes the chief clinical sign. In a patient with mild tonsillitis, for example, and a history of pain in a single joint for, perhaps, one night cardiac examination may reveal marked involvement of one or more valves. Indeed, cases have been reported in which cardiac involvement preceded a typical rheumatic arthritis by several days, examination of the thoracic organs having been prompted, e. g., by a bronchitis or asthmatic condition. According to Kerley, 1914, joint inflammation is met with as a manifestation of acute rheumatism in children much less frequently than endocarditis. He has repeatedly seen endocarditis in the children of rheumatic parents without any history of a painful joint; frequent sore throats, chorea, recurring spasmodic bronchitis, periodic gastric or intestinal attacks, or "growing pains" had, however, often been present at some time in these cases as indications of a rheumatic tendency. Cheadle emphasized the fact that various definite sequences of clinical events, e. g., chorea, later endocarditis, and finally acute articular rheumatism, can be recognized as a typical clinical picture of rheumatic infection in childhood.

Although instances of rheumatism in children but one or two years of age have been reported, the disease is rare below the age of three. It is frequent, on the other hand, between the fifth and tenth years. Tenderness, without distinct swelling, characterizes the average case of rheumatic joint involvement in the child; the affected joint, in many instances, exhibits merely some degree of stiffening, with pain only on active or passive movement or on direct pressure. The range of febrile temperature is somewhat lower than in adults, and the fever is typically of shorter duration. Sweating is a less prominent symptom. Pleurisy, erythema, and purpura are more frequent than in older patients. The frequency of endocarditis as a complication is such that it may be said to arise in a majority of all cases, this high incidence being favored by the repetition of rheumatic attacks to which these patients are subject. Particularly harmful, in this connection, is a series

of subacute attacks accompanied by only slight disturbance of the joints. Endocarditis at times occurs as a sequel to tonsillitis, without any evident joint involvement, although more usually tonsillitis is a precursor to rheumatic arthritis. In children chorea is not uncommonly associated with rheumatic disease, appearing usually near the termination of an attack after the more acute symptoms have passed off, but sometimes, instead, at the height of the disturbance, in which event endocardial involvement is likely to have occurred at about the same time. Anemia is another common result of rheumatism in children.

The essential point in avoiding dangerous delay in the diagnosis of rheumatism in children, indeed, is to wean oneself from the idea of pronounced joint symptoms as a necessary manifestation of the disease in these cases. By paying special attention rather to the other known manifestations of the disease in children, the practitioner is enabled better to detect the disturbance in its incipency and thereupon adopt prophylactic type of management of the case which will greatly reduce the probability of the most serious component of rheumatic disorder in young patients—viz.: permanent damage to the heart.

Joint involvement being often lacking as an indication of rheumatic disease in childhood, other manifestations of the affection must be watched for if a diagnosis is to be made sufficiently early to permit of protection of the heart against permanent endocardial lesions. Poynton, 1918, for one, thinks more can be done by the profession to forestall cicatricial damage in the heart than has heretofore been accomplished. That bacterial infection in rheumatic patients is responsible for cardiac damage seems plain from the fact that Poynton has repeatedly been able to induce pericarditis and endocarditis, as well as polyarticular inflammation, in various species of animals by inoculations with streptodiplococci isolated from human cases of acute rheumatism. A possibility of prophylaxis against continuous damage from rheumatic infection would appear to exist from his assertion that while cold and dampness do not induce acute rheumatism, they are capable of predisposing to it and of rendering its course chronic and incurable. Prophylaxis, then, should consist, at least in part, in carefully protecting children with a rheumatic tendency from these specifically harmful influences.

Some of the symptomatic peculiarities of rheumatism in children, which must be borne in mind if the disease is to be recognized early, were mentioned in the preceding issue. Among other possibly helpful indications of the condition is that emphasized by J. D. Love, 1918, viz., the presence of the so-called "growing pains" of childhood. Where joint symptoms have not been noticed, these pains are frequently to be looked upon, according

to this author, as the equivalents, in the muscles and fasciæ, of the rheumatic irritation more typically exerted in the joints themselves. The invasion of the disease being insidious, such relatively inconspicuous manifestations as these assume increased significance from the diagnostic standpoint. According to Williams, "growing pains" are of greater clinical import in girls than in boys, the greater physical activity of the latter rendering them more liable to pains due to excessive exertion and strain of muscles. The difficulty attending an exact estimate of the state of the endocardial tissues when lesions of these tissues are in their incipency necessitates another measure in prophylaxis, viz., rest of the heart, on the principle that an organ at comparative rest is less subject to, and better able to overcome, infection than the same organ in a state of fatigue. Rest in bed for a considerable period must, therefore, be imposed in all cases of acute rheumatism, whether pronounced or slight, in children; and even in the absence of acute illness, any marked exertion of the heart which would place it in a condition of fatigue, and hence of lowered resistance to active or latent infection, should be avoided.

Drug prophylaxis of acute rheumatism has been emphasized by Agote, of Buenos Aires, 1918, who calls attention to the analogy existing between syphilis, malaria, and acute articular rheumatism, each of these affections being attended with a primary lesion—chancre, mosquito bite, and infectious sore throat—and exhibiting a tendency to repeated recurrence in the form of more or less acute attacks. Development of recurrences in rheumatism during the same season of the year as that of the original attack was frequently observed by this author. Some patients were thus able to predict precisely when a fresh attack of articular rheumatism was to occur. In general, these attacks came on during the spring or fall months; in no instance were they met with during the hottest or the coldest months of the year. In view of the tendency of the disorder to return at special times, Agote carries out medicinal prophylaxis of acute rheumatism much as is done in malarial infection, drug treatment being specially instituted at times when recurrence is expected. Thus he has the patient take one or two grams of sodium salicylate every day throughout the month preceding the anticipated return of the disorder. In backward seasons the prophylactic course of treatment is begun later than usual, to correspond to prevailing conditions. Where rheumatism has already developed when the patient is seen, sodium salicylate is administered for two weeks or a month, then discontinued for an equal period, and thus given intermittently until the disease yields. In cases in which the salicylate is not well borne by the stomach, three grams of it are given in an enema at bedtime. The advantages of this plan of prophylactic treatment appear to be illustrated in the case of a boy of fourteen years who had had six rheumatic attacks in successive spring seasons, but had no further recurrence after the prophylactic treatment was instituted.

(To be continued.)

The Treatment of Muscles by Artificial Stimulation.—G. Cooper (*Lancet*, December 13, 1919) feels that too frequently the treatment of injury with subsequent muscular atrophy is turned over to a department of physiotherapy where a purely mechanical line of treatment is carried out. He considers that if the general man has a clearer idea of the line of treatment needed and can direct it more accurately, better results can be obtained. He briefly summarizes his experiences as follows:

1. Excluding the muscular dystrophies and injuries due to trauma and toxins, all muscular atrophy is of the disuse type—that is, it is caused by the suspension of the normal function of contraction and relaxation.
2. The condition and tone of a muscle are largely dependent upon their function—interchange between the cell and surrounding lymph taking place during contraction and relaxation.
3. Prevention of atrophy and restoration of atrophied muscles by rhythmic contractions is therefore a reasonable line of treatment.
4. Artificial stimulation of the muscle conserves the nervous energy of the patient and in most cases of injury is the only method that can be employed.
5. Of methods of artificial stimulation, the electrical is the most valuable.
6. Treatment by electrical stimulation is governed by the consideration of two factors; a, the degree of contraction produced, and, b, the degree of pain caused by the stimulation.
7. Pain is largely a matter of the length of the waves employed and the uniformity of the interruptions.
8. Apparatus devised to give a uniform type of interruption yields the best results.
9. Fatigue is a toxic phenomenon due to the accumulation of lactic acid. There is no risk of fatigue if a proper blood supply is ensured and a short interval allowed between contractions.
10. Practical experience has demonstrated the value of artificial stimulation in restoring the condition of wasted muscles and in preventing atrophy.

Treatment of Back Injuries.—Herman W. Marshall (*Boston Medical and Surgical Journal*, February 5, 1920) has arrived at the following conclusions from a study of thirty cases of vertebral fractures without cord symptoms and from a much larger series of simple back strains. Spinal bone grafts are suited best to well to do patients who will be considerably benefited by slight or moderate improvement in their physical condition. Results of surgical methods are not beneficial enough uniformly; and chances of fair or excellent recoveries are so good in healthy young adults without operation, that spinal bone grafts are not warranted in the majority of cases in workmen. Spinal grafts reinforce the posterior group of spinal ligaments and usually strengthen spines, at least to a slight degree. There is some danger that unavoidable injuries to muscles and ligaments which result from surgical procedures may weaken backs more than inlaid grafts strengthen them. Mechanical appliances are required very commonly for considerable periods of time even after successful grafts, and the results of this combination are presumably often better than either single method of treatment alone. Slight degrees of bony fracture in healthy young subjects are at times re-

covered from fairly well without operation in six months or less, severer grades of bony impaction occasionally are followed by complete restoration of back functions without operation several years after the injuries. Causes of back symptoms and disability in vertebral fractures should be separated into two groups. The two causes are rupture or strain of posterior groups of spinal ligaments and muscles, and crushing of cancellous bodies of vertebrae with accompanying relaxation of anterior spinal ligaments. Spinal grafts presumably do not greatly influence the symptoms which originate in the second class of causes. Mechanical braces often can be improved in details of manufacture so as to minimize their objectionable features and, while protecting injured back muscles, ligaments and bones, still permit to a maximum degree usual functions of arms and legs.

Treatment of back injuries, perhaps, should be directed primarily toward restoring strength to muscular and ligamentous tissues, but pathological conditions in crushed vertebrae should be appropriately treated by immobilization and protection in ways universally approved in treatment of fractures. The influence of bad posture and of other anatomical peculiarities upon existing symptoms in simple back strains should not be forgotten.

The treatment of musculoligamentous defects should include the use of various therapeutic agents according to physiological requirements. Mechanical braces should be used to reinforce muscles and to offset temporarily the extra mechanical strain due to faulty postures or anatomical deformities. Physical therapeutic agents, such as massage, manipulations, and exercises should be employed, as well as internal medical measures. The latter rectify vascular defects and influence muscles and ligaments through the qualities of circulating blood. The continuous exclusive use of any one of these methods is unjustifiable for very long periods, and they should be alternated and combined. It is unjustifiable to prescribe mechanical apparatus without knowing accurately the harmful as well as beneficial possibilities.

Preparation of Patients for Surgical Operations.—M. Casper (*International Journal of Surgery*, January, 1920) states that most severe ailments are attended by a certain amount of shock and operations create more, so it is necessary to take into consideration the amount of shock present and the amount likely to be added, and compare this with the amount of shock that the patient is capable of withstanding. It is essential to begin to conserve the vitality of the patient as early as possible. Many times the delay of a few days will help to increase the amount of the patient's resistance. Lowered temperature and acidosis are two important factors in the causation of shock that can be successfully overcome. Acidosis is lessened by the administration of thirty grains of bicarbonate of soda in three ounces of water, half an hour before meals for two days before operation; or four drams each of sodium bicarbonate and glucose in eight ounces of water by enema twice daily for two days prior to operation. Morphine one eighth grain, with or without sco-

polamine one one hundredth grain, may be of benefit in many cases if given an hour prior to operation, though it is not advocated as a routine measure. In the event of the patient being troubled with insomnia, thirty grains of a bromide salt may afford a good night's rest and thus increase the powers of resistance. Obese persons withstand fasting well but they easily become cyanotic, are always troubled with excessive saliva and mucus secretion, and their proneness to fatty heart must always be kept in mind. The blood pressure should be taken and corrected if too high; alcoholism is noted and the anesthetist is warned. Hemophilia and jaundice, while not absolute contraindications to operation, require special care and preliminary medication to improve the coagulability of the blood.

Diabetic patients are unfavorable surgical subjects and usually have much acidosis, are intolerant to shock, and their wounds readily become infected, requiring extreme care during operation and much preliminary correction. Most patients with cardiac disease should not be given general anesthesia; local anesthesia, if carefully given, will generally suffice. Patients with pulmonary affections require special consideration before as well as after operation. Wounds in syphilitic patients usually heal badly, and the danger of transmitting the infection to the surgeon and the attendants must not be forgotten. The patients should receive special antisyphilitic medication prior to operation and the operation delayed as long as compatible with the condition. Patients with acute infections must be carefully prepared and aseptic precautions used. The danger of infection for the surgeon must always be borne in mind. Pregnancy is not a contraindication to surgical operations that may be necessary during its course, and surgery is not hazardous to the fetus if the patient is properly handled. Operations should be avoided at the periods corresponding to the menstrual epochs of the patients, especially the third, fourth, and eighth months, when miscarriage is most prone to occur.

The toxic manifestations of Grave's disease demand long periods of rest and special treatment before surgery is attempted. Kidney disease requires diet and treatment and avoidance of general anesthesia if possible. In case of severe disease the kidney functional tests should be made, especially in prostatic operations, which also require other preliminary treatment and often preliminary drainage operation. Anemia should always be given preliminary attention. First, the kind and degree should be determined, and all loss of blood checked when possible by ligation, packing or cautery. In most cases of anemia blood transfusion is of great value and may be given repeatedly. The patient's mouth requires attention in surgical cases, and all decayed teeth should be extracted or filled before the patient goes to the hospital. If this is not done the cavities should be swabbed with iodine before operation.

The preparation of the field of operation is the most important procedure and should be done either by a nurse who understands the importance of complete asepsis or by the surgeon himself. The

local preparation begins the day before the operation and consists of thorough scrubbing and shaving of the field of operation. After the skin is dry, and not before, the iodine is applied. The skin of men is more sensitive to the iodine solution than that of women. A sterile towel is then placed over the area, which is removed when the patient is brought into the operating room. In emergency cases, in place of the scrubbing with soap and water, the application of iodine is preceded by benzine or alcohol. In head operations where the meninges are to be exposed the scalp should be thoroughly shaved. Eye operations require boric acid solution instillation. The nose is readily cleansed with saline solution. In stomach operations preliminary gastric lavage is usually practised prior to the patient being sent to the operating room. The fasting stomach has been shown to be sterile and the value of preliminary lavage is doubted. Gastric lavage is recommended in acute intestinal obstruction. In vaginal operations the vagina is thoroughly scrubbed with soap and water, and in hysterectomy the uterine cavity is swabbed with tincture of iodine. In most cases an enema early on the morning of the operation is desirable, and is imperative in all rectal operations. One of the last acts of preparation is to make sure that the urinary bladder is empty and if any doubt exists the bladder should be catheterized. The patient should be clad so that he may be warm and comfortable, and the field of operation, as well as all other parts of the body, should be easily accessible. The patient should always be reassured, as a last word of good cheer is a great aid in getting him in a proper frame of mind.

Induction of Anesthesia and Analgesia by Oral Administration of Various Drugs.—A. Ficklen (*New Orleans Medical and Surgical Journal*, January, 1920) says that ether, chloroform, and liquid petrolatum, when swallowed in the quantities given below, produce a safe general analgesia, accompanied in nearly all cases by a light anesthesia. Vomiting occurs in a small proportion of cases. Alarming symptoms have not been observed. The effects of the drugs are intensified and prolonged by the administration of morphine. The ether oil mixture is not as powerful as the formula to which chloroform has been added. The following formulas were used clinically:

Formula 1.—Ether, four fluid drams; liquid petrolatum, four fluid drams; peppermint water, five minims.

Formula 2.—Paraldehyde, one to three fluid drams; ether and liquid petrolatum equal parts to make one ounce; peppermint water, five minims.

Formula 3.—Ether, three and a half fluid drams; liquid petrolatum, four fluid drams; peppermint water, five minims.

Formula 4.—Chloroform, one half to one fluid dram; ether, three and one half fluid drams; liquid petrolatum, three and one half fluid drams; peppermint water, five minims.

Another formula given by J. T. Gwathmey is:

Chloroform, two drams; ether, two drams; liquid paraffin, four to six drams; peppermint water, five minims.

Administration of Arsphenamine by Retention Enemata.—John L. Mandracchia (*Medical Record*, January 24, 1920), from the results in twenty-five cases at the Metropolitan Hospital, believes that the administration of arsphenamine by retention enemata is a successful and practical method of giving the drug and therefore the method demands a place in the therapy of lues. The slow absorption is an advantage and prevents the occurrence of nitroid crises. In children it is the method of choice. There are no contraindications and the results are just as good as those obtained by the intravenous route. In adults the initial dose is 0.3 gram and every subsequent dose is 0.6 gram. The enemata may be given once or twice a week, and the average case clears up clinically and serologically after five arsphenamine enemata. During this course of enemata the patient should undergo a course of active mercurial therapy.

The Sugar Treatment of Tuberculosis.—Alexander Sterling (*Medical Record*, December 6, 1919) reports six cases of tuberculosis with saccharose medication. In this treatment the patient feels strong; although he may have an elevated temperature he is not depressed, and he gains in weight from three to ten pounds. Expectoration and night sweats cease after six to eight injections, and the cough becomes dry and less troublesome. Sterling advises that institutions adopt the saccharose treatment as a routine measure without fear, as it is absolutely harmless. Ampoules can be made up containing five grains of saccharose in five c.c., distilled water, and the ampoule injected every day or every other day, preferably in the gluteal region. There is very little pain if the technic is perfected and especially if the syringe is heated before use. There is little effect on the progress of the fever, but the night sweats and expectoration cease almost immediately, and there is a marked gain in weight and strength with an amelioration of the toxemia and its depression.

Acacia Solution in Severe Hemorrhage.—Barthélémy (*Presse médicale*, December 6, 1919) reports experiments in which dogs were allowed to bleed through a carotid cannula until no more blood passed out, breathing stopped, and the heart beats could no longer be made out, after which a 0.9 per cent. solution of sodium chloride containing six per cent. of acacia was injected into the saphenous vein and artificial respiration simultaneously started. Under this treatment first the heart beats and later spontaneous breathing were generally resumed. Out of seven animals thus dealt with and kept under observation after suture of the wounds and application of external heat, five definitely recovered and two died after two to four days. The same treatment in a wound patient who had been "bled white" through incomplete section of both femoral vessels and came under treatment only when in extremis proved successful in bringing the patient back to life. The author deems the conclusion warranted that by intravenous acacia infusions acute anemia can be combatted as effectually, and more simply, than by transfusion of blood or blood plasma.

Miscellany from Home and Foreign Journals

Perihilar Bronchopneumonic Pseudolobar Phthisis.—Walker Overend (*Archives of Radiology and Electrotherapy*, January, 1920) states that in hilus tuberculosis the foci may be small, disseminated and nodular; larger and nodal, producing a characteristic dappled appearance on the radiogram. At times the nodal shadows become aggregated and then combined by intervening less dense opacities, consisting of condensed tissue often containing dilated and thickened tubes; in other shadows there are extensive tracts of pseudolobar homogeneous consolidations approaching in aspect those present in pneumonia and pneumonic phthisis. Perihilar disease may be secondary to apical lesions of a minor or latent character which for some reason have been reactivated; frequently both apices are normal. Occasionally there may be impaired breath sounds, granular or interrupted breathing at one apex with some diminution of one supraclavicular isthmus. These are generally the persistent signs of a latent or arrested tuberculosis and not an indication of the activity. In the perihilar types, which show tracts of pseudolobar disease, symptoms such as cough, pyrexia, emaciation, and anorexia may become conspicuous before the diagnostic signs appear, or such radiographic shadows may be associated with quiet phases of the disease when the signs become minimal.

It is shown that perihilar fibrocaseous tuberculosis may be almost entirely unilateral. If bilateral the pulmonary lesions are not, as a rule, contemporaneous; one may be subacutely progressive, while the other is manifestly quiescent, even retrogressive. They arise in connection with hilar or perihilar glands on the same side. At times the disease may arise from apical lesions. During its subsequent evolution, cavities may form in the perihilum, and a second group of aerial foci may proceed from them which may be partial—affecting the diseased side only—or it may be general.

The disease advances in the upper lobe towards the axilla; in the lower lobe towards the costophreni sulcus, finally, in each case, producing a cuneate tract of infiltration with its apex situated at the hilum. In the left upper lobe the opacity may be fanshaped. As the lesion advances centrifugally it becomes more superficial, until in certain areas the characteristic tuberculous râle becomes audible. In the earlier stages, posttussive inspiratory crepitations may be audible. Mistakes may be made by the clinician, who thinks only of the apical crepitations and does not auscultate the fissures, the axilla, and the base. Pleuritic pains in the axillary regions and right basal effusion are not infrequent. The latter are more likely to occur when the middle and lower lobes are invaded. Basal effusions may be encountered in middle age. They may be accompanied by serious cardiac embarrassment and alarming dyspnea.

Perihilar bronchopneumonic infiltration, when bilateral, may occupy the wings of the chest, or it may approach the apex in one and the base in the other lung; there may be a protrusion of the mid-

dle intermammary region. This disfigurement is called annular emphysema. There is a greater tendency in this type to fibrosis and chronicity than in the purely apical variety. The prognosis is more serious in the cavitary forms and *cæteris paribus*, the younger the age of the patient; when the foci are small and disconnected, the prospect is brighter than when continuous tracts of infiltration are visible on the radiogram. In the strictly unilateral forms the outlook is also more favorable. This essentially chronic type appears to be more closely connected with the flat chest, whether congenital or acquired, which, when it becomes emphysematous still remains practically flat, bulging, if at all, merely in the lower middle and basal parts of the lung.

Surgical Renal Tuberculosis.—W. F. Braasch (*American Journal of the Medical Sciences*, January, 1920) comes to the following conclusions: 1. Renal tuberculosis occurs most frequently between the ages of twenty and forty years (seventy per cent.). 2. It occurs in the male almost twice as often as in the female. 3. The postoperative mortality in the male patient is somewhat higher than in the female. 4. The condition is usually not surgical in children; it occurs more often as a part of a general tuberculosis. 5. Evidence of tuberculosis in other tissues of the body may be found in fully seventy one per cent. of the patients, if not in all. 6. The postoperative mortality among patients with coincident lesions is not higher than that of the general average. 7. Multiple lesions, unless they are a part of an acute general infection, do not necessarily render the prognosis more unfavorable. 8. Evidence of healed pulmonary tuberculosis is present in fully one third of the patients. 9. The percentage of recovery among patients with healed pulmonary tuberculosis is above the average and may be considered indicative of increased powers of resistance. 10. Coincident active pulmonary tuberculosis was found in approximately five per cent. of the patients, of whom more than sixty per cent. recovered following nephrectomy. 11. Involvement of genitalia is present in at least seventy three per cent. of male patients and does not seem to affect the ultimate recovery. 12. Frequency of spontaneous healing of lesions in the prostate and seminal vesicles contraindicates their removal by subsequent operation. 13. Evidence of tuberculosis involving the bones and joints was noted in six per cent. of the cases; one half of the lesions were active. The late mortality was five per cent., from which it may be inferred that the presence of such complications may be an index of increased resistance. 14. Spondylitis, usually healed, was present in 5.7 per cent., with a mortality of twelve per cent. 15. Chronic spondylitis does not influence the prognosis. Active spondylitis, although it does not contraindicate nephrectomy, will not offer a favorable prognosis. 16. Tuberculous adenitis was present in nineteen patients (6.4 per cent.) and the low mortality (ten

per cent.) is suggestive of a heightened resistance. 17. Reduction in hemoglobin does not necessarily affect the prognosis. 18. The mortality among patients with marked bladder involvement is twice as great as with slight involvement. The degree of involvement is dependent not so much on the duration of symptoms as on the virulence of the infection. 19. The mortality percentage is markedly influenced by the degree of pathological involvement of the kidney, increasing in proportion to the extent of the lesion. Early lesions have the lowest mortality and pyonephrosis the highest. 20. Occasional renal tuberculosis is indicative of relative immunity and a low mortality. 21. The duration of preoperative symptoms does not materially affect the late mortality. 22. Recovery from bladder symptoms is more apt to occur, and earlier, when the preoperative symptoms are short than when they are long. 23. Recovery or permanent improvement of the remaining kidney will not follow after one kidney has been removed in cases of bilateral renal tuberculosis. 24. Operation in cases of bilateral renal tuberculosis is advisable only when there are acute unilateral complications, and then with no hope of eventual recovery. 25. Later mortality is much the highest during the first year; it decreases with the length of time elapsing after operation. 26. The operative mortality is a negligible factor; the late mortality (five years or less after operation) is approximately twenty per cent.; failure to effect complete cure is approximately twenty per cent.; this leaves a prognosis of recovery in eighty per cent. and of a complete cure to be expected in fully sixty per cent. of patients.

Cancer and Prolongation of Human Life.—

W. J. Mayo (*Surgery, Gynecology and Obstetrics*, January, 1920) states that the arch enemy of middle age and beyond is cancer, and measures both for prevention and cure have not advanced in proportion to the increasing need. One woman in eleven, and one man in thirteen die from cancer, and this proportion of cancer deaths would be maintained in the greater number of persons who reached the cancer age. The knowledge that chronic irritation was the great underlying cause of the disease should be spread. Whenever a certain type of cancer existed in a race of men or in a country with great frequency as compared with other races and countries, it was due to a single cause, usually a social custom. Good dentistry had eliminated a proportion of cancers of the jaw due to irritation from defective teeth. Cancer of the lip and tongue was on the increase as the habit of smoking was on the increase in both sexes. It seemed to be an established fact that in the countries in which the breasts were allowed to be exposed to the air without covering cancer of the breast was extremely rare and the incidence was in direct ratio to the amount of covering of the breast and the pressure exerted upon it.

Thirty per cent. of all cancers in men and twenty-one per cent. in women were in the stomach. The influence of drinks too hot to be held comfortably in the mouth in the production of chronic irritation which preceded the development of gastric cancer seemed probable. Unfor-

tunately, less was known about the causes of cancer in the large intestine and rectum. The majority of cancer patients came too late to be cured. Inoperability could not always be illustrated in a given case, and therefore operation must be done in many questionable cases to give the patient the benefit of the doubt. The mortality in the favorable cases of resection of the stomach was low, but some of the most extensive resections resulted in cures, although with a greatly increased risk. The paradox of increased experience accompanied by higher operative mortality and a smaller proportion of cures was seen. It was found that when only twenty-five per cent. of the patients with cancer of the large intestine were operated upon the mortality was about eight per cent. and the cures of the patients operated upon about fifty per cent. for a five year period, but only thirteen of the 100 patients were cured; seventy-five were considered hopeless at the time of examination and were not subjected to operation. Gradually the percentage of patients operated upon was increased. The mortality advanced to an average of twelve per cent.; the percentage of five year cures dropped to thirty-seven per cent., but there were twenty-seven, instead of thirteen, of the total 100 patients examined, alive at the end of five years.

Too little attention had been paid to traumatic transplantation of malignant cells during operation. Rough handling of the growth loosened cells which could become grafted on any surface denuded of its normal covering. A considerable proportion of adenocarcinomata of the ovary was due to spontaneous grafting of cells which had their origin in cancer of the stomach. These cells were grafted on to the break in the ovarian surface due to the discharge of the ovum, and the secondary infection in the ovary, by rapidity of growth, could mask the primary disease. Transplantation could occur by gravity to the bottom of Douglas's pouch; the malignant cells became attached to the epiploic tags. This produced the typical nodules noted on rectal examination.

In early cases of vaginal hysterectomy for cancer of the cervix a cure was seldom secured. The carcinomatous cervix was grasped with vulsellum forceps, traumatizing the tissues during the removal of the growth, and local recurrence resulted. Vaginal hysterectomies with the cautery were then begun and many five year cures were obtained. It was found that the excessive dilatation of the vagina, preliminary to the use of cautery, made many fissures in the vaginal mucosa. In two cases carcinoma developed in these vaginal fissures from cells deposited there, although there was no recurrence at the site of the original neoplasm.

Carcinoma of one wall of the rectum, exercising eroding pressure on the opposite wall, might cause secondary growth. In carcinoma of the large intestine, by reverse peristalsis, carcinoma cells could be carried upward and became transplanted above as well as below the original growth. In one of the cases a preliminary colostomy was performed and at the end of two weeks while there was still a little granulating surface around the

colostomy wound, the rectum was removed from behind. Carcinoma cells were evidently detached, carried upward, and deposited on this prepared field, and secondary carcinoma occurred, which was confined to the edge of the colostomy wound. Operative methods should be devised that would more effectively prevent cell transplantation as well as the traumatic detachment of cancer infected thrombi into vascular channels—a complication which frequently caused postoperative metastatic carcinoma of the liver and lungs.

A Crutch Attachment Permitting Motion of the Lower Limbs through Muscular Action in the Upper.—G. Bidou (*Bulletin de l'Académie de médecine*, December 2, 1919) describes a new mechanical appliance which may be attached to any ordinary crutch, on either or both sides. The device is fastened to the upper portions of the upright of the crutch and is connected by flexible cables with a hand lever lower down on the crutch and with the lower extremity of the patient. By working the lever with his hand the patient is enabled to impart movements of elevation and flexion on the pelvis to the impotent lower limb. The device is especially useful in paraplegic cases of all kinds. It may also be employed in all cases of paresis or temporary weakness forming an obstacle to easy movement of the lower extremity. It restores the power of locomotion to many helpless paralytics.

Creatinuria in Infants.—James L. Gamble and Samuel Goldschmidt (*Journal of Biological Chemistry*, November, 1919), in a study of the relation of creatinuria to acidosis and the elimination of ingested creatine and creatinine, used male infants from a foundling home, one of whom was normal and the others somewhat underweight. None of them had a history of recent nutritional upsets, and all gained in weight on the experimental diet used, which consisted of cow's milk. Satisfactory proof has not yet been reported for believing that acidosis produced by abnormal diets is in any way a factor in causing or increasing creatine excretion. From the experiments it is seen that small amounts of ingested creatine lead to an increased urinary output in infants, and that the ingested creatine is nearly or all eliminated within several days. The authors compared the results of creatine ingestion in adult men reported in the literature with the results obtained in infants, and concluded that the two differ radically, as smaller absolute amounts of ingested creatine lead to creatine excretion in the urine in infants than is the case in adults, and that the creatine ingested is more completely eliminated in the infant than in the adult. Variations in the acid base intake were found to have no effect on the creatinuria of infants. The authors state further that in the infant on a milk diet the protein intake is not entirely responsible for the increased output of creatine which follows increasing the intake of milk. The quantity of whey given is more directly related to the degree of creatinuria produced than is the total protein value of the milk. The authors believe that the ingestion of creatine (contained in milk modifications) may be a large factor in the creatinuria of infants fed on cow's milk.

Acute Aseptic Suppurative Arthritis.—Apert and Cambassédès (*Presse médicale*, November 26, 1919) believe acute puriform aseptic effusions have so far been reported only as occurring in the meninges, pleura, and in one instance, in the elbow joint; in the latter case the elbow effusion was secondary to an aseptic meningeal effusion. They report a case of primary aseptic purulent arthritis of the knee, and likewise refer in detail to one seen by Apert in 1895 and to the elbow case already mentioned. The recent knee case occurred in a child aged five, and was unaccompanied by fever. The purulent fluid withdrawn from the joint by puncture contained intact polynuclear cells and clotted rapidly. Cultures were sterile and the tuberculosus skin test and Wassermann reaction negative. Complete recovery followed. From the three cases the authors conclude that the prognosis in this type of joint involvement is favorable. Recognition of these aseptic joint inflammations is highly desirable, to obviate prognostic error and especially, an unnecessary operative procedure. The pus from these cases quickly clots *en masse*, doubtless because there has been no opportunity for destruction of fibrin by bacterial secretions and degenerated leucocytes. Dropping a little of the fluid obtained by puncture into a test tube will readily reveal this peculiar feature. The absence of fever, contrasting with the joint swelling, should likewise attract attention. Fever does not, however, exclude an aseptic joint involvement. Pain seems to correspond in degree merely to the extent of distention of the articulation. In one case pain was practically absent. In another case the pain subsided as soon as puncture had been carried out.

Malingering.—Joseph Catton (*Military Surgeon*, December, 1919) states that an understanding of malingering is essential because of its occurrence, in one of its forms in the military, but also because of its occurrence in public hospitals, jails, and in connection with industrial insurance. There is a marked difference of opinion as to the frequency of malingering. The author concludes that while out and out malingering is exceedingly rare, the minor forms are rather widespread in occurrence and should be looked for carefully in order, 1, that fraud may not be a drain on the efficiency of the military organization, upon the funds to be expended for hospitalization, upon the compensation to be distributed as pensions, or in consequence of the War Insurance Act; 2, in order that the patient may be benefited by such treatment as is indicated for the mental disturbance that may be found at the bottom of his complaints.

The diagnosis of frank malingering should not be made until the following four questions shall have been answered in the affirmative:

1. Is organic disease absent? Although all apparent signs of previous injury are absent, can it be said that there is no apparent aftermath?
2. Is hysteria absent?
3. Has the patient confessed to feigning or can proof of fraud be objectively demonstrated?
4. Does psychiatric examination show absence of psychoneurosis, psychosis, inebriety, mental deficiency, and constitutional psychopathy?

Chronic Nephritis in the Young.—Walter L. Bierring (*Journal of the Iowa State Medical Society*, January 15, 1920) reports four cases, with a gradual and insidious onset, in young subjects aged eleven, fifteen, eighteen, and twenty years, respectively. The distinctive subjective symptoms were headache, nausea, vomiting, polyuria, loss of weight and strength. Albuminuria with casts in a urine of low specific gravity, cardiac hypertrophy with arterial hypertension prevailed as the clinical signs. The observations noted in connection with these cases indicate that the condition of chronic nephritis with persistent hypertension, usually regarded as peculiar to the ages of later adult life, can occur at a much younger age.

Placental Hormone a Physiological Galactagogue.—Bertha Van Hoosen (*Illinois Medical Journal*, January, 1920) gives tables of thirty-three cases in which placental hormone was administered before delivery, and of thirty-six cases in which no placental hormone was given. The findings were that the babies whose mothers were given the placenta began to gain at an earlier day and that a larger percentage regained their birth weight about the tenth to fourteenth day. Forty grains were given hypodermically either during labor or at the end of labor. The conclusions arrived at are that placental hormone is a powerful stimulant to the secretion of the mammary gland, but its effect is transient and it must be repeated at intervals to maintain its action. If the placenta is administered in large doses at the time of delivery, or previous to it, the secretion of milk will be established on the first, or at the latest, the second day. The discomfort of a sudden and violent establishment of lactation is avoided, and further, the mammary gland may be stimulated in this way at any period of lactation. Bovine desiccated placenta administered by mouth is our most satisfactory galactagogue.

A Skin Disorder Due to a Pediculoid Found in a Cargo of Barley.—Loir and Legangneux (*Bulletin de l'Académie de médecine*, November 18, 1919) report an epidemic of pruriginous skin disorder which developed last summer at Havre, France, among sixty-three men who had begun two or three hours before to unload 1,700 tons of barley in bags from a vessel recently arrived from Bizerta. Mixed with the barley were found black, dead insect larvae, covered with small light colored spots. Microscopic examination showed that the latter consisted of mites of the family tarsonemides and of the pediculoid group, from sixty to 110 microns in length. The usual treatment for scabies brought very rapid improvement among the men affected, but families living on barges upon which the sacs had been unloaded later developed the same disorder, the mites having evidently run short of larvæ to feed on, and turning to the human victims at hand. Since 1911 six similar epidemics from vessels bringing wheat or barley to Havre from the East during the summer had been encountered. Sulphur disinfection of vessels bringing cereals from the Orient during this season is advised. Shower baths and change of clothing by the men before returning home are also recommended.

Ferran's Antialcoholic Serum.—Berillon (*Presse médicale*, December 6, 1919) notes that Ferran's serum is obtained by administering wine to horses. The serum is collected when the animal presents reactions on the part of the system corresponding to those of acute alcoholism. The serum was tried clinically in inveterate alcoholics, i. e., patients in whom alcoholism had become chronic. Subcutaneous injection of the serum seemed to place the human patient's organism in a condition analogous to that of acute alcoholism, and to supply to the system improved powers of resistance against intoxication. The patients experienced a marked sense of euphoria after the injection, and were enabled to react against the exhaustion or "suppression neurasthenia" arising from complete cessation of alcoholic inhibition.

The Rapidity and Persistence of the Action of Digitalis on Hearts Showing Auricular Fibrillation.—C. Canby Robinson (*American Journal of the Medical Sciences*, January, 1920) reports a series of twenty-six cases of auricular fibrillation or flutter in which large single doses of the tincture of digitalis were administered by mouth. The drug used was standardized and was usually given in doses ranging from fifteen to twenty-five c.c. The study of these cases demonstrates that such doses of digitalis affect the heart in cases of auricular fibrillation or flutter at a relatively constant time after administration, in from two to five hours, indicating that the drug is absorbed from the alimentary tract at a fairly rapid and uniform rate. The series of cases also demonstrates that the maximum effect on the heart is usually obtained in about twenty-four hours, and generally continues to be effectual for from four to fifteen days.

The Teaching of Pathology.—T. T. O'Farrell (*Lancet*, December 13, 1919), in line with the general movement toward educational reform, discusses the position of pathology at the present time and offers the following suggestions as to how improvements in teaching may be made: 1. Examinations and teaching should be modified to conform to modern ideas and the reading of a current medical journal should form part of the program. 2. Round table discussions should be held by all teachers of medical subjects and the pathologist should be able to discuss methods of teaching on the same footing as the clinical teacher. 3. Changes in the curriculum are suggested, as follows: a, The third year men to receive the ordinary courses in general and special pathology, bacteriology, and practical work; b, the fourth year men to attend a course in clinical pathology and also to write out reports on six autopsy cases, including the clinical history; c, the fifth year men to report on a number of "live" cases with the findings and an account of the clinical pathological methods employed, in surgical cases to give an account of the histological findings, and the students to be encouraged to report their work before student's medical societies; d, a system of lectures, demonstrations, or classes in practical work to be instituted in special subjects and to be conducted by extramural teachers in consultation with the director of the department.

Proceedings of National and Local Societies

SOUTHERN SURGICAL ASSOCIATION.

Thirty-second Annual Session, Held at New Orleans, La., December 16, 17, and 18, 1919.

The President, Dr. JAMES E. THOMPSON, of Galveston, Tex., in the Chair.

(Continued from page 307)

The Operative Treatment of Pelvic Inflammation.—Dr. CHARLES R. ROBINS, of Richmond, Va., drew the following conclusions: 1. Pelvic inflammation was most frequently due to one of two causes, viz., gonorrhea or infections following abortion or labor at term. 2. These two types differed widely as to methods of treatment. Gonorrheal cases are, as a rule, local in their effect and are not attended by symptoms of absorption; infections following abortion or labor at term, on the other hand, always manifest symptoms of intense absorption and are of the nature of a septicemia. 3. Operation in gonorrheal cases may be performed with comparative safety at any stage but radical operation in the septicemic group in the acute stage is attended by a high mortality and should not be done. 4. Delay in operation in the septicemic group is an advantage; it is less dangerous and often results in symptomatic or absolute cure. 5. The best method of treatment is that usually known as Fowler-Ochsner-Murphy treatment. 6. The cases in which operation is indicated are those which have passed into the chronic stage, and a moderate delay is permissible. 7. In operation it is seldom practicable to restore the function of the tubes. They really become the foci of infection, their removal stops the toxic process, and if they are left, further trouble is likely to manifest itself. 8. The objects of the operation are to remove the tubes and preserve the essential organs of menstruation, the uterus and the ovaries. 9. The details of the operation on which emphasis is laid are the complete removal of the tube by excising also the uterine portion, the attachment of the broad ligament to the horn of the uterus, thereby elevating the ovary away from pressure and adhesions, and the temporary suspension of the uterus.

A New Suspension Operation for Retroversion of the Uterus.—Dr. F. G. DUBOSE, of Selma, Ala., said this operation had given uniform satisfaction in more than fifty cases, without a failure in any instance to correct and hold in position the retroverted uterus.

Technic: A linen or silk thread on a full curved needle was run through the broad ligament close to and immediately underneath the round ligament, beginning at the internal abdominal ring, carried across the fundus of the uterus under the peritoneal coat, passing underneath the opposite round ligament until the other internal ring was reached. The needle was unthreaded and a ligature carrier was passed through the aponeurosis of the rectus muscle about an inch from the abdominal incision, and on a level with the internal abdominal ring through the musculature of the anterior abdominal wall until it emerged from the parietal peritoneum

at the internal abdominal ring. The linen suture was threaded on this carrier and drawn through the abdominal wall. The same technic was carried out on the opposite side, then both ends of the thread were caught and the uterus pulled up to the desired position. Two hemostats were then applied to the thread, one on either side, where it emerged from the aponeurosis of the rectus muscle. The peritoneum was then closed, the aponeurosis of the rectus muscle sutured, and while the forceps were still in position the linen suspension thread was tied. The placing of the forceps prevented the drawing too tightly on the suspension suture, which would bring the uterus too far forward and possibly render the space between the uterus and abdominal wall so narrow as to result in hernia of the intestines or obstruction. The hemostats were removed after tying the suspension suture. The closure of the abdominal skin incision was then completed.

Unraveling the Mysteries of Rightsided Abdominal Pain in the Female.—Dr. JAMES N. BAKER, of Montgomery, Ala., stated that the most important step in an effort to arrive at sound conclusions was the history, carefully and sequentially recorded by the surgeon himself, and dating back to the very beginning of the trouble. Careful search must be made in this long trail for acute flareups, the proper interpretation of which would oftentimes serve as valuable guide posts. Was the acute condition attributable to the appendix, to the tube or ovary, to a renal colic, to a pyelitis, to a ureteral stone, or to a stricture? A painstaking history seldom failed to reveal one or more exacerbations which pointed the way to the organ involved. One should always hesitate to hold an appendix responsible for chronic rightsided pain where the history did not show definite acute attacks; nor should too much importance be attached to the x ray findings of a distorted and stagnant appendix where the history failed to reveal either acuteness or reflex digestive disturbances. The reverse pathological condition might obtain. Instead of a ptotic and dilated condition of the cecum, one might encounter a mal-descend or partial rotation of the cecum, which was bound down and otherwise distorted by bands, either congenital or acquired, or both. This gave the picture familiarly known as Jackson's veil or Lane's kink.

It was to this class of patients that most careful study should be given. The employment of both the x ray and the cystoscope was mandatory. If the genitourinary tract could be shown to be free from pathological conditions, and not until then, was one justified in making his attack upon the intestinal tract. The mere removal of an appendix might not bring relief. This was evidenced by the host of sufferers still clamoring for help who presented neat scars over McBurney's point. Liberal incisions should be employed, a careful survey of the entire area made, and all needed surgery applied.

Stone in the Kidney.—Dr. CHARLES H. MAYO, of Rochester, Minn., said that stones formed in the cortex, in the calices, and in the pelvis of the kidney. The kidney was constantly eliminating living bacteria, so that it was always exposed to infection, and usually showed no results from it except gross lesions of rare occurrence. Stone formation might proceed with exceeding slowness and without pain or other symptoms until marked destruction of the kidney occurred, mixed infection developed, or until the stone assumed great size or became loosened and moved into the ureter. Minute infarctions occurred, as shown at necropsy following death from an acute attack, and the results of similar lesions in the past were shown by scars or gross kidney changes.

Stone formation was evidently the result of the combination of two types of bacteria; the first created an infraction with minute necrosis causing mucoid exudate to form; the second factor was the elimination at the same time of the stone forming bacteria that might come in contact with the mucoid material. If the stone originated in the cortex of the kidney, its growth would be slow, but if it originated in the calices or pelvis, growth might be much more rapid because of the ease with which its chemical material was secured.

The Results of Operations for the Removal of Stones from the Ureter.—Dr. E. S. Judd, of Rochester, Minn., stated that stones in the ureter might pass voluntarily into the bladder. In his experience twelve per cent. of a group of 400 persons had admitted the passing of stones. Most of these calculi originated in the calices and in the kidney pelvis, although in some cases they might arise in the ureter in association with ureteral stricture. Stones might be lodged in the ureter and produce no symptoms and again they might produce the classic syndrome of ureteral calculus. The diagnosis, however, should always be checked up by the x ray and cystoscope, using ureterograms as advocated by Doctor Braasch. After the diagnosis was established, if the patient was having frequent and severe attacks of pain, it seemed advisable to observe him for a time, knowing that a certain proportion of stones would be passed. The possibility of severe pressure in ureter and kidney, resulting in a hydronephrosis or pyonephrosis, must not be forgotten. In cases in which stone was apparently causing no symptoms, it seemed advisable to remove it unless there were contraindications.

There were two methods of treatment, the non-operative and the operative. The first method consisted in the dislodging of the stone by a ureteral catheter or small sound. The contraindications to this procedure, as given by Braasch, were: 1. A stone two cm. or more in diameter; 2, acute ossification with continuous obstruction; 3, acute renal infection; 4, the patient's intolerance to cystoscopic manipulation, and 5, anatomical deformity. Braasch had had excellent results in recovering these stones, especially when they were lodged at the ureteral orifice. He used instruments and papaverin. A stone lodged in the ureter might lead to marked dilatation of the ureter above the stone and to hydronephrosis. On the other hand,

there might be no changes in the ureter and kidney above the stone. The latter type of stone was small and difficult to locate. The kidney should not be removed unless extensively infected, as it might recover its function.

If pyelonephritis had resulted from the stone and there was evidence of general infection, if the opposite kidney functionated well, it was inadvisable to remove the stone. If the stone was in the lower third of the ureter and kidney was badly damaged, it was better to remove the kidney and leave the stones, which might have to be removed later because of pain. When the stone obstructed the ureter so that the function of the kidney on the same side could not be ascertained, it seemed best to remove the stone only. Conservative methods were justified in any case of chronic kidney infection, while radical methods must be employed in acute, severe infections. Nephrectomy was the operation of choice. In two cases cited complete anuria was caused by stone in the ureter; both recovered after removal of stone. Neither of the patients appeared to be sick as a result of the anuria.

When bilateral calculi existed, the operative method appeared to be best, one stone being removed at a time. The side showing evidence of acute trouble was operated upon, but if there was no apparent difference he preferred to remove the stone from the ureter on the side having the least function.

Doctor Braasch had removed ureteral stones in about 126 cases by the nonoperative methods. During the same period 400 patients were operated upon; about one half the patients required operation to rid them of stone. Forty-eight of the 400 patients (twelve per cent.) had passed stones with gravel before operation; in nine cases multiple stones were passed. The operative results were good, two deaths occurring in 400 cases, only one of which was directly due to the operation. The study of this series of 400 patients operated upon for ureteral stone and the 125 patients treated by Braasch, led him to conclude that before instituting any method of treatment for the removal of stones from the ureter, it was well to bear in mind that a large percentage of such stones were passed voluntarily; in the early cases, therefore, it was best to delay treatment.

Ureteroureteral Anastomosis.—Dr. REUBEN PETERSON, of Ann Arbor, Mich, drew the following conclusions: 1. No case of ureteroureteral anastomosis could be classed as cured or successful until so proved by the most modern exploration of the repaired duct and the corresponding kidney. 2. A study of the literature of ureteral anastomosis by various methods showed that anastomosis by the end to end, end in end, and end in side methods was a perfectly feasible procedure. 3. Not only could the duct be made patent with little or no stricture but a functioning kidney and ureter could result. 4. In skilled hands the primary mortality due to any one of the three methods should be very small. 5. Leakage after ureteroureteral anastomosis probably in the large majority of cases meant failure since it led usually to stricture, hydroureter and

hydronephrosis. 6. Judged from this viewpoint the invagination methods were preferable to the transverse end to end method since they were followed by fewer cases of leakage. 7. The end in end method of anastomosis was the operation of choice since it was extremely simple, and sacrificed the minimum amount of the ureter. 8. As asserted by Alksne, from an experimental study of the different methods of ureteroureteral anastomosis there was evidence to show that every ureteroureteral anastomosis, no matter how perfect might be the surgical result, would be followed by a slight degree at least of hydroureter and hydronephrosis. 9. Although such an assertion was borne out by the findings in the case reported, it needed to be confirmed by a careful examination of other operated cases.

Sarcoma of the Stomach.—Dr. WILLIAM D. HAGGARD, of Nashville, Tenn., said primary gastric sarcoma was one of the rarest surgical diseases. There was but one example of sarcoma of the stomach in 8400 specimens of sarcoma in the Berlin Pathological Institute. Sarcoma was present in only four of the 921 cases of gastric cancer operatively and pathologically studied by Smithies. Sarcoma of the stomach might occur at any age in life. The youngest patient was that of Finlayson, a boy of three and a half years, and it had been known to occur in a man of eighty-five. Although sarcoma had been thought to be a disease of young life, it more frequently involved the stomach after the fortieth year of life. Of the twenty-five cases analyzed, the age of the patient was given in twenty. The youngest patient was a boy aged sixteen, the oldest a woman aged sixty-six. Sarcoma was said to metastasize in forty per cent. of the cases. In this regard it was not nearly so malignant as cancer. It was prone to metastasize in the skin. A certain diagnosis of sarcoma of the stomach before operation was practically impossible. Only an operative diagnosis was possible. Hemorrhage from the stomach and blood in the stools was a frequent occurrence, especially in the round cell variety, although in sarcoma it was not as frequent as in cancer. Early exploration should be invoked.

Ileostomy for Postoperative Obstruction Following Appendectomy.—Dr. EDWARD P. RICHARDSON, of Boston, Mass., said that in considering the place of enterostomy in the treatment of intestinal obstruction, a distinction should be made between obstruction occurring spontaneously or late after operation and that occurring early after operation during the period of convalescence. In the latter class of cases obstruction was most frequently due to recent plastic or partly organized adhesions, which represented temporary rather than permanent causes of obstruction. Seven cases of obstruction occurring during convalescence from appendicitis were reported, in five of which ileostomy was done for obstruction apparently mechanical in nature. In these five patients, four of whom were children, recovery with spontaneous closure of the fistula occurred, the patients remaining well for from one to eight years. These results

suggested that ileostomy was a more favorable method of treatment in obstruction by recent adhesions than in other types of obstruction. Good results depended on operation being undertaken early, and it was far better to operate in an occasional case unnecessarily than to postpone operation until the later stages of obstruction had developed.

A Successful Posterior Gastroenterostomy Seventy-six Hours Following a Rammstedt Operation Which Failed to Relieve the Obstruction. Dr. FRANK D. SMYTHE, of Memphis, Tenn., submitted for consideration the advisability of resorting to posterior gastroenterostomy as a last resort in cases in which a Rammstedt operation had resulted in failure to relieve the obstruction. He was justified in assuming that the operation had failed where symptoms persisted for two or three days after the operation had been done. He did not know what proportion of deaths after a Rammstedt operation were due directly to failure to relieve the obstruction, but he did know that whatever the proportion might be, the patients should be given the benefits offered by a gastroenterostomy. The surgeon adopting that policy would be agreeably surprised at the results of his efforts and an otherwise hopeless case might be cured.

Perforation of the Gastrointestinal Tract.—Dr. CHARLES N. COWDEN, of Nashville, Tenn., said that in every case of perforation, no matter what the condition of the patient, there was an absolute indication for immediate operation. If the symptoms pointed rather definitely to perforation, but the diagnosis was in some doubt, exploration was safer than delay. Closing the opening was a *sine qua non* to success in any of our operative measures. Shock was no contraindication to operation. The operation should be as expeditious as possible, only what was necessary being done, and artistic ideals should be left to less urgent cases.

Intussusception Resulting from Benign Tumor of the Intestine.—Dr. A. MURAT WILLIS, of Richmond, Va., stated that in approximately 25,000 operations at the Boston City Hospital, adenoma of the small intestine was encountered only once, and was not associated with intussusception. Operations for intussusception in young children were often grave emergencies, and the surgeon was chiefly concerned in making a decision between simple reduction and excision of the invaginated gut. It was reasonable to assume that many specimens of intestine removed at operation for intussusception, if carefully studied, would show a tumor or the remains of a tumor spontaneously destroyed by the pressure necrosis of the accompanying hyperperistalsis and the associated interference with its vascular supply. More and better study of a larger number of intussusception specimens was necessary to determine the relationship between tumor and invagination.

Surgical Drainage from a Biological Viewpoint.—Dr. J. SHELTON HORSLEY, of Richmond, Va., stated that drainage from the abdominal cavity was practically always uphill, and yet it was successful because the drainage material not only relieved the pressure but provoked the outpouring

of large quantities of lymph in an effort to extrude the drainage material, and this serum carried along with it products of bacterial infection that might otherwise be absorbed. In solid soft tissue, as in the thigh, the lymph supply was not so abundant and consequently gravity drainage must be used. In the abdomen the supply of lymph was so abundant and its pouring out so constant along the drainage tract that it made little difference whether the drainage tube was pointed up or down, so long as it was of sufficient size and of the proper kind of material to provoke the outpouring of serum. Drainage should be instituted after every radical operation for cancer of the breast or neck, as it tended to prevent the absorption of cancer cells that might be left in the wound. Drainage of infected epithelial lined hollow viscera carried off the inflammatory products, afforded physiological rest, and also produced a reversal of the circulation of the local lymphatics, that would prevent the absorption of much of the septic products. Drainage material should be selected with a view to inducing a reversed flow of lymph to carry away the liquid products of the wound, and also with a view to injuring the wound as little as possible. Ideal drainage material had not been found, but empirically combinations of gauze and rubber tissue had been worked out that were fairly satisfactory.

(To be concluded.)

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Health Through Will Power. By JAMES J. WALSH, M.D., Ph.D., Sc.D., etc., Medical Director of Fordham University School of Sociology; Professor of Physiological Psychology at Cathedral College; Lecturer on Psychology, Marywood College, etc. Boston: Little, Brown & Co., 1919. Pp. vii-288.

If some prescriptions were written in plain English and readable handwriting they would often lose therapeutically, because the air of mystery created by unintelligibility gives the idea of unknown power bestowed. It is this touch of occultism and mystery which draws thousands every Sunday to be muzzified by woolly brained "philosophers" who hide their own ignorance by a rapid flow of twisted words and borrowed phrases, aided by eccentricities in dress, by music, subdued lights, and flowers.

The wholesome breeziness of *Health Through Will Power* would soon extinguish the altar lights of these rickety temples where introspection, the creation of a receptive mind," and general self-consciousness is taught, for it shows that the will, once wisely directed, means the formation of habits and habit implies an unconscious or unforced performance of things good or bad. We are all so obsessed with the idea of the devil always rampaging around to make us break good habits that it is vitalizing to hear Doctor Walsh say that good

customs are as difficult to change as bad ones.

The heartening value of the book is that memories of similar experiences in self or others confirm the facts offered. Who does not know the dread of failure, the will to overcome pain, the expulsion of it by a new emotion, the recreation by fresh air and wholesome diet, and control of foolish habits which lead to buying sleep at the druggists and digestion from quacks? The author goes further and amazes the lay mind with effects of the will even in heart and lung trouble and chronic disease. The neurotic will perhaps angrily throw aside the book disgusted at having his pet ideas assailed, but the anxious-to-get-better will be delighted to find that which he has anxiously sought for abroad quite near at hand, even in himself. There is no sarcastic censoring, for Doctor Walsh understands we have only yielded to the seemingly inevitable, so he takes tremendous pleasure in marshalling before us an array of great men triumphant over pain and morbid pleasures, so urging us on to a wise forgetting and a new beginning.

Births, [Marriages, and Deaths.

Died.

BUCK.—In Newfield, N. J., on Wednesday, February 4th, Dr. Ralph Emerson Buck, aged fifty years.

CHERRY.—In San Francisco, Cal., on Friday, January 30th, Dr. Edward Martin Cherry, aged forty-seven years.

CURTIS.—In Stratford, Conn., on Wednesday, January 28th, Dr. Rollin A. Curtis, aged fifty-four years.

HUGHES.—In Lawrence, Mass., on Monday, January 26th, Dr. Patrick James Hughes, aged forty-one years.

KISTLER.—In St. Petersburg, Fla., on Friday, January 30th, Dr. W. S. Kistler, of Minersville, Pa.

MYERS.—In Brooklyn, N. Y., on Monday, February 16th, Dr. William A. Myers, aged fifty-four years.

NASH.—In Bessemer, Ala., on Thursday, January 1st, Dr. Samuel F. Nash, aged forty-three years.

NOYES.—In Newburyport, Mass., on Monday, February 9th, Dr. Ernest Henry Noyes, aged sixty-seven years.

PARCELS.—In Lewistown, Pa., on Monday, February 2nd, Dr. Walter H. Parcels, aged seventy-two years.

PASCHALL.—In Nashville, Tenn., on Saturday, January 31st, Dr. William A. Paschall, aged sixty-one years.

PEARSE.—In Braddock, Pa., on Saturday, February 14th, Dr. Edward Pearse, aged forty-five years.

SEWALL.—In Newport, Me., on Wednesday, February 4th, Dr. John Jasper Sewall, aged sixty-three years.

STEWART.—In Philadelphia, Pa., on Wednesday, February 4th, Dr. Francis T. Stewart, aged forty-six years.

TINKER.—In Philadelphia, Pa., on Sunday, February 8th, Dr. John Stevenson Tinker, aged forty-five years.

WIDMER.—In Newark, N. J., on Sunday, February 1st, Dr. Henry R. Widmer, aged thirty-nine years.

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Original Communications

ROENTGEN RAY STUDIES OF THE FUNCTIONAL ALTERATIONS OF THE DIAPHRAGM.*

BY HENRY K. PANCOAST, M. D.,
Philadelphia.

The technic of the röntgen ray study of intrathoracic conditions is incomplete without the routine use of the röntgenoscope. This is a perfectly safe procedure, requiring but a few seconds, as a rule, and should be employed in every instance as a part of the examination. It is especially adapted to the study of moving parts, as the heart, aorta, diaphragm, and costal expansion; the detection of changes in level of fluids or the agitation of fluid levels. It has the advantage of enabling one to view the organs of the chest at any desired angle at will; and it is, of course, an important aid in the detection and removal of foreign bodies, and the essential means of producing orthodiagraphic tracings. The diaphragm may be regarded as an important organ of the chest, and its function may be altered or temporarily or permanently suppressed by disease of the muscle itself or of neighboring anatomical structures. Interference with the action of the diaphragm is readily detected by the röntgenoscope and this may be an important means of determining the structure affected and the pathological conditions responsible for the functional disturbances of the muscle. The study of the diaphragm is, therefore, an important means of diagnosis, and in a few instances, the sole source of knowledge whereby the condition present can be determined.

No doubt the routine study of this organ has been much neglected, but the more attention it receives the more one learns to depend upon it for valuable assistance. Williams was one of the early writers to call our attention to the effects of extrinsic agencies upon the position and movement of the diaphragm. In his book, published in 1903, he called attention to a large number of conditions which affected its movement or position. His name will always be connected with the effect of a tuberculous process restricting the movement of the diaphragm on the affected side, especially in the lower part of the excursion. (Williams's sign.) The same effect was noted in pneumonia. Restricted movement was observed also in aneurysm,

pleural adhesions, presence of foreign bodies (on the side of the obstruction) and gangrene. The diaphragm was found depressed in aneurysm, emphysema, pneumothorax, and pleural effusion. It was pushed up and its excursion limited in ascites, gas in excessive quantities and abdominal tumors. The position and inclination of the heart depended on the position of the diaphragm and the heart rested upon it during expiration.

Williams's study of the diaphragm was comprehensive, and there are but few conditions to be added now that will influence excursion or position of the muscle. It is our purpose to classify all the conditions and point out the diagnostic importance of a study of this organ of respiration.

1. Paralysis of the phrenic nerve may occur as a result of systemic poisoning, injuries or disease of the cervical spine, pressure from tumors or abscesses or direct injury in wounds. Contraction of the diaphragm results in its depression and an elongation of the thoracic cavity and opposes the action of the intercostal muscles in elevating the ribs and widening the thorax. In phrenic nerve paralysis the diaphragm appears elevated and motionless except for possibly a slight motion imparted to it by movements of the ribs by the intercostal and other muscles of respiration. The röntgenoscope is, therefore, an accurate and easy method of determining phrenic nerve paralysis.

2. Influence of disease conditions of the lungs. The conditions of this group may be subdivided into those causing inelasticity of the lungs, inflammatory conditions, and those producing pressure upon or obliterating the lumen of the bronchi or trachea.

a. Conditions causing inelasticity of the lungs. The most frequent, and, therefore, the most important cause of pulmonary inelasticity is fibrosis, which is an end result of a large number of disease conditions, notably tuberculosis, pneumoconiosis, abscess and gumma. To have much influence upon diaphragm excursion it is necessary that the fibrosis involve the lower lobe. Apical fibrosis, such as is usually the end result of a healed tuberculous lesion, has comparatively little influence. If the entire upper lobe is involved or the process has been more extensive there will be found a decided restriction of diaphragmatic movement. The most extreme examples of fibrosis have been found in the third stage of pneumoconiosis. Even in the first stage there will usually be found a restriction

*Read before the Section on General Medicine of the College of Physicians, Philadelphia, November 24, 1919.

of the inner aspect of the right diaphragm during full inspiration at the point of contact of its shadows with those of the linear markings extending downward from the hilus. In the third stage of diffuse fibrosis the entire lung becomes inelastic and even the greatest effort of the diaphragm to cause lung expansion is futile. A röntgenoscopic study of such a patient readily discloses the cause of the intense dyspnea from which these patients suffer. Likewise in tuberculosis, a study of the diaphragm shows why some patients are dyspneic and others with lesions apparently as extensive are not.

b. Inflammatory conditions will produce an amount of diaphragmatic restriction depending upon the nearness of the lesion to the diaphragm as well as to the extent of the process. The amount of restriction in active tuberculosis varies largely with the extent of the lesion, aside from fibrosis. It is no longer regarded as a diagnostic point except in investigating the cause of dyspnea. Pneumonia will always restrict movement, and especially when the lower lobe is involved. Inelasticity of the lung, occlusion of air and pain may all be factors concerned. Abscess and gumma are more potent agencies, and when healed, these lesions are replaced by a large amount of fibrosis which is an active factor in lung inelasticity. Syphilis may also produce a diffuse fibrous change which is not nearly so active in restricting the diaphragm, and the effect is much like that of the early stage of pneumoconiosis.

c. Neoplasms of the lungs produce a certain amount of diaphragm restriction, depending upon their location and size. They operate through inelasticity and pressure on the air passages.

3. Disease conditions of the pleura are probably the most frequent causes of serious interference with diaphragmatic movement. They may act by pressure, adhesions, reflexly because of pain, or by causing disease of the diaphragm muscle. The effect of pneumothorax is variable. If the tension within the pleural cavity is greater than external pressure, through a more or less valve-like action at the seat of the rent in the visceral pleura, the diaphragm will be depressed and be almost or entirely motionless. If there is no opening present, the muscle will remain stationary at varying levels. If the rent is wide open and the intrapleural tension is about the same as external pressure, the diaphragm may move through a nearly normal excursion. In small serous effusions there is very little disturbance. In the case of large general effusions the diaphragm will be found depressed and nearly or quite stationary, provided it can be seen. Localized collections at the bases tend to fix the muscle, and this is always the case with empyemata. In the latter condition, disease of the diaphragm muscle is to be considered as a factor. Organization of exudate into thickened pleura is a very frequent cause of permanent restriction and dyspnea. This is always likely to occur in diaphragmatic pleurisy, but the ultimate result may not be marked. Organization of exudate in the sulcus between the peripheral aspect of the diaphragm and the parietal pleura is the most

potent factor in permanent disability. When the two surfaces of pleura become adherent the peripheral aspect of the diaphragm becomes rigidly fixed and the muscle moves only in the central and inner portions. How long such a condition will persist is uncertain. It is bound to cause more or less dyspnea at first, until a certain amount of relief is afforded by a compensatory movement of the opposite diaphragm. In one case of this kind studied soon after the influenza epidemic last fall there was marked dyspnea caused by fixation of the outer aspect of the diaphragm at the chest wall. One year later, dyspnea had greatly lessened and it was found that in addition to compensatory movement on the other side, the pleural thickening had lessened considerably and the diaphragm had become quite movable at the point of previous fixation, although there was still some restriction in movement.

4. Obstruction in the air passages from pressure or the presence of foreign bodies. The restriction in diaphragmatic movement under such conditions may be an index of the amount of respiratory obstruction and examination will certainly indicate the affected side.

5. We have no way so far of determining the exact extent of the influence of myositis and degenerative changes upon the function of the muscle. We know that it is frequently affected by inflammatory conditions of the pleura but whether this or pressure is the main factor in the influence of effusions upon restricting movement is not certain. Pressure, of course, always plays a part. The same remarks apply to subdiaphragmatic abscesses.

6. Reflex disturbances, principally pain, are frequent causes of diaphragm restriction. In acute pleurisy the diaphragm on the affected side will be found motionless or nearly so, and at a comparatively high level, because of its inactivity. The same appearance will be noted but to a less extent in acute peritonitis. Observations have not been made on the effect of intercostal neuralgia and pain from other sources.

7. Diaphragmatic hernia and eventration. The röntgen examination is the simplest method of determining these conditions, and the diagnosis is very easily made.

8. Conditions below the diaphragm. Subphrenic abscess can usually be determined readily by the röntgen examination. There are two types of cases—one in which gas is present and is readily seen below the diaphragm, and changes its position with that of the patient; and the other in which pus alone is present. In the latter type the diaphragm is always fixed, more or less flattened and elevated, and there is nothing to be found above to account for these appearances. One is most likely to be misled in the diagnosis by the acute stage of pleurisy or a hepatic abscess pointing under the diaphragm. In the latter condition, unless the abscess is very large, the contour of the diaphragmatic shadow will serve to differentiate the two conditions.

In two instances we have been able to make a positive diagnosis of left perinephric abscess by ob-

serving certain phenomena of the diaphragm. In the first case a left perinephric abscess was suspected. The patient was examined röntgenoscopically and the left diaphragm was found elevated and fixed. The patient was then shaken quickly in a lateral direction and a distinct wave was seen in the diaphragm. A diagnosis of pus under the diaphragm was made and at operation a huge sac of pus was found in the capsule of the kidney. In the second case similar phenomena were observed in the erect posture, but in the recumbent posture the diaphragm was not elevated and moved to nearly a normal extent. At operation, the röntgen diagnosis of left perinephric abscess was confirmed. No explanation was forthcoming for the absence of signs in the recumbent posture.

Hepatic abscess pointing under the diaphragm will elevate the muscle, and, if not too large, give it an irregular contour. There will be limitation of motion but not usually fixation. A nodular growth of the liver will give much the same appearance.

In ascites with a large amount of fluid, the diaphragm will be very much elevated and restricted in movement. Sometimes a wave motion may be observed on agitation of the patient laterally.¹

3400 SPRUCE STREET.

ERRORS IN ABDOMINAL DIAGNOSIS AS SEEN BY THE PATHOLOGIST.*

BY STANLEY P. REIMANN, M. D.,
Philadelphian.

From the Department of Pathology of the Lankenau Hospital, Philadelphia, Pa.

From time to time reports have appeared in medical literature comparing clinical diagnoses with the findings at the postmortem table. These reports are written both by clinicians and by pathologists (1-2). They emphasize the importance of pathological anatomy, having as their main object the ultimate increase in the accuracy of clinical diagnosis. Pathologists have, at times, assumed a superior attitude and what one might term a cynical joy at uncovering clinical mistakes. This betrays either inexperience, or an absolutely wrong perspective. The only attitude permissible is one of mutual study and critical analysis. Pathological anatomy is the keystone of the arch on which all diagnostic science rests, but it has not received the attention in America which its importance merits. Pathologists, *ipse facto*, are supposed to have an expert knowledge of pathological anatomy. But as Éwing (3) recently lamented when it became necessary to equip a large number of laboratories in military hospitals, the supply of so-called clinical pathologists was fair enough, but very few expert pathological anatomists could be found. By clinical pathologists, he meant those who gave their attention to the per-

formance of the numerous tests which occupy the work of a clinical laboratory. It was, however, the pathologists, skilled in the gross and microscopic evidence and sequence of disease who laid the foundation, not only for modern clinical diagnosis, but for studies in bacteriology, physiology, and biochemistry, as well. Pathological anatomy is still the foundation of all our knowledge. The small and diminishing number of autopsies which we see in this country is, therefore, a serious handicap to our best progress. We need more autopsies! Then only will we develop good pathological anatomists; then only will every medical man be able to secure a working knowledge of this subject. By working knowledge is meant the knowledge that sees mentally the vegetations on a heart valve when pain develops in the loin of a patient and bloody urine comes from one ureter. Such a patient has had his kidney removed surgically for a tumor. In the clinical history read at the autopsy, there were notes concerning a vague changing heart murmur and a septic temperature for a number of weeks.

Standing at the elbow of a surgeon and studying what has been called living pathology, that is, observing what the surgeon finds at the operating table and studying that material, does not make one become a pathological anatomist. It is not for the purpose of becoming thoroughly familiar with disease and disease processes. Even though study of the living subject at the operating table by a few master surgeons, who, parenthetically, were pathological anatomists before they were surgeons, has succeeded brilliantly in clearing up a number of intraabdominal pathological questions, it cannot be said that by this means alone, training in diagnosis will be complete and thorough. I do not mean to minimize in any way the importance of this living pathology; and to a pathologist, or a clinician trained in pathology, it is enlightening and highly instructive. To the medical student, however, and to the practitioner, whose knowledge of pathology has not been developed or has been forgotten, it is incomplete and at times misleading. It is excellent as far as it goes, but not sufficient in scope. It might be said that the leading exponent of this living pathology is himself a gross pathological anatomist of rare ability.

In a case of peritonitis, for example, the surgeon removes the offending appendix and drains the abscess cavity, but does he remember that such a suppurative process may produce myocardial, hepatic, or renal lesions which may chronically incapacitate the patient? The doctor trained in pathology immediately sees the cloudy swelling, fatty degeneration, and even necrosis, which has taken place in other organs in addition to the local trouble. This he takes into consideration in the further management of his patient. During the war, the living pathological conditions as evidenced by shellshattered and infected limbs was not sufficient evidence to satisfactorily indicate the proper treatment. The pathologist pointed out at the autopsy that the grave damage to heart and kidneys which resulted from allowing suppurating limbs to remain on the patient in the hope of saving them, often

¹ Since this paper was written we have had occasion to make observations of the diaphragm in long continued hiccoughing. The finding was a sudden spasmodic contraction of the diaphragm downward at the time the patient gave the usual sound of hiccoughing.

*This paper was one of a symposium on Errors in Present Day Abdominal Diagnosis, as Seen by the Internist, Surgeon, and Pathologist. Read before the Northern Medical Society of Philadelphia, December 12, 1919.

killed the patient (4). The surgeon, in addition to his studies of living pathology, should therefore, before he becomes a surgeon, have been trained in what we may call complete pathology.

Another phase of the subject from the pathologist's viewpoint is revealed not so much by the autopsy, but by the lack of autopsy. Reasons for errors in diagnosis are often laid at the door of the laboratory, or the clinical pathologist. Many new methods of laboratory diagnosis have been devised on the basis of the enormous amount of knowledge which has been gained in bacteriology, physiology, biochemistry, and other branches. Unfortunately, many procedures are based on incomplete or even entirely unknown principles. Those based on partially revealed facts are, it is true, few; but they are dependable and give satisfactory information. On the other hand, those based on more or less unknown principles are often of great value. I need mention only the Wassermann reaction. In the unknown class are, however, large numbers which may be called mushroom tests. They spring suddenly into life, but unfortunately are often used long after their uselessness has been shown. Clinicians order these tests and often have them done with little or no knowledge of their physiological or pathological basis. In their enthusiasm, they will base far reaching conclusions on the results of these tests. Sooner or later, the test will fail. The laboratory and the pathologist then come in for a share of criticism. A new test in the experimental stage without an adequate pathological or anatomical basis is often used by clinicians as though it was an established procedure. No one realizes better than the pathologist the limitations which beset clinical laboratory methods, and he longs for the knowledge gained by autopsies which will demonstrate or disprove the value of these interesting, but experimental, tests.

The case of cholesterol is one in point. Determination of the amounts of this substance in the blood was considered a diagnostic sign of cholelithiasis without demonstration of the gallstones either at operation or on the autopsy table. When the cholesterol content of the blood was finally compared with the operative findings, it soon became apparent that it was worthless as a diagnostic test (5). *A priori*, the biochemist might have doubted the cholesterol test as a diagnostic one from his general knowledge.

Many fundamentals in pathology and physiology may remain in the minds of clinicians, but the details often disappear completely. Clinicians cannot be expected to remember them or keep abreast of progress in these lines. It would take, assuming a smattering of general chemistry and physics, about six months of study, liberally sprinkled with practical work, to become familiar, in its details, with the one subject of acidosis. The answer is, that for the greatest progress in the least time, there should be—first, more autopsies, second, the closest cooperation between clinicians and pathologists. Clinicians should not only use the laboratory as a mechanical workshop in which the technical procedures of certain tests are performed,

but they should actively make use of the brains and the knowledge of the person in charge of the laboratory (6).

As to the mistakes discovered by the pathologist, let me speak of those found both at the autopsy table and at the examination of specimens removed surgically. A number of generalizations may be made. Affections in the right hypochondrium cannot be differentiated by our present means in between twenty to thirty per cent. of the cases. The more chronic the disease, usually the more difficult it becomes to differentiate, for example, gastric and duodenal ulcers, gallbladder disease, and pancreatitis. In about five to eight per cent. of the cases, the upper abdomen is suspected, whereas the pathological condition exists in the lower abdomen, or vice versa. In a minimum number of cases of acute pulmonary affections, especially with involvement of the diaphragmatic pleura, the disorder is diagnosed in the abdomen. The differentiation between acute appendicitis and acute salpingoophoritis is made in a surprising number of cases, considering the proximity of these organs. Gross errors of commission are encountered in occasional cases. The gastric crises in tabes have been called perforated duodenal and gastric ulcer, acute cholecystitis, acute appendicitis, intestinal obstruction, and various other conditions. Marked gastropnoia and enteroptosis have repeatedly been called carcinoma of the stomach. A cold psoas abscess has been called a strangulated femoral hernia, and an acute fibrinous pericarditis, an acute hemorrhagic pancreatitis. Among these mistakes are many which, after the pathological diagnosis was established, might have been avoided. There are, however, a certain minimum of mistakes which, with our present knowledge and methods, are unavoidable. A reduction in this proportion of error is, of course, the goal. We must therefore become as familiar with disease as possible. To this end we need more autopsies, and a careful and critical trial of every new method of diagnosis, or idea which seems based on good physiological and pathological groundwork. Adequate and careful animal experimentation should be performed as far as possible. Finally, before the last word is given, results of the new methods must be checked by autopsy on those persons whom our present medical knowledge cannot save.

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RELATIONSHIP OF OPHTHALMOLOGY
TO GROUP DIAGNOSIS.BY HOMER E. SMITH, M. D., F. A. C. S.,
New York,

Assistant Surgeon, Knapp Memorial Eye Hospital; Visiting Ophthalmologist, New York Diagnostic Clinics.

"One skilled in diseases of the eye," so says the lexicon of the oculist. To the layman he is an eye doctor who ranks about on the same level with the refracting optician. To the profession at large he is one whose opinion is of value solely as it covers purely ocular conditions. With his fellow craftsmen his standing is perhaps proportional to the refinements in his differential ophthalmic diagnoses. Any one of these concepts is only partly true and taken together they fall far short of comprehensiveness. The oculist is the clinician raised to the *nth* power who, in addition, is "one skilled in diseases of the eye." Specialist, when by this is meant the treatment of a simple organ of the body, is manifestly an absurdity and an impossibility as well. In ophthalmology not even a single one of its four grand divisions, the external and internal diseases, refraction work or surgery, can be so isolated as to come within the scope of the lexicographer's definition. The external diseases of the eye may be segregated as conjunctival, scleral or corneal, but the oculist may need the bacteriologist, the hematologist, the serologist, or the microscopist to make the diagnosis complete or to indicate the proper line of treatment. The ophthalmoscope will reveal abnormalities of the media or fundus but to correlate these to their proper etiological relationship might mean a search through every organ of the body and perhaps a chemical or biological examination of every body fluid. The oculist cannot be an expert roentgenologist, but there are times when only the x ray will solve his problem. The eye grounds may show beginning disease but as yet not sufficiently advanced to permit of any differentiation as to type, as to whether it is tuberculous, syphilitic, malignant, infectious, toxic, leukemic, or diabetic, or whether it is due to any other of a dozen different systemic disturbances.

Here the oculist is in urgent need of group diagnosis. Refraction work might be thought to be a purely optical problem, but it is more than this. Many patients with asthenopia with an error of refraction or a muscle imbalance may have these perfectly corrected and still suffer from painful vision. Asthenopia may lie outside of the ametropic condition and can be a reflex neurosis from nerve irritation anywhere, dental, nasal, or genitral, or may be the local expression of a subnormal bodily status in any of its multiform types. The oculist needs help from experts in the collateral branches to solve a problem of this kind.

The surgery of the eye comes as near standing alone as a specialty—within a specialty—if we look at it from the viewpoint of a highly trained manual dexterity, but even here the surgical status of the patient needs the help of the internist and the operability of the eye calls for the aid of the

bacteriologist. Perhaps as most typical of how necessary is group diagnosis in ophthalmology one may take glaucoma for an example. In the opinion of the writer glaucoma is not a disease but is a symptom of a disturbed metabolism, the origin of which may lie in a single organ or in a group of organs of correlated function; 2, that the metabolic disturbance, whatever may be the cause, gives rise to a chemical or biochemical change in the blood or lymph streams and that these changed fluids exhibit an increase in dialytic or a decrease in osmotic power; 3, that the usually given etiological factors, so far as they cover purely anatomical anomalies, are incidental only; 4, that systemic disorders are factors only when the effect of such disease is to throw out of balance the crystalloids and colloids in the blood stream; 5, that arteriosclerosis, *per se*, is not a cause but that the toxic condition which gave rise to the sclerosis, in many cases, may be, and finally, as a corollary to the changes which take place, the physical pressure within the globe is the result of imbalanced inflow and outflow and that a perversion of osmotic pressure lies at the root of this. I am aware that part of this is in the abstract and part is theory, but one must proceed from the abstract to the concrete and that no scheme of investigation can start without a theory. Assuming that the foregoing is true (and I think it is) the classification of glaucoma must come under many subheadings. For example: In some cases of glaucoma an increase of epinephrine has been found in the blood. Does this mean that the causal influence has been found? Not at all. It simply means that the endocrine relationships have been thrown out of balance by some disturbance—toxic or otherwise, either in the suprarenal capsules or in some other organ which may be far remote from these glands.

If we are to cope successfully with so abstruse a problem we must call to our aid the help of experts in every division of medical research and while the clue to solution of the problem probably lies in the chemistry of the blood, yet even here we must go farther and determine to just what such chemical changes are due. The task may appear hopeless, perhaps it is, but the essay is worthy of our highest endeavor. One thing is sure and that is—for success is needed unified cooperation of many minds and these must be in close touch during the investigations. Only in group medicine is this possible and the group must include not three or four, but practically skilled workers in every branch of medicine. As the oculist is dependent upon the cooperation of his fellow practitioners how can he be helpful to them? In other words: What class of patients should be referred for an ocular examination? Most frequently are patients suffering from the reflex disturbances due to eyestrain and of these gastrointestinal disturbances are the most common. The popular conception that headache ranks first is an error this stands second on the list. Dyspepsia stands first and the majority of these patients will be cured by proper lenses. Neurasthenia is a convenient cloak behind which hides much diagnostic incapacity. The neurasthenic may not be made so

by eyestrain, but this may be a contributory factor in the case and unrelieved may be a bar to recovery. Perhaps next in importance are the high blood pressure cases—the term is used advisedly in contradistinction to arteriosclerosis with high systolic tension. All patients with arteriosclerosis do not have high pressure nor does high pressure always mean sclerosis. The ophthalmoscope will give a fairly accurate estimate of the state of the arterial walls and help to differentiate between these conditions. Ranking first in importance but next in frequency are patients with disturbed or failing vision. By disturbance of vision, in contradistinction to impairment of sight, is meant interference with binocular single vision. Often in general paresis or tabes this precedes the parietic or tabetic symptoms and gives the clue to a correct diagnosis. Perhaps the first and only symptom of a luetic infection, barring the initial lesion (which may have been overlooked), is a paresis of the external rectus muscle. This may be also the expression of some sinus involvement or may be a symptom of some other intracranial mischief and if accompanied by optic neuritis, monocular or both sided, is suggestive of increased intracranial pressure from tumor and other causes, although many times the ocular palsies which accompany abscess and new growths are overshadowed by the symptoms to which these give rise. The rôle of the ocular muscles in the maintenance of equilibrium and the vertigo which may result from their imbalance should not be forgotten. If we except the blurred vision which comes to every uncorrected hyperope with advancing years, failing vision is always the expression of some systemic disorder and the oculist can always be a help, for in the ocular fundus or in the dioptric media may lie the answer to the diagnostic query of the referring physician.

To pass in review the diseases wherein the oculist can be a help would cover the entire field of neurology and the greater part of medicine as a whole. The oculist cannot always give first aid in diagnosis, but corroborative evidence may be supplemented, prognoses may be more accurate, and methods of treatment be better arrived at. James Anderson, in 1880, said: "It seems to me that the best and most hopeful feature of ophthalmology is that it has relations, closer or more remote, with every branch of medicine and surgery; indeed with almost every branch of science."

Group diagnosis is a necessity, but dissociated group diagnoses, when by this is meant a collection of opinions taken separately on a given case, leads more frequently to grosser errors than would occur to the independent worker. Group diagnosis to attain a high value must be associated opinions, or rather, a concrete opinion arrived at by giving to the facts brought out by separate special examinations their proper relative value in the clinical picture. Even this is not enough if the highest point of accuracy is to be reached, the facts brought out must be coordinated by men working together under such conditions as will permit of intimate side talks as the investigation proceeds, and finally by a group consultation to bring the separate but correlated researches into a composite entity.

SOURCES OF ERROR IN THE ESTIMATION OF BLOOD PRESSURE*

A Clinical Study.

By A. E. OLIENSIS, M. D.,

Philadelphia,

Associate in Medicine, Temple University, Visiting Physician,
Samaritan Hospital.

So much has been written on blood pressure and so much has been done, that it would seem that the last word had been said about the less abstruse problems of this subject. Yet on looking over the literature, one is struck with the wide divergence of opinion, often totally opposite, held by the different workers and observers, and it is with the purpose of possibly ascertaining the cause of these diverse opinions, that we have undertaken the study of one or two phases of this much hackneyed subject—blood pressure.

However, before going into the phases that we are particularly interested in, it would perhaps not be amiss briefly to review the underlying principles of blood pressure. What is blood pressure, and what are the chief factors concerned in it?

Blood pressure may be defined as the pressure exerted by the blood at any point in the circulation. By common consent we have narrowed this term down to mean the tension of the blood within the arteries. The chief factors concerned in the maintenance of blood pressure are: 1. The heart, which is the pumping station distributing the blood throughout the system; 2. the arterioles and capillaries, which are the source of resistance to that pump.

Other factors of less importance, such as the elasticity of the vessel wall, the volume or viscosity of the blood, of course, play their part, but it gives us a clearer concept of the meaning of blood pressure, if we keep these two factors foremost in our minds—the heart as the force, and the arterioles and capillaries as the resistance to that force—their combined action causing what is known as the blood pressure. It also simplifies the subject greatly to consider the diastolic pressure as essentially representing the peripheral resistance, and that it refers rather to the state of tonus of the arterioles and capillaries; while the systolic pressure, on the other hand, largely represents myocardial efficiency. The systolic pressure is, therefore, equal to the amount of force necessary to overcome the peripheral resistance, plus the force necessary to keep up the circulation, so it is really the pulse pressure, which is the systolic pressure minus the diastolic pressure, which actually maintains the circulation.

We are cognizant of the fact that authorities differ as to what the systolic and diastolic pressures really and chiefly represent. One observer (1) states that the systolic pressure represents peripheral resistance, while the diastolic pressure represents the force of the heart. But this theory does not seem tenable to me, when I think of a case of compensated aortic regurgitation with its tremendous cardiac hypertrophy, and power to keep the circulation going with practically its un-

aided muscular power, and still we get a low diastolic pressure; or in some old cases of chronic interstitial nephritis with a failing myocardium, when the systolic pressure is dropping lower and lower as the myocardium is failing the diastolic pressure often rises in spite of this myocardial failure. I cannot see how else we can explain it other than by considering the systolic pressure, roughly speaking, as an index of heart power and the diastolic pressure as the peripheral resistance. And yet we believe the diastolic pressure to be the more reliable of the two, as we shall show later. We consider the systolic pressure as merely compensatory to the diastolic pressure.

Stone (2) showed that it was necessary for the systolic pressure to be fifty per cent. over and above the diastolic to maintain the circulation. In other words, if the diastolic pressure is eighty then the systolic pressure should be 120 (i. e., eighty plus one half of eighty equals 120). This rule, while it has its exceptions, particularly in cases of hypertension, is worth remembering. It gives one a working idea of blood pressure and to my mind is much more valuable than any of the functional tests devised.

Thus, assuming that the diastolic pressure represents the resistance in the arterioles and capillaries, and that the systolic pressure represents the cardiac power, it is really that part of the systolic pressure which is the difference between the two, or the pulse pressure, which is the real driving force; and it is by the widening or narrowing of the pulse pressure, unhampered by outside influences, such as psychic stimulation, and other factors that we can best judge the functional capacity of the heart.

As an example in point, we might again refer to a case of chronic interstitial nephritis with hypertension. Suppose the patient presents himself to us with a blood pressure reading as follows: Systolic pressure 220, diastolic pressure 150, pulse pressure 70. In other words, his pulse pressure is a little less than half his diastolic pressure, and we feel, therefore, that his myocardium is failing somewhat. We have here a retention or formation of toxins (whatever they may be) which the diseased kidney cannot excrete, or, according to the present view, there is thrown into the circulation excessive quantities of adrenalin. These retained poisons or adrenalin cause vasoconstriction, and the diastolic pressure goes up. In order to maintain the circulation, the systolic pressure must rise to at least a half more than the diastolic pressure. In the reading stated above, we had systolic pressure 220, diastolic pressure 150, and pulse pressure 70. Suppose the next day we see the patient and find the systolic pressure 200, diastolic pressure 160, and pulse pressure 40, we may say then that the toxemia is increasing, and the myocardium is unable to respond any longer to the demands made upon it, and if this keeps up—the systolic falling and the diastolic rising, the pulse pressure becomes so narrow that the circulation can no longer be maintained and the patient must die. If you watch the patient you will find that this narrowing of the pulse pressure goes hand in hand with the clinical signs of myocardial failure, but

it is more accurately demonstrable by blood pressure and a prognosis can be made with greater certainty.

It is important to emphasize that blood pressure is a most valuable aid in diagnosis, prognosis and as a means of measuring the functional capacity of the heart, as there seems to be a general tendency on the part of the profession to minimize its value. In order, however, that it should be of the greatest possible service to us, we must rule out all those fallacies and extraneous influences which tend to militate against its accuracy and usefulness. These are: 1. Psychic influence on blood pressure; 2, the difference in blood pressure between the two arms. and, 3, the position of the patient when the blood pressure is taken.

Of these three factors the psychic influence is by far the most important, as we shall later show in the following tables. The psychic influence alone may raise the pressure thirty-eight mm. of mercury and often higher. This was brought forcibly to my mind by the blood pressure readings of a patient of a physician whom we all know. This physician and I both obtained the same high blood pressure when he was with the patient, while I was able to get a pressure thirty to forty points lower when he was not there. The patient's blood pressure was invariably raised by that physician's presence.

As to the difference in blood pressure between the two arms, there seems to be a difference of opinion. Most observers agree that there is a difference, but why there is that difference, and which arm gives the higher reading, is clouded in uncertainty. As a matter of fact the pressures in both arms are absolutely the same, the difference being entirely psychic.

The position of the patient, however, is of real importance, as here we have not only the psychic influence but also an actual influence.

In order to prove these contentions, we took ninety-six unselected cases, both men and women most of them ambulatory, some of them bedridden and suffering from a variety of maladies. Seventy-four of these had the systolic and diastolic pressures taken, first on the right arm in the standing, sitting and recumbent positions, and then on the left arm in the recumbent, sitting and standing positions. Twenty-two of the patients were used as controls and the same procedure was repeated except that the left arm was taken first and the right arm next with the following results:

SYSTOLIC PRESSURE.

Difference between the two arms.

	<i>Standing.</i>	<i>Sitting.</i>	<i>Recumbent.</i>
Highest	38	33.5	21.5
Lowest	2	2	2.5
Mean	13	13.2	10.5

DIASTOLIC PRESSURE.

Difference between the two arms.

	<i>Standing.</i>	<i>Sitting.</i>	<i>Recumbent.</i>
Highest	13.5	15.5	23
Lowest	1.5	1.5	1.5
Mean	6	6	6.75

The greatest difference in favor of the right arm, when the right arm was taken first, was as follows:

	Standing.	Sitting.	Recumbent.
Systolic Pressure	38	33.5	21.5
Diastolic Pressure	12.5	15.5	23

The greatest difference in favor of the left arm, when the left arm was taken first, was as follows:

	Standing.	Sitting.	Recumbent.
Systolic Pressure	37	30	16
Diastolic Pressure	10	17	13

The systolic pressure difference showed, then, that regardless of the position of the patient and regardless of which arm was taken first, whether the right or the left, the higher reading was, in the vast majority of the cases, in the arm taken first, the difference mounting as high as thirty-eight mm. of mercury and being most marked in the standing position and least marked in the recumbent position. The difference in the sitting position being almost as high as in the standing position.

The diastolic pressure also shows that whether it be the right or the left arm, the arm first taken, in the majority of cases, gives the higher reading, the highest difference being obtained in the recumbent position, the least difference in the standing position; the sitting posture being midway between the two.

MEAN PULSE PRESSURE.
Difference between the two arms.
Right Arm Taken First.

	Standing.	Sitting.	Recumbent.
Right arm	46.7	51.7	58.06
Left arm	38	43.7	51.96

Left Arm Taken First.

	Standing.	Sitting.	Recumbent.
Left arm	49.72	49.4	52.04
Right arm	40.13	43.9	50.86

The pulse pressure differences, then, also follow this rule, being greater in the arm first taken regardless as to whether it is the right or the left, that it is greatest in the standing position, least in the recumbent position, and midway in the sitting position. The difference being from 1.18 to 9.09 mm. of mercury.

We also tabulated the average systolic and diastolic pressures in the three positions, and found the following:

	Systolic Pressure.	Diastolic Pressure
Standing	128	81
Sitting	130	79
Recumbent	134	76

This table shows that the highest systolic reading is in the recumbent position which is also the lowest diastolic, giving, therefore, the widest pulse pressure in the recumbent position. The lowest systolic reading is in the standing position which gives also the highest diastolic reading, and, therefore, the narrowest pulse pressure. The sitting position is midway between the two, the average difference being from two to six mm. of mercury; the highest systolic difference between the recumbent and standing positions being sixteen mm. of mercury, and the highest diastolic difference in those positions being 9.5 mm. of mercury.

These tables, to my mind, demonstrate clearly that the most fruitful source of error in sphygmomanometry is the psychic state of the patient, and that to overcome this state it is not only necessary to reassure the subject and to make frequent observations, but to check this up by taking the pressure in both arms—the lower reading being the correct one.

In conclusion, we believe that the diastolic pressure is the representative pressure, that it is more

reliable and more stable; that it gives us a good idea of what the systolic pressure should be, and throws light upon the state of tonus of the peripheral vascular system.

That the systolic pressure is only compensatory to the diastolic pressure; is not as reliable because it is largely influenced by the psychic state of the patient (as we have shown by taking the pressure first of one arm and then the other, the higher reading being, as a rule, in the first arm.)

The pulse pressure is the criterion of myocardial integrity. The pulse pressure is greatest in the recumbent position and least in the standing position, hence the most favorable position for patients with large pulse pressure is the semiupright position, while for those with small pulse pressure the recumbent posture is best.

The systolic pressure is highest in the recumbent position while the diastolic pressure is lowest in that posture, and, conversely, in the upright position the systolic pressure is lowest and the diastolic pressure highest.

The tests for the functional capacity of the heart, as applied, are of little value, because of the psychic state of the individual, but a fairly accurate estimation can be made by observing the pulse pressure, particularly when the pressure in both arms is taken.

The trend of the profession is now not to overestimate but rather underestimate and minimize the importance of blood pressure. And the reason for this is apparent. Much harm has been done by illadvised attempts at reduction of physiological hypertension, this reduction being frequently accomplished at the expense of the myocardium. We should never attempt such reduction unless the hypertension is excessive and dangerous, or unless we can reduce the diastolic pressure at the same time, thus still maintaining a pulse pressure which is fully adequate to carry on the circulation.

I believe that only by regarding the diastolic pressure as essentially equivalent to the peripheral resistance, and the systolic pressure as compensatory to that resistance, will we come to a better clinical understanding and appreciation of the value of blood pressure.

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726 PINE STREET.

MODERN TREATMENT OF STERILITY.

By H. M. ARMITAGE, M. D.,
Chester, Pa.

A subject which for many years has been treated according to dogma and folklore and took for granted the fertility of meagre males of imperfect type, while fertile females of perfect type were subjected to the time honored ordeal of curettage, has at last been approached from a scientific viewpoint by a few earnest investigators who by their efforts have changed methods of diagnosis by epigram and treatment by aphorism to methods based upon clean cut, scientific principles. Due to careful

history taking, physical examination and the use of the microscope with a proper interpretation and correlation of our findings, we are now able to definitely state the cause of sterility in a large proportion of cases and outline treatment which will not be attended with the high proportion of failures observed under the older methods.

Sterility in either sex may be due to defects of arrested development in intrauterine life, known as fetalism, or to arrested development in childhood, known as infantilism or conubertal sterility. In the majority of cases of fetalism impregnation can not take place and treatment will be of no value. If, after examination of the female, we find a double uterus, due to failure of union of the Mullerian ducts, or an absence of vagina, uterus, ovaries or tubes, or in the case of the male, a congenital defect with complete aspermia, we should classify the case as one of absolute sterility.

All conditions other than fetalism are relative as regards sterility and fertility, and many grades of fertility may be present from high fertility to sterility but by the removal of certain mechanical obstacles or under proper treatment a low fertility may be advanced to a degree where conception will be possible. It seems to be a commonplace to say that the conditions which should exist for conception are a male and female with genital organs free from mechanical defects, a genital passage in the female favorable to the life of the spermatozoa, and a high degree of fertility in both male and female, but if we are to consider fertility as a relative term of varying degrees it is necessary first to view it in this light in order that we may realize that a man with a low degree of fertility might impregnate a woman where these conditions existed, while a woman of low grade fertility, mechanical defects or a hostile genital passage would be infertile to his spermatozoa.

The examination of a couple presenting themselves to a physician for treatment should begin with a general history of both and we should inquire particularly into the history of past venereal infections, elimination and kind of life followed by each of them. A sedentary life and poor elimination are not incompatible with fertility, but a healthy, robust, clear eyed individual with good elimination and accustomed to exercise is more likely to be fertile than an anemic person of sedentary habits and poisoned by autointoxication due to defective elimination.

In the woman particular interest should be taken in obtaining the history of any previous infections, following pregnancy or miscarriage. A general physical examination should follow the history and in addition to the routine examination the distribution of hair should be observed, as well as the condition of the skin, whether it is warm or cold and clammy, and also the pulse rate and blood pressure. The thyroid should be examined and where myxedema is present thyroid extract is indicated. If the colon is distended and a history of constipation is present proper treatment should be prescribed for combating this condition.

Our attention now must be directed toward the actual sexual examination. We will first consider

the examination of the man. The history should include a record as to past infections and sexual relations. Mistakes are often made in the marital relations which should be remedied, since pernicious errors in the sexual relation will often lead to prostatic or vesicle engorgement, as a forerunner to long continued sterility. The testicles should be examined, as a testicle which is normal and active is soft, elliptical and sensitive to pressure. A hard, globular testicle with a low degree of sensibility as a rule is not producing active spermatozoa. Infantile testicles and penis with an absence of spermatozoa in the semen are usually sterile and treatment will be of no value.

While venereal disease and especially gonorrheal epididymitis are important factors in contributing to sterility, the production of spermatozoa is such a complicated process and dependent upon so many conditions that conclusions can not be drawn as to the absolute fertility of the male. The fault may be in the production of spermatozoa or in their transportation. Double gonorrheal epididymitis may produce complete sterility. When the condition has been unilateral or limited to upper portion of the globus major the spermatozoa are decreased in number and pregnancy is less likely to occur.

The route traversed by the spermatozoa is an extended tortuous path and obstacles may occur along the way. A thin lubricating fluid should normally be present in the epididymis for the proper development of the spermatozoa. A thick, sticky secretion from an engorged prostate may entangle the spermatozoa in the mucus so that no motion will be present. Massage and correction of sexual excesses or errors will often remedy this. An inflammation of the vesicles will cause the same trouble and can be treated with good results. A localized inflammation in the urethra may so alter the secretions that the vitality and motility of the spermatozoa are decreased; local treatment with the aid of the urethroscope will remedy this.

In the examination of the woman we should also inquire into the marital relations and give advice for the correction of errors and excesses. The ovary produces the ovum and also an internal secretion. Either one may be at fault. As in the case of the male, if the ovum is perfectly formed the transportation may be at fault. If a history is obtained of peritonitis, abortion, ectopic gestation, or one pregnancy followed by fever and inflammation, adhesions may be present around the ovary cutting off the blood supply and causing a cystic condition of the ovary which precludes the possibility of ovulation. Corpus luteum cysts which are thought to inhibit ovulation often follow abortions and miscarriages. The diagnosis is made by bimanual examination, history, and exclusion after a painstaking study of the case. The treatment is operative. Resection of the ovary should be performed whenever possible and this will be followed by good results.

The covering of the ovary may be so thick that it is impossible for the Graafian follicle to break through, or the enzyme responsible for the rupture may be lacking. Unruptured follicles are re-

tained and atresic follicles not only mechanically prevent the ripening of the next Graafian follicle but due to retention ovulation is inhibited.

If the enzyme is not given off, the impregnated ovum may fail to embed or if it does it may be a faulty implantation so that it continues on down and is lost (1). Clinically we recognize a defective implantation case by the following history:

The patient frequently misses a menstruation and goes over ten days or two weeks and floods. There is no doubt in my mind that many of these patients are pregnant but there is defective implantation especially where we have negative findings in regard to other data. The treatment of this condition consists in the administration of corpus luteum since it is a well known fact that corpus luteum aids in strengthening the attachment of the ovum probably through some enzyme which is elaborated by its presence, and when it is destroyed prematurely this enzyme is lacking. One ovary or the other should give off an ovum every month which finds its way into the Fallopian tube and is carried along into the uterus. The spermatozoa may meet it in the tube or in the uterus and the union which takes place gives rise to a fecundated ovum. The uterus forms a nest of this fecundated ovum which gives off an enzyme that absorbs the endometrium and the fecundated ovum sinks into the decidua and is nearly covered.

If we have found normal spermatozoa and by our examination are convinced that nothing is present to inhibit their passage upward, we naturally conclude that the fault must be in the giving off of the ovum, the character of the ovum, the tube or in the embedding. The ovum may be expelled too early by the overstimulation of the endocrine glands controlling the phenomena of menstruation and clinically we see these types in women who menstruate profusely. Thymus and mammary extract are indicated, as these patients decrease in menstruation, and where this is not followed by a cure, resection of the large, flabby, oysterlike ovaries, which are nearly always present, will in most cases be followed by a marked decrease in the flow.

In cases in which menstruation occurs only once in three or four months we are generally dealing with a condition where the endocrines which stimulate this function and ovulation are not assertive enough. Therefore, the glands which stimulate this function are indicated and good results follow their continued use where hypoplasia of the uterus is not present to any marked degree. The extracts are those of the thyroid, ovary and corpus luteum. These extracts, in a word, assist the ovum in continuing its embedding in the uterine wall and also strengthening and promoting the growth of the impregnated ovum, so that it may be readily seen that they are of value in continued miscarriages and may be given, together with antisiphilitic measures when indicated, along with instructions for proper rest, where a history of repeated miscarriages is obtained.

When a history of previous pelvic infection, bimanual examination, and exclusion lead us to the diagnosis of obstruction of the Fallopian tubes,

laparotomy is indicated and one of two procedures is carried out. Either the tube is resected and an ectropion made of the cut edge by sutures of catgut or the tube is simply split for a short distance longitudinally.

We must now consider those conditions in the uterus which are commonly held to be the cause of sterility. Endometritis has long been considered a potent cause and curettage the treatment. I am firmly convinced that too many of these operations have been performed but I am also strongly of the opinion that in cases of endometritis a properly performed gentle curettage is of the utmost value. If it is improperly performed, however, the consequent inflammation and hypoplasia of the uterine wall will prevent future pregnancy.

Backward displacements of the uterus should be corrected, when present, and other causes have been ruled out by exclusion. Care should be taken not to suspend the uterus in the face of an anterior fixation of the cervix without first releasing the anterior attachments, since drainage from the uterus would be decreased. Many patients with retroversion and retroflexion become pregnant and recently many prominent authorities have classified uncomplicated backward displacements in the nonoperative class, but it is equally true that in properly selected cases sterility is a complication which demands treatment. A well executed operation for shortening the round ligaments and correcting the displacement has in my experience been followed by pregnancy in a large number of cases.

Fibroids of the uterus are not always a bar to pregnancy but tend to inhibit it in three ways: 1, By mechanical distortion and compression of the interstitial parts of the tube; 2, by bleeding and washing away the ovum, and 3, by increasing menstruation. Operation may be successful if the fibroid is so situated that it can be enucleated and removed without performing a hysterectomy although in a great many instances this is impossible. Plastic work on the tubes and cervix should often be done at the same time.

The cervix may be the seat of cervical catarrh and contain a thick, tenacious discharge which will entangle the spermatozoa in its meshes, proving a positive barrier. Microscopic examination of the discharge should be made and the tenacity of the mucus along with the degree of leucocytosis will give a fair index of the severity of the condition. The character of the epithelium which is found in the discharge should also be studied. Often the inflammation has extended into the endometrium and tubes. When this is localized to the cervix, the local application of iodine and depletion with ichthyol and boroglyceride suppositories will in many instances be followed by a cure of the cervicitis.

A pin point os may need correction, which is best performed by a cervical plastic operation and if short anterior attachments are present they should be released. An os which admits a sound is large enough for the passage of the spermatozoa. Microscopical examination of the vaginal secretion will often reveal many bacilli to the field and a high degree of acidity accompanying it. Boro-

glyceride and ichthyol suppositories at bedtime with a sodium bicarbonate douche in the morning and vaccine treatment usually effect a cure and make pregnancy possible.

The next step in the examination is the combination test or the coitus test, which is for the determination of the reaction between the spermatozoa of the man and the cervical and vaginal secretions of the woman. The couple have intercourse and the wife reports to the office within three hours. She is placed on the table in the Sims position, the cervix exposed and a specimen taken from the cervix. The material is searched for spermatozoa. The cervix should be full of live spermatozoa from one to three hours after intercourse. The spermatozoa found in the vagina should also be examined but the only ones alive in the vagina after one and a half hours are those that have been protected from direct contact with the vaginal secretions by the clotting mechanism of the semen itself.

If all the spermatozoa are dead then we know that there is something in the woman's vaginal or cervical secretions, as the case may be, which destroys the motility of the spermatozoa. If the spermatozoa are dead or deficient in motility, examination of the spermatozoa direct from the husband without admixture with the vaginal or cervical secretions of the wife should be made. This examination should be made soon after the spermatozoa has left the urethra.

The points to keep in mind in the examination of the spermatozoa are not only motility but the kind of motility, the vitality and the number of spermatozoa present. The motility, vitality and numerical frequency of spermatozoa may all be increased under high proteid diet, tonics, exercise, and correction of sexual abuses, but it is impossible to bring spermatozoa into the semen if there were no spermatozoa present before. When a spermatozoon is first produced in the testicle it is eosinophilic and where ejaculated spermatozoa take the eosin stain we may rest assured that something is happening which is interfering with normal development of the spermatozoa.

Direct uterine insemination has been practised by some men and is carried out by injecting about five mm. of semen directly into the uterine cavity by means of a special catheter. Owing to social, religious and legal objections this method fell into disuse but following the great success in impregnating animals by this method a more extended trial has been made and good results are claimed for it. Personally I have never used this method and am not prepared to discuss its relative merits.

When based upon an accurate diagnosis of the condition at fault as determined by a study of the male and female according to the methods which have been outlined, rational treatment may be administered either by the modern application of our knowledge of endocrine therapy or corrective surgical procedures and a hopeful prognosis held forth in a large number of cases, depending upon the duration of the sterility, the age of the patient, and whether irremediable congenital defects are present. In some groups of cases the propor-

tion of successful efforts runs between eighty and eighty-five per cent. In others it is hopeless but a careful diagnosis will be of inestimable value in aiding us to predict whether treatment will be of avail or not.

Nothing, however, is more tragic or fantastic than a careless diagnosis followed by haphazard treatment in sterility and a most positive stand against it should be taken by the profession. The wrongs against which we array ourselves are not ordinary wrongs; they cut to the very roots of human life.

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400 EAST THIRTEENTH STREET.

THE TREATMENT OF TUBERCULOSIS IN EXPERIMENTAL ANIMALS.

BY BENJAMIN S. PASCHALL, M. D.,
New York.

In my former article on the coordination of the principles of chemistry with the laws of immunity (1), and their scientific application in the treatment of tuberculosis, I briefly discussed the fundamental underlying principles upon which the action of mycoleum was based. The animal experimentation from which these conclusions were derived, was divided into two groups; those in my own laboratory, and those conducted under governmental supervision. Of the latter group, half of the series were conducted in the Plague Laboratory, at Seattle, Wash., under the direction, at that time, of Dr. B. J. Lloyd, and the remainder at the Hygienic Laboratory, at Washington, D. C., under the direction of Dr. G. W. McCoy. In my own experiments, embracing several hundred guinea-pigs, the results make a better showing than in all those done in government laboratories, probably due to the extra attention and care given the experimental animals. They were kept in light cages with an abundance of fresh air, and away from the possibility of contamination with other diseases, instead of being kept in dark, covered stone crocks, as in the U. S. Plague Laboratory, at Seattle, or in garbage cans covered with wire screening, away from light and air, as in the Hygienic Laboratory, at Washington, D. C. In any event, one would never apply such treatment to human beings and expect successful results. In addition, the Washington animals always seemed to be hungry whenever I saw them.

The first essential in work of this kind is to obtain a standardization of cultures of tubercle bacilli. To do this a culture of a given virulence must be given in such doses (milligrams of living tubercle bacilli) that the animal (guinea-pig) will live over three months and not live over six months. This is sometimes hard to do, as a culture of fairly high virulence must be reduced in doses often to .001 mgm. or less, while a low virulent culture must be increased in dose sometimes to one mgm. or even more. Further than this cultures must be young

and vigorous or so many of the organisms will be dead that standardization efforts become more and more complex and also grinding must be very carefully done, preferably in a small glass ball mill, until the microscope shows absence of clumping, or there will be great discrepancy in the length of life of the various guineapigs in a given series.

I prefer grinding in a small amount of fresh sterile glycerine bouillon as many organisms seemingly die when ground in water or normal saline for any length of time. The methods for weighing tubercle bacilli may be calculated either wet or dry. If a good sized clump is carefully pressed a few minutes between several layers of sterile filter paper and subsequently dried in an oven at a 100° C. for several hours, it will be found that the pressed clump in question weighs very nearly

For this reason it may be better policy to give such cultures and such inoculating doses that most of the guineapigs die in ninety days or slightly before, and to kill the treated animals as the controls die or vice versa, marking them off in counts as described in the accompanying scaling table as to the amount of disease present in each group, so that the number of days each group lives will be approximately the same or, by comparing both days and counts side by side. The nearer the standardization is fixed at the ninety day limit, the more regular the results will be, even though the comparisons in counts in each series will not be as great as in animals living a longer time. Thus, if some such method of standardization for the potency of mycoleum is adopted similar to the familiar toxin, antitoxin standards in guineapigs

Seattle series No. 1, guinea-pig No.		Culture dose and date. Human Culture to mgm., Feb. 19, 1914.		Treated with ethyl esters, T.H.I., dose, 1 to .3 cc.		Number of days each guinea-pig lived.		Guinea-pig's weight at time of inoculation, all pigs about 500 gm.		Loss or gain of weight for each guinea-pig not recorded		Number counts against each animal. See scaling system.		Total and average days lived by series.		Total and average counts against the series.		Total and average weight by series. Not recorded.		Total and average amount of mycoleum per guinea-pig.	
Treated alcohols.	4, 5, 1	.....	.....	.....	.....	K 88	.....	.....	.....	.....	.....	K—	Average per guinea-pig, 4 months.	.....	.....	.....	.....	.....	.....	Average quantity per guinea-pig, 1.2 cc.	.....
.....	.....	.....	.....	.....	.....	K 88	.....	.....	.....	.....	.....	K—	10 days—527.	.....	.....	.....	.....	.....	.....	Average doses,	.....
.....	.....	.....	.....	.....	.....	K 165	.....	.....	.....	.....	.....	XXX	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	186	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total amount 1.2 cc.		.....	.....	.....	.....	This guinea-pig treated 3 months and off treatment 3 months.		.....		.....		.....		4		.....		.....		4.	
Treated ethyl esters.	2, 3, 6, 9	.....	.....	.....	.....	88	.....	.....	.....	.....	.....	XXX	Average per guinea-pig, 3 months.	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	88	.....	.....	.....	.....	.....	XXXX	20 days—352.	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	88	.....	.....	.....	.....	.....	XXX	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	88	.....	.....	.....	.....	.....	XXXX	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total 1.22 cc.		.....	.....	.....	.....	.....		.....		.....		10		.....		.....		.....		.....
Untreated.	0	.....	.....	.....	.....	K 40	.....	.....	.....	.....	.....	XXXX	Average, 3 months.	.....	.....	.....	.....	.....	.....	.....	.....
.....	10	.....	.....	.....	.....	K 88	.....	.....	.....	.....	.....	XXXX	15 days—381.	.....	.....	.....	.....	.....	.....	.....	.....
.....	11	.....	.....	.....	.....	K 88	.....	.....	.....	.....	.....	K—	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	12	.....	.....	.....	.....	165	.....	.....	.....	.....	.....	XXXX	.....	.....	.....	.....	.....	.....	.....	.....	.....

NOTE.—This series was conducted in the Seattle laboratory of the U.S.P.H.S. in 1914 under the supervision of Assistant Surgeon General B. J. Lloyd.

*This guinea-pig was treated with five doses amounting to 1.22 in all and then left to see how long it would live off treatment. It was used for plague by mistake and killed.

Guineapigs marked blue in records received ethyl esters only which are not in any way immunizing so that second group can be also regarded as controls. The number of doses is insufficient and should have been continued.

Inoculated February 19, 1914. U.S.P.H.S. plague laboratory. Seattle, Wash.

four times that of the oven dried clump. The weights herein described, however, refer to the wet weights.

As stated, it is often hard to scale down or up, as the case may be, to a point where the animal will live over ninety days, and yet die within any reasonable time, or even in some cases to die at all. In other words, when the animal has been made to assume the chronic phase of tuberculosis and thus be somewhat induced to resemble human tuberculosis in its commonest type, then it begins to act more like the human type in the length of time it may survive, and in a certain proportion of cases may spontaneously recover or show a strong tendency towards retrogressive changes in its organs at autopsy.

for diphtheria, this ninety day period with an average three to one count in each series will give the most accurate and most satisfactory basis for testing in the long run. This particularly applies where rather virulent strains are used.

The system of scaling is essentially that adopted by other workers both here and abroad with slight modifications made as occasion from time to time has arisen. It differs slightly from Corper's in that this writer seems to pay less attention to lesions in the liver than I have done.

SYSTEM OF SCALING IN COUNTS AGAINST EACH ANIMAL.

O = Died from other causes.

OP = Died from other causes—probably pneumonia.

OA = Died from other causes—probably abscess.

- OF = Died from fibrosis (fibrous masses in thorax or abdomen).
 O* = Probably from anaphalaxis from mycoleum dissolving effect on tubercle bacilli.
 — = Essentially free from tuberculosis, except at point of inoculation and contiguous glands.
 X = General glandular involvement, but organs essentially free from tubercles. The spleen not enlarged but often having a peculiar granular appearance distinctly not normal, or a very few discrete areas in otherwise normal organs.
 XX = General glandular involvement, slight enlargement of liver or spleen, or both, with the granular appearance becoming more marked or pearly areas beginning to appear in lungs, liver, or spleen, or minute discrete caseous dots beginning to appear in considerable numbers.
 XXX = Pearly or caseous areas large and well defined in one or more organs with moderate enlargement of liver or spleen, or both, but areas still discrete. The areas large and numerous and somewhat coalescing, but insufficient to cause death.

autopsy performed. In this way, the number of days lived for the series would be the same for both groups and the total and average counts become most accurate. Thus it will be seen in Seattle series No. 1, that both the number of days lived and counts is approximately the same in the second and third groups, both of which may be regarded as controls, while in the first group the number of days lived greatly exceeds the other two, or in other words, had the last guineapig been killed a month earlier the amount of disease present would have been, let us say, plus one which would have made the charts show one to five average instead of two to five. This is mentioned merely by way of illustration. It will be seen from examining group two that the ethyl esters of mycoleum used alone have little or no immunizing value and in my own experiments where I attempted to find which portion of the wax had the greatest immunizing value I repeatedly demonstrated that all portions must be used together in

Treated.	1	2	3	4	5	6	Seattle series No. 2, guinea- pig No.	Culture date and date, Sputum emulsion, May 16- 14. See below.	Treated with mycoleum from tubercle cultures, 3 cc. Num- ber doses.	Number of days each guinea- pig lived.	Number of days lived after last dose.	Guinea-pig's weight at time of inoculation, all 250 to 350 gms.	Loss of weight of each guinea-pig at autopsy.	Number counts against each animal at autopsy.	Total days lived by series and average per guinea-pig.	Total counts against each series.	Total and average loss of weight.	Average per guinea- pig 1.5 cc.	
							Not recorded.	Not recorded.	Not recorded.	Not recorded.	Not recorded.	Not recorded.	Not recorded.	Not recorded.	Not recorded.	Not recorded.	Not recorded.	Not recorded.	Not recorded.
1
2
3
4
5
6

Inoculated May 16, 1914. Seattle laboratory U.S.P.H.S., Dr. B. J. Lloyd.

Note.—Six guineapigs, average weight 300 grams, each inoculated with sputum of case dying of tuberculosis. Sputum literally loaded with tubercle bacilli in practically pure culture. Twenty c.c. sputum diluted with sixty c.c. nor salt and shaken for a long time until free from clumping. Five c.c. of this inoculated into each guinea-pig.

XXXX = Massive coalescing areas in liver or numerous large caseous nodules in lungs, or enormously enlarged spleen with pearly or caseous nodules, or a combination of all three sufficient to cause death.

SXXXX = Death from septicemic forms of tuberculosis, rapid loss of weight from day of inoculation, but pathological findings obscure.

K Preceding X or — indicates that the animal was killed for autopsy.

The presence of tubercle bacilli in lesions is of no particular significance. Thus a minus, plus one, or even plus two animal with tubercle bacilli present to microscopical examination at ninety days will become free from these organisms if continuously treated with mycoleum for about a year, or sometimes sooner.

As mentioned, in observing the number of counts against any series the number of days lived must always be taken into consideration. The most satisfactory method of getting accurate counts for comparison is to divide the animals into two groups, treated and untreated, in separate cages, and whenever an animal dies in one group, one should be selected from the other group and an

the same ratios as they exist in the original wax in order to get the maximum immunizing effect.

In Seattle Series No. 2, it will be noted that while the counts against the two groups are one to two there is again a great difference in the number of days lived. In this case, as in the previous one, Doctor Lloyd insisted that one guinea-pig be left in the cage without further treatment to see how long it would live, so that, had the guinea-pig been killed when the last control died with, for example, one count charged against it, the series would have come out a one to four series. Taking into consideration that tubercle bacilli from sputum, as a rule, seem much more virulent than from cultures, this showing seemed very good indeed. Here also, I wished to work with standardized cultures in these experiments but a recent fire which had again destroyed my laboratory also destroyed my cultures.

There is another interesting point about this series chart 2. The mycoleum was not made from tubercle bacilli at all, but from the wax elabor-

mycoleum were given (three c.c. at each injection). This was to prove beyond peradventure the absolutely harmlessness of the preparation in practically any dose and that a guineapig could actually receive a human therapeutic dose. This also for the benefit of the government eye. It must be remembered that this work was conducted in 1914 and that at that time we had already been using mycoleum on animals and man for a number of years.

Upon the completion of these experiments every effort was made on our part, and on the part of the trustees of the King County Medical Society, and certain influential friends in Washington, D. C., to urge the U. S. Public Health Service to take such steps as in their judgment would be necessary to make this substance available to all persons suffering from tuberculosis. This they absolutely,

mycoleum, presumably to test the container and the contents of the syringe for sterility and purity (freedom from adulteration), as provided for by the law of July 1, 1902. Imagine my astonishment when on the tenth day of the following September (1918), I received a report of the examination conducted by the hygienic laboratory, which I would like to quote here:

A number of guinea-pigs were given intramuscularly a dose of approximately 0.1 c. c. mycoelium about every seven days throughout the experiment. After one or two doses had been given, the test animals were given a small quantity of virulent tubercle bacilli, the same quantity being given to an equal number of control animals. Inasmuch as there was no significant difference in survivals or duration of the disease between the two groups, it was felt that the mycoelium had no influence on the progress of the infection.

Not an inquiry, not a question, not a hint even that upon a dozen or less guineapigs in the hands

Seattle Series No. 4, guinea-pig No.	Treated.	Untreated.	Unimmolated.	Number of days each guinea-pig lived.	Number of days after last dose myelomum.	Guinea-pig's weight at time of inoculation, average 500 gm.	Loss of weight of guinea-pig at autopsy.	Number counts against each guinea-pig at autopsy.	Total and average days lived by series.	Total and average counts against each series.	Total and average loss of weight of series.	Total and average number of c.c. of myelomum given.
* culture and dose, Park Hansen virulent culture H 505 to mp.	1	1	1	17	9	.....	Not recorded.	X	.....	.....	.....	.....
	2	2	2	17	9	.....	.....	X	.....	.....	.....	.....
	3	3	3	17	9	.....	.....	X	.....	.....	.....	.....
	4	4	4	17	9	.....	.....	X	.....	.....	.....	.....
	5	5	5	17	9	.....	.....	X	.....	.....	.....	.....
	6	6	6	17	9	.....	.....	X	.....	.....	.....	.....
	7	7	7	17	9	.....	.....	X	.....	.....	.....	.....
	8	8	8	17	9	.....	.....	X	.....	.....	.....	.....
	9	9	9	17	9	.....	.....	X	.....	.....	.....	.....
	10	10	10	17	9	.....	.....	X	.....	.....	.....	.....
	11	11	11	17	9	.....	.....	X	.....	.....	.....	.....
	12	12	12	17	9	.....	.....	X	.....	.....	.....	.....
	13	13	13	17	9	.....	.....	X	.....	.....	.....	.....
	14	14	14	17	9	.....	.....	X	.....	.....	.....	.....
	15	15	15	17	9	.....	.....	X	.....	.....	.....	.....
	16	16	16	17	9	.....	.....	X	.....	.....	.....	.....
	17	17	17	17	9	.....	.....	X	.....	.....	.....	.....
	18	18	18	17	9	.....	.....	X	.....	.....	.....	.....
	19	19	19	17	9	.....	.....	X	.....	.....	.....	.....
	20	20	20	17	9	.....	.....	X	.....	.....	.....	.....
	21	21	21	17	9	.....	.....	X	.....	.....	.....	.....
	22	22	22	17	9	.....	.....	X	.....	.....	.....	.....
	23	23	23	17	9	.....	.....	X	.....	.....	.....	.....
	24	24	24	17	9	.....	.....	X	.....	.....	.....	.....
	25	25	25	17	9	.....	.....	X	.....	.....	.....	.....
	26	26	26	17	9	.....	.....	X	.....	.....	.....	.....
	27	27	27	17	9	.....	.....	X	.....	.....	.....	.....
	28	28	28	17	9	.....	.....	X	.....	.....	.....	.....
	29	29	29	17	9	.....	.....	X	.....	.....	.....	.....
	30	30	30	17	9	.....	.....	X	.....	.....	.....	.....
	31	31	31	17	9	.....	.....	X	.....	.....	.....	.....
	32	32	32	17	9	.....	.....	X	.....	.....	.....	.....
	33	33	33	17	9	.....	.....	X	.....	.....	.....	.....
	34	34	34	17	9	.....	.....	X	.....	.....	.....	.....
	35	35	35	17	9	.....	.....	X	.....	.....	.....	.....
	36	36	36	17	9	.....	.....	X	.....	.....	.....	.....
	37	37	37	17	9	.....	.....	X	.....	.....	.....	.....
	38	38	38	17	9	.....	.....	X	.....	.....	.....	.....
	39	39	39	17	9	.....	.....	X	.....	.....	.....	.....
	40	40	40	17	9	.....	.....	X	.....	.....	.....	.....
	41	41	41	17	9	.....	.....	X	.....	.....	.....	.....
	42	42	42	17	9	.....	.....	X	.....	.....	.....	.....
	43	43	43	17	9	.....	.....	X	.....	.....	.....	.....
	44	44	44	17	9	.....	.....	X	.....	.....	.....	.....
	45	45	45	17	9	.....	.....	X	.....	.....	.....	.....
	46	46	46	17	9	.....	.....	X	.....	.....	.....	.....
	47	47	47	17	9	.....	.....	X	.....	.....	.....	.....
	48	48	48	17	9	.....	.....	X	.....	.....	.....	.....
	49	49	49	17	9	.....	.....	X	.....	.....	.....	.....
	50	50	50	17	9	.....	.....	X	.....	.....	.....	.....
	51	51	51	17	9	.....	.....	X	.....	.....	.....	.....
	52	52	52	17	9	.....	.....	X	.....	.....	.....	.....
	53	53	53	17	9	.....	.....	X	.....	.....	.....	.....
	54	54	54	17	9	.....	.....	X	.....	.....	.....	.....
	55	55	55	17	9	.....	.....	X	.....	.....	.....	.....
	56	56	56	17	9	.....	.....	X	.....	.....	.....	.....
	57	57	57	17	9	.....	.....	X	.....	.....	.....	.....
	58	58	58	17	9	.....	.....	X	.....	.....	.....	.....
	59	59	59	17	9	.....	.....	X	.....	.....	.....	.....
	60	60	60	17	9	.....	.....	X	.....	.....	.....	.....
	61	61	61	17	9	.....	.....	X	.....	.....	.....	.....
	62	62	62	17	9	.....	.....	X	.....	.....	.....	.....
	63	63	63	17	9	.....	.....	X	.....	.....	.....	.....
	64	64	64	17	9	.....	.....	X	.....	.....	.....	.....
	65	65	65	17	9	.....	.....	X	.....	.....	.....	.....
	66	66	66	17	9	.....	.....	X	.....	.....	.....	.....
	67	67	67	17	9	.....	.....	X	.....	.....	.....	.....
	68	68	68	17	9	.....	.....	X	.....	.....	.....	.....
	69	69	69	17	9	.....	.....	X	.....	.....	.....	.....
	70	70	70	17	9	.....	.....	X	.....	.....	.....	.....
	71	71	71	17	9	.....	.....	X	.....	.....	.....	.....
	72	72	72	17	9	.....	.....	X	.....	.....	.....	.....
	73	73	73	17	9	.....	.....	X	.....	.....	.....	.....
	74	74	74	17	9	.....	.....	X	.....	.....	.....	.....
	75	75	75	17	9	.....	.....	X	.....	.....	.....	.....
	76	76	76	17	9	.....	.....	X	.....	.....	.....	.....
	77	77	77	17	9	.....	.....	X	.....	.....	.....	.....
	78	78	78	17	9	.....	.....	X	.....	.....	.....	.....
	79	79	79	17	9	.....	.....	X	.....	.....	.....	.....
	80	80	80	17	9	.....	.....	X	.....	.....	.....	.....
	81	81	81	17	9	.....	.....	X	.....	.....	.....	.....
	82	82	82	17	9	X
	83	83	83	17	9	X
	84	84	84	17	9	X
	85	85	85	17	9	X
	86	86	86	17	9	X
	87	87	87	17	9	X
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	89	89	89	17	9	X
	90	90	90	17	9	X
	91	91	91	17	9	X
	92	92	92	17	9	X
	93	93	93	17	9	X
	94	94	94	17	9	X
	95	95	95	17	9	X
	96	96	96	17	9	.....	.....	X	.....	.....	.....	.....
	97	97	97	17	9	.....	.....	X	.....	.....	.....	.....
	98	98	98	17	9	.....	.....	X	.....	.....	.....	.....
	99	99	99	17	9	.....	.....	X	.....	.....	.....	.....
	100	100	100	17	9	.....	.....	X	.....	.....	.....	.....
	101	101	101	17	9	.....	.....	X	.....	.....	.....	.....
	102	102	102	17	9	.....	.....	X	.....	.....	.....	.....
	103	103	103	17	9	.....	.....	X	.....	.....	.....	.....
	104	104	104	17	9	.....	.....	X	.....	.....	.....	.....
	105	105	105	17	9	.....	.....	X	.....	.....	.....	.....
	106	106	106	17	9	.....	.....	X	.....	.....	.....	.....
	107	107	107	17	9	.....	.....	X	.....	.....	.....	.....
	108	108	108	17	9	.....	.....	X	.....	.....	.....	.....
	109	109	109	17	9	.....	.....	X	.....	.....	.....	.....
	110	110	110	17	9	.....	.....	X	.....	.....	.....	.....
	111	111	111	17	9	.....	.....	X	.....	.....	.....	.....
	112	112	112	17	9	.....	.....	X	.....	.....	.....	.....
	113	113	113	17	9	.....	.....	X	.....	.....	.....	.....
	114	114	114	17	9	.....	.....	X	.....	.....	.....	.....
	115	115	115	17	9	.....	.....	X	.....	.....	.....	.....
	116	116	116	17	9	.....	.....	X	.....	.....	.....	.....
	117	117	117	17	9	.....	.....	X	.....	.....	.....	.....
	118	118	118	17	9	.....	.....	X	.....	.....	.....	.....
	119	119	119	17	9	.....	.....	X	.....	.....	.....	.....
	120	120	120	17	9	.....	.....	X	.....	.....	.....	.....
	121	121	121	17	9	.....	.....	X	.....	.....	.....	.....
	122	122	122	17	9	.....	.....	X	.....	.....	.....	.....
	123	123	123	17	9	.....	.....	X	.....	.....	.....	.....
	124	124	124	17	9	.....	.....	X	.....	.....	.....	.....
	125	125	125	17	9	.....	.....	X	.....	.....	.....	.....
	126	126	126	17	9	.....	.....	X	.....	.....	.....	.....
	127	127	127	17	9	.....	.....	X	.....	.....	.....	.....
	128	128	128	17	9	.....	.....	X	.....	.....	.....	.....
	129	129	129	17	9	.....	.....	X	.....	.....	.....	.....
	130	130	130	17	9	.....	.....	X	.....	.....	.....	.....
	131	131	131	17	9	.....	.....	X	.....	.....	.....	.....
	132	132	132	17	9	.....	.....	X	.....	.....	.....	.....
	133	133	133	17	9	.....	.....	X	.....	.....	.....	.....
	134	134	134	17	9	.....	.....	X	.....	.....	.....	.....
	135	135	135	17	9	.....	.....	X	.....	.....	.....	.....
	136	136	136	17	9	.....	.....	X	.....	.....	.....	.....
	137	137	137	17	9	.....	.....	X	.....	.....	.....	.....
	138	138	138	17	9	.....	.....	X	.....	.....	.....	.....
	139	139	139	17	9	.....	.....	X	.....	.....	.....	.....
	140	140	140	17	9	.....	.....	X	.....	.....	.....	.....
	141	141	141	17	9	.....	.....	X	.....	.....	.....	.....
	142	142	142	17	9	.....	.....	X	.....	.....	.....	.....
	143	143	143	17	9	.....	.....	X	.....	.....	.....	.....
	144	144	144	17	9	.....	.....	X	.....	.....	.....	.....
	145	145	145	17	9	.....	.....	X	.....	.....	.....	.....
	146	146	146	17	9							

Inoculated November 27, 1914. Plague laboratory U.S.P.H.S. Seattle, Wash.

NOTE.—Numbers 13 to 16 received mycology only to see if there are any pathological changes in any organs resulting from repeated injections. There were evidences of caseation at the point of injection in two guineapigs and no evidences in two. There were no evidences of pathological changes of any sort in any of the organs.

*At the outset it was known that this dose was moderately high both in amount and virulence, and it was intended to scale down to a standard but this was never carried out.

It will be noted that the first three died so quickly that immunity was impossible. They showed the typical massive coalescing areas and not the septicemic type as in very highly virulent strains.

continuously, and persistently refused to do, and now, at the present writing, having finally succeeded in starting this machinery of testing going, there is every indication that they are even more determined never to stop it.²

After an interval of four years therefore, the matter was again taken up from New York, and on October 11, 1917, I applied for a license for manufacture and sale of mycoleum under the law of 1902. On March 25 following I received a letter from the health department requesting a sample of

of some one entirely unversed in the matter, hung the passing or refusal of a license for this important substance. And another year, wasted while I waited, and still wait, and the disease goes on.

In this article I have already called attention to a fact well known and perfectly well understood by every competent investigator of tuberculosis at the present time, and that is the paramount importance in any animal experimentation work in connection with tuberculosis, of the standardization of a given culture or cultures in which two factors are universally recognized by investigators on the subject. The first is the virulence of a given strain and the second is to find the smallest weighed quantity found to be necessary to regularly produce the disease in the animal without overwhelming it.

¹ The reader will understand that under the law of 1920 the Public Health Service has jurisdiction over the interstate sale of serums, vaccines and analogous products. So it seemed as if this were the proper course to take at the time as well as later, even though mycolium is patented as a synthetic lag and has always been claimed to be, or does not come under this law apparently more than methanol, acetone or acetic acid where these are produced by fermentation processes.

Accordingly, I was even more surprised upon inquiry as to the standardization characteristics of the culture used to receive a letter from the Public Health Service on September 25th, in response to my inquiry as to the laboratory number of the or-

sufficient to give one guineapig two doses, if an attempt were made to properly treat the animals, as approximately one c.c. was sent at the time. Naturally, I have never been able to obtain these records, although I have repeatedly asked to see

Washington series 2, government series 5.														Culture and dose to guinea pigs. Government numbers.														Mycocolem, 5 cc. Number days at ten day intervals.														Number of days each guinea pig lived.														Number of days lived after last mycocolem dose.														Weight of guineapig at time of inoculation.														Total loss of weight of guineapig at death.														Number of counts against each guineapig. See feeding system.														Total days lived by series.														Total counts against the series.														Total loss of weight of series.														Average dose of mycocolem per guineapig in cc.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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All guineapigs received ten mgms. H37, July 1, 1919, Hygienic Laboratory, U. S. P. H. S., Washington, D. C.

ganism, the quantity of dosage of live tubercle bacilli used, and its virulence, i. e., number of days each series lived, which read as follows:

The culture used was one at the hygienic laboratory under the simple designation "human" and the dose used

them, and also I have never been able to obtain any information as to number of animals used, the length of time each series lived, or the laboratory number of the culture used, and I particularly wanted to start with this culture if even a little

Washington Series No. 3 (Government), (series 3)		Culture, dose and date 1 mg. H37, 6/6/19, Government guineapig numbers.		Number of doses mycobact- erium 5 cc. average interval ten days.		Number of days each guineapig lived.		Weight of guineapig at time of inoculation.		Loss of weight of guineapig at time of autopsy.		Number of counts against each guineapig. See feed- ing system.		Total and average days lived by series.		Total and average counts against each series.		Total and average loss of weight of each series.		Total and average number of doses in c.c. mycobact. given.				
Treated.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	1	4	47	2	500	160	XX							average per guineapig	average per guineapig	average per guineapig	average per guineapig	average per guineapig	average per guineapig	average per guineapig	average per guineapig	average per guineapig	average per guineapig	average per guineapig
2	2	4	47	2	500	240	XX							47	3	131	14.5 cc.							
3	3	4	54	2	500	75	XX							..	..	..	..	..	..	..	..	..	..	..
4	4	4	51	2	500	105	XX							285	18	785								
5	5	4	35	11	500	105	XX							..	..	..	..	..	..	..	..	..	..	..
6	6	4	53	4	530	140	XX							47	4	183								
7	7	..	59	..	590	130	XX							..	..	..	..	..	..	..	..	..	..	..
8	8	..	86	..	560	215	XX							..	..	..	..	..	..	..	..	..	..	..
9	9	..	86	..	600	285	XX							..	..	..	..	..	..	..	..	..	..	..
10	10	..	38	..	600	130	XX							..	..	..	..	..	..	..	..	..	..	..
11	11	..	36	..	550	170	XX							..	..	..	..	..	..	..	..	..	..	..
12	12	..	38	..	560	170	XX							286	24	1100								

Inoculated June 16, 1919, Hygienic laboratory, U.S.P.H.S., Washington, D. C.

NOTE.—In scaling the total number of days must always be compared with the counts against the series. The days being the same the counts are significant and vice versa the counts being the same the days are important. Each is thus a check on the other.

It has been repeatedly shown that a highly virulent culture must be reduced in dose so that the average length of life of the control series is ninety days or over. Even at ninety days a two to one checking is not uncommon.

was 1/100 of an ordinary loop full of the material in the moist condition.

To make matters worse, the sample of mycocolem submitted to the department in March, presumably to be tested for sterility was approximately only

was known about its virulence. Some time later, it was suggested by Surgeon General Blue that if I was not satisfied with these results, arrangements might be made whereby the experiments be repeated under my direction.

importance, not alone as to footgear but also as to the intimate relationship between pedic pathology and body health.

It is to be regretted that among other fallacious conceptions existing in the minds of the layman, and too often medical practitioners, an opinion is

to prevent the further manufacture and sale of such shoes, the community would eliminate one of the most potent factors in undermining the vital health of present and future generations. An understanding of the connection between high heels and body health warrants first an explanation, from a mechanical viewpoint, of two significant problems, to which brief reference will be made, namely: 1. Posture and its relation to organic function; 2, essentials of normal foot functioning.

Regarding posture and organic function, it should be remembered that organic function is effected most efficiently if an organ or any of its parts is not displaced from the location assigned to it in the body, except where slight shifts are essential for physiological action. For example, the least deviation of the eyeball from a normal axis by pushing one's finger against it distorts the vision. Another example of this is seen where one's occupation calls for an attitude that necessitates constant stooping, as in the operation of a machine. Here the constant stooping continually disturbs the location and relation of many organs, as the lungs or the intestines. This malposition and pressure produce pathological results.

As to the essentials of normal foot functioning, in order to produce a perfect equilibrium by a normal posture there must be an equalized and opposed action of the extensor muscles of the leg as playing against the flexor muscles. This opposing action corrects the relation of the longitudinal axis of the body so as to preserve an angle of about 90° . Such play of the opposing muscles serves also to correct a tendency to fall backward or forward and produces a slight but normal back and forth swaying. This forward and backward swaying takes place by a ginglymoid rotation of the tibia and fibula over the astragalus which receives the body weight from the tibia. The amount of work and rest for this system of flexible muscular cables playing on both sides of the tibia and

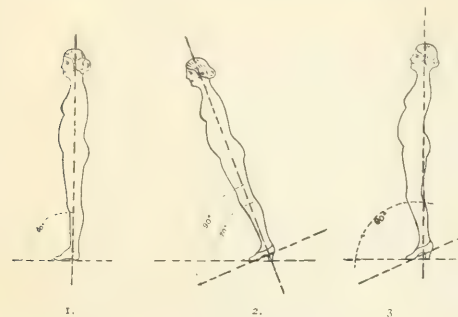


FIG. 2.—Normal posture with a resulting normal location of all organs of the body; no shoes are being worn.

FIG. 2.—Theoretical effect in posture if tendency of high heeled shoe to throw body forward is unchecked.

FIG. 3.—Showing how balance is recovered in the high heeled shoe by an increased spinal curvature at lumbar region; the protruding abdomen; the knee flexion necessary for balance; and a general displacement of all organs of the body, as indicated by the dotted line running through the length of the figure.

still prevalent that must in time become obsolete, the idea that the resultants of foot strains or foot ills are confined to the foot itself instead, as is often actually the case of affecting organs and producing symptoms in other parts of the body. Referred pains are axiomatic to all of us as a pathological entity; but I desire to call special attention to the apparent disregard of the rôle of the high heeled shoe in producing referred pains and also referred disorders.

We observe, in this connection the curious spectacle of many persons with crippled feet seeking diagnosis and treatment of their foot ills in the shoe shop. The treatment often takes the form of a shoe that has generally been manufactured or which is fitted without due appreciation of the mechanism and function of the feet. We observe also additional "treatment" consisting of the sale of commercial arch supports. We see the public depending upon corn cures for relief from excrescences that generally indicate malposition of the delicate structures of the feet and which call for minor orthopedic measures in preference to the much lauded proprietary remedy that is heralded as a cure—all for foot troubles.

The lack of realization of the importance of foot pathology by the profession has, therefore, created a number of pseudoscientists. It has even reached the point where the assertion has been made by some shoe manufacturers, and, I regret to state, occasionally by physicians, that the high heel is a boon. Such a statement falls to the ground in the light of a scientific analysis of foot physiology and pathology.

The effects of high heels are so far-reaching that if legislation were enacted and rigidly enforced

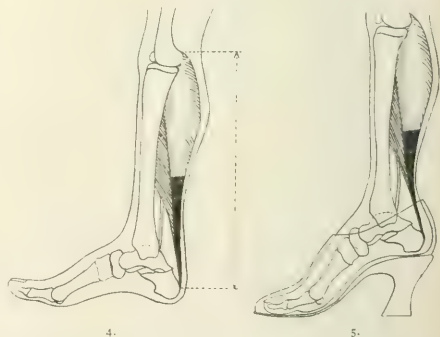


FIG. 4.—Posterior leg muscles in their normal relationship to leg when foot is minus the shoe.

FIG. 5.—Contraction of posterior leg muscles and generally altered relationship of bones in the high heeled shoe.

also the whole skeleton is normal, and standing made easy if high heels do not produce a permanent shifting in the relationship of the bones and muscles of the legs and feet. The normal

relationship in the position of bones and muscles at the legs and feet becomes more essential in walking because the hingelike action at the astragalus is increased from a slight swaying to a pendulous oscillation of the tibia over the astragalus, and true physiological walking can only be accomplished if the foot motion is free on the leg. Such motions in walking if unrestricted should enable a flexion or bending of the foot on the leg to about 75° and an extension of about 135° . The free flexion or bending up of the foot to the leg is essential at that stage of the walk when the leg is completing the arc over the astragalus by way of the hinge joint as already mentioned.

A review of the two foregoing considerations furnishes two conclusions, namely: 1. That every organ or part of an organ can functionate normally only if it is not displaced from its natural position by factors not inherent in true physiological function. 2. That ease of equilibrium and gait

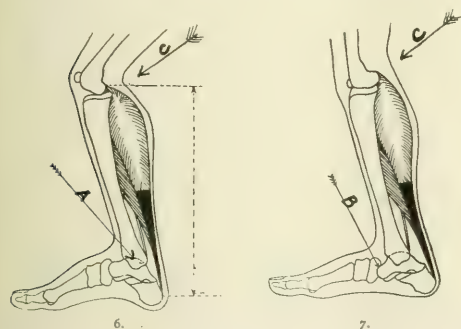


FIG. 6.—Arrow A marks location of ankle joint and where flexion is being now facilitated by flexion at the knee joint (Arrow C).

FIG. 7.—Shows effect of forced flexion of ankle joint without accommodative flexion at knee joint (Arrow C) in a foot where the posterior leg muscles have shortened. The tendo Achilles, the os calcis and astragalus are now acting in a united mass to permit flexion by a secondary break and astragalus displacement at the mediatarsal joint (Arrow B), thereby producing a flat foot.

depend on a normal relation in the length and position of the muscles of the legs and feet particularly those that cause a flexion in walking of 75° with the leg, and permit an extension of about 135° .

Perfect balance in standing and walking can only occur with the bare foot when all the delicate intrinsic motions of the feet are not hampered. When, however, we apply these conclusions to the changes that take place in feet wearing high heeled shoes with a view to studying the effects of such shoes, we perceive a source of danger in these shoes because the essentials of perfect equilibrium and gait have been violated. As to the first consideration, that organic function demands normal organic position. In Fig. 1 we observe perfect equilibrium, the perfect standing posture. The feet are at right angles with the body. The muscular tension of the entire body, to maintain the skeletal components, is equally distributed and is functioning unrestrictedly to correct constant swaying. The dotted line through the middle of the figure indicates a normal distribution and location of the

heart, lungs, stomach, intestines, kidneys, uterus and other important internal structures. No organ is unduly malposed or hindered by pressure of neighboring organs. In Fig. 2, high heels have been placed under the os calcis and the prop, theoretically of course, has altered the angular relation between the feet and the longitudinal axis of the body with a resulting tendency to fall unless something is done to check this tendency by a recovery of balance. It is a physical impossibility to attain and maintain this attitude and before the person reaches this degree of inclination, a readjustment occurs to produce the so-called slouch attitude, as shown in Fig. 3. An examination of the dotted line through this figure furnishes interesting information. It indicates that in order to recover balance the curvature of the lumbar region has been unduly increased and the abdomen naturally distended to an increased convexity; the knees have been flexed to compensate for the increased angulation over the normal 90° angle at the ankle joint.

If a detailed analysis of the changes in the body were carefully accounted for, it would reveal a shift from normal alignment or some strain of practically every organ in the body. The abdominal viscera are now functioning in an unnatural physiological relationship. If pathological disturbances occur in any of these organs through other causes, such disturbances are enhanced. As many women become corpulent in later life the corset is laced more tightly to hide the increased protrusion of the abdomen and also to compensate for the ever increasing weakness of the muscles of the back whose strength has correspondingly been disturbed. This tighter lacing, adds another element of danger and together with the high heels only serves to weaken the musculature of the trunk by immobilization. As a result, little benefit is derived by the abdominal viscera from walking. Which has become an inelastic strut. The disorders occasioned or enhanced by skeletal distortion due to high heels become in their nature more chronic and insidious because the resultant symptoms are obscured in general diagnosis, and do not call for immediate relief.

Perfect balancing and walking, as previously stated, demand a normal relationship in the length and position of the muscles of the legs to permit pliant foot function. We find that an application of this essential reveals the fallacy of the assertion that high heels are beneficial. Figs. 4 and 5 show that the posterior leg muscles are affected unfavorably by such heels. This type of shoe causes a contraction of the calf muscles determined by the respective height of the heel and with it a corresponding lengthening and weakening of the anterior muscles. A normal play of opposing muscles can no longer exist. In time the slack, created by the shortening of the posterior muscles, is taken up by Nature with injurious results.

Another danger in the high heeled shoe from the strain imposed by a contraction of the posterior leg muscles is that it discourages the healthful and natural exercise of walking. It is needless to state that our female patients do not avail themselves of the benefits of outdoor walking as there is no

incentive when a disturbed muscular mechanism engenders fatigue and strain. When an attempt is made to walk, the resulting fatigue, with the referred nervous disturbances, do not encourage it.

The symptoms and the farreaching effects of a shortened Achilles tendon has caused many orthopedic surgeons to regard the condition as a distinct clinical entity. In the literature of orthopedic surgery the condition has been referred to as a nondeforming club foot, also muscle bound feet (Hibbs). It is more properly referred to as a Schaffer's foot because Schaffer was the first to investigate the condition and to give an accurate description of its effect on the body mechanism, and its symptoms.

Hibbs (2) in writing on the shortened tendo Achilles suggests tenotomy as the most practical means for the cure of this condition and with reference to the symptoms, states: "When dorsal flexion is limited by a shortened calf . . . the stride is shortened, the contraction of the calf is more frequent, and its rest periods are shortened. Or else, if stride is not shortened, when the tibia reaches the limit of its forward swing over the articular surface of the astragalus established by the shortened calf, tension is made upon the muscle and it contracts, elevating the heel. The muscle is held in a state of contraction for a longer period of time and it also suffers somewhat from tension made upon it. . . . The heel, being held in an elevated position for so long a period, with the weight borne upon the distal ends of the metatarsal bones, adds the important element of foot strain. . . . The gait produced by feet in such a condition must of necessity have an unfavorable effect upon the nervous system, because there is an overproduction of those waste products of muscle action which cause fatigue and muscle tension and affect the nerve ends in the fibres of the calf muscles by the impairment of the circulation, and so give rise to foot strain. Evidence of this is given in the fact that all these patients suffer from excessive fatigue, pains in the legs often referred to to the back, nervousness, and mental lassitude. In many instances the nervous system is affected before serious changes have taken place in the foot."

Again, Nutt (3) referring to the symptoms occasioned by a contracted tendo Achilles, states: "Thus it may be understood how this condition may cause muscular pain from stretching of the calf muscles, or pain about the knee from the strain of supporting the body with the knee slightly flexed, or pain at the astragaloscapoid articulation from strain of overextension, or over the tuberosities of the os calcis from a periostitis set up by the strain on the plantar fascia. . . . The loss of firm support at the end of each step accounts for the weak ankle and frequent sprains which occur in some cases."

Further inquiry into the action of the high heel discloses additional information of no less import. We observe from the illustrations that the location of the astragalus, with respect to the foot, is such that it transmits the greater part of the body weight which it receives from the tibia to the os calcis. The body weight is borne on the os calcis when one is standing erect in bare feet. Due to the forward and backward swaying already referred

to and which is affected even by so slight a movement as the inclination of the head, the centre of gravity and therefore body weight is shifted in such a manner as to modify the relative amounts of weight borne alternately by the posterior portion of the foot at the calcaneal region and the share borne by the front portion of the foot at the region of the anterior metatarsal arch.

The posterior portion of the foot in standing is bearing a greater share of the weight in a relationship of about two to one. The anterior metatarsal region acts as an auxiliary and sustaining prop in standing. This anterior metatarsal arch is formed by the heads of the five metatarsal bones. Its plantar articular construction makes even digital displacement possible. The components indicate therefore an obvious function more nearly allied to a spring. This becomes apparent when we contrast it with the more rigid articulations of the longitudinal arch intended mainly for weight bearing. The anterior metatarsal arch absorbs the shock of the step in walking. This is demonstrated by comparing the anatomical changes in the shape of this anterior arch when it is removed from the ground and when pressed against the ground in the step. When off the ground, the anterior arch curves upward so as to form a concavity on the plantar surface with the three middle heads higher than their neighbors, the heads of the first and fifth metatarsal bones, while the sesamoids under the head of the first metatarsal are in line with the head of the fifth metatarsal.

When the forefoot reaches the ground and prior to its receiving the full weight of the body, the first and fifth metatarsal heads touch the ground first; then as the weight of the body is ultimately received on the anterior metatarsal region, all of the heads flatten out to the surface and remain in line until the foot leaves the ground, when the contour of this arch is restored. The delicate function of this springlike arrangement, together with the play of the interphalangeal joints and the toes, however, is lost in the high heeled shoe. The high heel shifts the greater portion of the body weight to the anterior arch causing that arch to maintain a constant state of depression and malposition of its parts. In addition to this when we recall that these shoes are generally built with a narrow toe box unlike the shape of the normal forefoot under weight bearing, we begin to fully understand the causes of corns, callosities and ingrowing toe nails, the too frequent Morton's toe, and general metatarsalgia. All of these pathological conditions, though minor from a surgical viewpoint, materially assist in increasing the nervous tension of the mass and decreasing its efficiency. The incidental instability and displacement of the ankle structures, together with the small bearing surface of either the French or the Cuban heel, predisposes to chronic weak ankles with the constant possibility of fracture of the malleoli. It also creates flat foot as we shall presently see. When such shoes are worn by mothers through many generations, and particularly at the period of pregnancy, we are undoubtedly bequeathing a legacy of foot weaknesses to future generations.

Offhand, the occasional contention that high heels render the longitudinal arch more secure and prevent flat foot seems logical. What could be simpler at first thought than that by wedging the heel upward we more compactly bind the component parts of the longitudinal arch, thereby reducing the possibility of a breakdown. Unfortunately, this contention is nurtured and survives because of a popular notion alluded to in my article on flat foot that the longitudinal arch in flat foot breaks directly downward. Instead of this, the actual flat foot consists of a lateral displacement of its two component limbs. The longitudinal axis of the os calcis in the normal foot is inclined obliquely inward and the normal foot is actually resting on an arch the component limbs of which are already tilting inward at their junction. Additional stress on such a structure, occasioned by improper footgear, faulty attitudes of gait and locomotion, occupation and other factors, which cause abduction of the forefoot, can only result in a further tilting of the os calcis and as a sequence further abduction of the forefoot. The astragalus then rotates downward and inward because its rigid location between the tibia and fibula prevent it from tilting obliquely with the os calcis. In this way, the greatest strain is brought to bear on the inferior calcaneoscaphoid ligament on which the head of the astragalus rests. The ligaments sag, due to the pressure exerted by the misaligned astragalar head. This mechanical displacement of the component parts of the longitudinal arch may continue in varying degrees. The mechanical factor, however, is caused by the parts having been displaced first laterally and next downward creating an angulation inward of the longitudinal axis of the foot at the astragaloscaphoid articulation. The contention that high heels prevent flat foot might warrant consideration if in flat foot the arch really broke straight down with the astragalus keeping in a straight line with the longitudinal axis of the foot as sketched in so many of the circulars advertising commercial arch supports. This contention might merit some attention if the high heeled shoes were constantly worn. But the shoes are discarded daily or what is a very common, a too sudden lowering of the height of the heel is advised or attempted. As a result a condition is created that produces a strain or break at the astragaloscaphoid junction that is akin to the mechanical causes of flat foot and which, therefore, makes a shift from high to low heels a cause of flat foot.

It seems strange that when we remove the high heeled shoes from feet where the posterior leg muscles have become permanently shortened, nature should reward this kindness by an injury. It is clear when we stop to consider why this condition results. To understand this, let us glance at Fig. 6: A indicates the location of ankle joint formed by the tibia, the fibula and astragalus at which point, flexion and extension of the foot on the leg take place. The normal flexion of seventy-five degrees, which is required in walking, is only possible provided the posterior muscles of the leg have not become permanently shortened. When high heeled shoes have been worn for some time

the extended position of the feet has, however, rendered this contraction permanent or perhaps the term fixed might be preferable. When the shoe is removed, accommodation to recover the required normal balance of the body on the feet by the restoration of an angle of ninety degrees can be effected in several ways, but not by normal flexion with the entire leg held straight. One way is to keep walking on the toes as if the heel prop was there. This is inconvenient and soon becomes impossible. The other way to accommodate the posterior shortening is to flex the knees so as to lessen the distance between the insertions of the gastrocnemius into the femur and the posterior os calcis, and thereby lowering the heel to secure the necessary body balance is made possible. But this attitude distorts the position of the entire skeleton and cannot be easily maintained for any length of time.

The other and most natural method of accommodation is by the attempt to forcibly straighten the knee joint to relieve tension. As the attempt to stand erect without bending the knee is made, the already shortened tendo Achilles refuses to lengthen an equal amount to the height of the discarded heel. The result is that the shortened tendo Achilles, the os calcis and the astragalus act in unison and in mass and by their unified tug permit the lowering of the heel by an accommodative secondary flexion at the mediatarsal joints indicated by B in Fig. 7. The mediatarsal joints, often referred to as a single joint because they act in unison, are formed at the inner side by the astragaloscaphoid junction, and on the outer side of the calcaneocuboid articulation. These joints which provide principally for the motions of abduction and adduction of the forefoot represents the next breaking point in the foot that permits of the secondary flexion. The astragalus then as in flat foot rotates inward and downward creating an inward angulation at the astragaloscaphoid articulation, producing a flat foot due to the contraction of the tendo Achilles but which is accommodated and hidden when the high heeled shoe is worn.

Schuster, (4) whose scholarly investigations of this and similar conditions has furnished additional valuable data, states: "The greater number of talipes equinus cases of the milder and nonparalytic form that pass unnoticed is almost appalling. Easily fifty per cent. of the fashionable ladies who seek the aid of the orthopedist and pediatricist suffer from the consequences of the unrecognized talipes equinus, produced by the wearing of the modern high heeled shoe. . . . Upon examination . . . patient is suffering from a flat foot . . . caused by a flexion of the forefoot at the mediatarsal joints when his patient stands on the floor without shoes, because the right angular position of the foot to leg in standing is impossible in her case without flexion at the mediatarsal joints and the consequent lowering and inside displacement of the head of the astragalus because of the shortening of the gastrocnemium, produced by the continued wearing of the high heeled shoe."

The contention as to the beneficial effects of the high heel finds no support in logic or practice so far

as normal feet are concerned. Nor can a counter claim be made, that if one has worn such shoes for a long time, a return to proper footgear cannot be made because of the resulting injuries, pain and the sensation of falling backward accompanying a sudden return to low heels. Through proper treatment of the affected structures combined with a gradual lowering of the heel, a safe return to normal equilibrium is possible. I have found that ordinary measures such as vibration, massage manipulation and exercises of the proper kind are productive of excellent results without injury.

The foregoing considerations as to the dangers of the high heeled shoe indicate generally the importance of a scientific understanding of foot pathology. In view of the many other problems with which the general practitioner has to contend, it becomes essential that as sponsors of the public welfare, we should if occasion arises, encourage any propaganda work undertaken in a scientific manner by those medically educated in this regard.

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BONE TUMORS OF THYROID ORIGIN.

By J. CHRISTOPHER O'DAY, M. D.,
Honolulu, Hawaii.

The study of those bone tumors that are believed to be the end result of thyroid infarct soon brings one to realize that the last word in the etiology of goitre has not yet been spoken. If a tiny particle of detached thyroid tissue upon entering the blood stream can, after having lodged within the diploe of the skull, give rise to a neoplasm of such dimensions as to menace the life of the individual, what is to prevent us from believing that many of the puzzling types of goitre may have had their origin in similar detached portions that had failed to gain access to the bloodstream? Why are they not as capable within their own environment in forming a nucleus for neoplastic development as elsewhere? But there is another question relative to these thyroid emboli—why do they have a predilection for bone? This question becomes an interesting one the moment the systemic filters are gone over in review because no evidence seems available to show that the kidneys or the brain itself has suffered from a benign growth of this character. Ewing (1) says: "That a simple colloid goitre presenting a structure that usually remains harmless for years, may give rise to metastatic tumors of benign or malignant type is one of the striking anomalies of the pathological thyroid." In so far as we were able to determine, it would seem that an infarct of normal, or rather malignant free thyroid cell is unable to proliferate outside of bony tissue while those bearing the elements of malignancy are capable of development within any tissue of the body, and often with such rapidity as to have the result growth mistaken for the primary one.

A consideration of these bone tumors of thyroid origin cannot fail to drive home all that has been said of those retentive goitres where, as a result of the first lymphatic obstruction, should a rent be carried into the vascular cortex, the acini, exploding and fusing into one retentive mass, detach such portions as may enter the bloodstream where as aimless emboli they drift till infarction determines their future. And it seems strange, indeed, that unless chance brings them within bony structure their presence can never be so much as suspected. We know that the character of epithelium is selfasserting, and we may do well to ask why it is that the epithelial cells of thyroid origin require the influence of an osseous environment before becoming so. We, however, believe, and we base the belief on otherwise unclassified goitres, that normal detached thyroid epithelial cells are selfasserting within two environments, namely, the bony and the parent structure itself.

At the clinic of St. Vincent's Hospital, Portland, Oregon, we removed an exceedingly large unilateral left sided goitre from a patient. It extended from the median line to the mastoid process. Evidently its own growth had strangled the blood supply because no vessels were ligated in its removal. It was shelled out without difficulty. On removal it weighed two pounds and three ounces. This patient came to us through the kindness of Doctor Tilzer who had advised removal of the gland owing to its slow but continuous growth. On section it was hard, fibrous and had an appearance not unlike that of a fibroid uterus. Microscopically it resembled carcinoma; I may say, atypical carcinoma because the epithelial cells that infiltrated the connective tissue stroma were larger than those of true cancer. Careless observation might tempt one to classify it as a fibroid goitre, but the extensive infiltration of epithelial cells, by us, was looked upon as unmistakable evidence of the same process, responsible for those bone tumors of thyroid origin, at work. While more than four years have passed since the removal of the gland the patient has remained free from any recurrence.

Whether thyroid epithelium has to be influenced from without before taking on its chaotic proliferating, or whether it finds the most encouraging environment within the diploe of bone is a question for which we would hesitate to vouchsafe an answer.

K. Kolb (2) warns us that "All sarcomalike tumors in the bones, especially in the skull, should suggest the possibility of metastasis of thyroid tissue." He reports a case of the kind in an unmarried woman of seventy-five who had had a goitre removed seven years before. He refers to fifty-nine cases compiled by Regensburger in 1911 where twenty-five were in the skull, nine in the parietal bone and the balance in various long bones of the body. There was a history of thyroid trauma in nine of the fifty-nine cases. One of the patients, a girl of thirteen, had a cystic tumor removed from the frontal bone. At eighteen a colloid goitre developed which was also removed. Two years following the extirpation of the goitre a thyroid metastatic bone tumor occurred at the site of

the original cyst. J. Philip Kanoky (3) calls attention to the fact that in these tumors we have a structure similar to or almost identical with the tissue found in the normal thyroid gland.

These benign tumors of thyroid origin argue strongly against the theory of Cohnheim wherein he attributes the first cause of malignancies to displacement of embryonic cells. In support of his own parasitic theory of cancer origin, Roswell Park has pointed to these benign tumors of metastatic development. "If Cohnheim is right," I have heard Park say, "then every transplant of thyroid or other glandular tissue should become a malignant growth." This subject of bone tumors of thyroid origin is too vast to permit of prolonged discussion here. What we have included is not as a study of the subject itself but more as a means of directing attention to the unusual behavior of the thyroid's secreting cells as a clue toward solving some of the baffling problems which confront the seeker of goitre etiology.

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HEREDITY.

By L. DONALD McEVoy, M. D.,
New York.

In expressing an opinion regarding the activities of ultramicroscopical elements, the only available guide is that suggested by the observation of what we conceive to be analogous conditions in the world of the macroscopic. Nevertheless it would seem that as soon as a body comes under observation as a unit of life, its structure is immediately reduced from the complex to a conception of what is considered to be simple, the various component parts being regarded as sections of a unit. The obvious fact that great differences exist in the chemical and structural composition of the cells forming a body is lost sight of, and for some reason, a theory based upon the modification of an original cell is forced upon a condition wherein the cell has ceased to concern itself.

The simplest form of life has the essentials of complexity in its structure. The processes of change necessitated by the intake of food, the output of waste, the structure of the envelope, and the necessary neural elements to secure coordination, indicate a complexity to a degree. It is true that all forms of matter readily assume shapes of one kind or another which we term crystals, and because of this phenomenon, are recognized as belonging to this or that element, or combination of elements. This form may be explained as an example of the extension of this law, but when a cell proliferates by one of the manifold processes of generation, it transmits potential form and function to an entity composed of as many diverse elements as form the body of the parent cell.

Thus for example, the envelope of the parent cell

must give off such chemical attributes or compounds as will serve to form a new envelope of the proper form and shape. The same with other portions of the cell differing in structure from the envelope, until the potential new cell has all the characteristics of the parent cell, excepting development.

However, it should be obvious that the simple multiplication of such a cell would lead to nothing except a mass of cells. To form a body, other cell masses of different structure and chemical composition must be added, and as soon as added would lead to a most intricate complexity. The cell as a unit of the structure immediately gives place to the group or zone, for in speaking of the cell as a unit we referred to its completed structure, and the same rule would apply to a mass of cells forming the functional part of a body composed of heterogeneous masses, with varied functions.

In such a grouping of cell masses or zones, the independence of each zone would of necessity be sacrificed to the requirements of the body considered as a whole. Equable distribution of food, the development of function and disposal of waste, would require cooperation, secured through the neural elements diverted from the individual cells in each zone, but the zone would still remain the unit of structure. This may not be clear, as it will be remembered that each zone is the product of cell proliferation. Nevertheless it is improbable that neural elements exist without the confines of life forms, and unless the individual cell sacrificed or parted with enough of such elements sufficient to form a control, the body would disintegrate into its original cell masses. The cell has undergone a change; its power of proliferation has been modified; it is dependent upon its zone control.

The function of a zone being regulated by its relation and dependence upon its communal existence as one of a number of zones, its form and position will be subject to the law of coordination. The cell no longer proliferates for the zone, having been succeeded by its neural control representing the zone as a unit having form and function, and consisting of many cells. However, the necessity of reproduction is as imperative to the group of zones forming the body, as it was to the cells composing the zones.

Having established a perfect coordination enabling the body to exist, analogous in many respects to the cooperation found within the structure of the cell, it is obvious that a change must be made in the process of reproduction. Division cannot be applied because of the complexity involved. The preponderating strength or weakness of a zone could not be corrected. Deformities would ensue threatening the extinction of a species. Hence the wise dispensation of nature in making the provision of sexual difference.

As the necessity of coordination compelled the alignment of neural elements, so the necessity of reproduction compels the group of zones forming the body to provide a container, for the various zonal elements representing their respective agencies of reproduction. As premature development would endanger the life of the body, all elements are dormant, necessitating the activation of a definite

chemical analogue before the process of growth begins.

As in all the phenomena of nature, the law of periodicity is recognized, the process of zonal reproduction occurs at regular intervals, the elements being thrown off and carried to the container where they mingle with one another. We can term them zonal nuclei. As the original zones were grouped together because of a definite chemical attraction, so the various nuclei clump together in irregular numbers, the latter depending upon the virility and regularity of the parent zones. Thus it would be expected that variations in the relative strength and degree of perfection would inevitably exist among the nuclei thrown off by any zone. It should be obvious also that accidents might prevent the appearance of certain nuclei, thus making it possible for groups of clumps to form with one or more zones missing, or others in such a state of imperfection that they could in no way be considered as representative.

Given, therefore, a form of life whose anatomical structure represents the grouping of many varieties of zones, we trace the process of reproduction in each zone as an individual unit, independent of the body of which it forms a part. Using as an example the process of fecundation ordinarily observed in mammals, we will follow the activity of a zonal nucleus.

It is one of a clump extruded from the same zone. Many in the clump are imperfect. They are all dormant, awaiting the chemical activation of an analogue, held together by the zonal attraction transmitted to each nuclei of the zone. Each nucleus carries with it in varying degree, the proliferating potential of the zone, secured and transmitted from the neural control of the zone. Surrounding this clump are units of other zones, also clumped, their position regulated by the same chemical affinity which had activated the parent zones in their relation to one another. The number of clumps represents the number of zones in the body, or should normally do so. As the number of nuclei in each clump depends upon the force of the attraction between them, there will be variation in size. An envelope will be formed by elements from the container; the resulting form is a spermatozoon or an ovum.

With many others the spermatozoon is extruded in juxtaposition to numerous ovi. Here the law of chemical attraction superimposes its rule of selection. It may be that no affinity exists between the elements. If so, impregnation will not take place. If a chemical attraction is found, one of the ovi is penetrated by the spermatozoon, and immediately on entering the ovum, the envelope of the spermatozoon breaks, liberating its enclosed nuclei, to mingle with the analogous forms contained within the ovum. The zonal nucleus with which we are concerned has, like all its fellows, definite chemical attributes which attract to it the analogous nuclei of the female. From the group depending upon the force of the chemical affinity, one is selected, and the two nuclei affording one another the necessary chemical activation blend to form a zonal nucleus capable of proliferation.

As the characteristics of the one or the other are more virile, they will predominate. If equally balanced, the result of proliferation would be a zone having parental attributes evenly divided. This process having taken place with units representing the various zones, the resulting group is the potential of a new body. The remaining nuclei, both the male and female, clump together again and attach themselves by the vestiges of the container to the new body, which thus becomes a host for many ancestral forms which lay inert until the body matures. On maturing, they are liberated to mingle within their container, with the nuclei of their host, and take their chance of extrusion.

The fecundated ovum receiving its nourishment through the maternal organism goes through a process of zonal proliferation until such time as waste increases to a degree menacing to the life of the parent. This extrusion of waste material by the fetus causes its expulsion, acting as an oxytocic.

The animal is yet undeveloped. The mechanism of coordination has been completed only in so far as the actual processes concerning the intake of food and the output of waste. Differences in zonal structure may exist, one half being asymmetrical or deformed. Some zones may be entirely lacking; duplication of others may be evident. The neural control over the zones has to adjust itself to conditions. An ancestral zone in juxtaposition to a new formation may cause unbalance. Weak and inefficient zones, the result of inbreeding or accident, may be unable to function. Zones of special senses may function perfectly, but lack of coordination makes the result worthless. Some virile zone may dominate a weaker, thus disturbing equilibrium, but throughout the body unceasing efforts to secure coordination are taking place, eventually producing a result perfected as completely as the nature of the complexities will permit.

No attempt has been made to cite examples as any one familiar with the rudiments of biology will be able to apply the many instances wherein Nature has proved inexplicable.

286 FORT WASHINGTON AVENUE.

LONDON LETTER.

(From our own Correspondent.)

*Annual Meeting of the National Dental Association.—
Inadequacy of Hospital Facilities in London.*

LONDON, FEBRUARY 21, 1920.

The annual meeting of the National Dental Association was held in London, shortly after the opening of the new headquarters. One of the principal subjects of discussion was the claims of dentists at present unregistered for recognition under the proposed new legislation and admission to a new register of practitioners. The first Speaker, Mr. J. A. Seddon, M. P., strongly denounced the type of dentist who was commercially minded, cared nothing about professional etiquette, and went in for blazing advertisements, which, unfortunately appealed to a large section of the community. These men who went into the business for money alone and did not trouble to improve

themselves, were a discredit to the profession, and a danger to those who constantly studied their clients' needs. They would soon be suppressed under the new legislation. Mr. F. Butterfield said that the Dentists' Act of 1878 was not intended to prohibit the right of practice to any responsible man. Members of the unregistered profession were following a perfectly legitimate calling, and anyone who designated them as "quacks" committed a gross slander. It must be realized by all sections of the profession that if a bill was to be successfully dealt with in the House of Commons it must be noncontroversial. Mr. G. B. Blizard, a member of the department committee on the Dentists' Act, said it was essential that the act should be considered as quickly as possible, in view of the fact that a panel system for dentists was coming. Discussing the proposed bill, he said that the departmental committee had heard evidence that registered dentists numbered only about 5,000, who confined their treatment to the upper and middle classes, leaving the class which most needed attention to the non-registered members of the profession of whom there were about 15,000. The committee arrived at the unanimous conclusion that some scheme or other should be formed whereby unregistered men should be admitted to the register: With the view to meeting future demands for skilled dentists, Mr. Blizard advocated that half of the annual recruitment of the dental profession of the future should come in at the door of free maintenance scholarships. He hoped dentists would be able to set up that precedent for all other professions.

The last speaker described tersely and accurately the situation as regards dentistry in its relation to the community in Great Britain. It is true that the poor population of Great Britain, and no doubt this is the case in other countries, who most require the services of the dentist, either receive no attention at all or wholly inadequate treatment. It is only the well to do or fairly well to do who can afford to be treated scientifically, for it must be borne in mind that being treated scientifically is different from being treated skilfully. Many unregistered dentists are mechanically very skilful but the skill does not prevent them from treating a patient unscientifically and frequently doing more harm than good. Others are both unscientific and unskilful. While a thorough training and the possession of a qualification does not necessarily insure scientific dental treatment any more than similar attainments in a member of the medical profession insure scientific medical and surgical treatment, they are yet a very great safeguard, the greatest safeguard indeed against improper treatment that human ingenuity can devise. Of course, it would be unjust to the unregistered dentists to take away their source of livelihood, and means for avoiding this will be arranged, but it certainly is an act of wisdom to insist that in the future all dentists shall be required to give proof of their knowledge and skill. It will also be arranged that the course of dentistry is less expensive than at the present time or the supply of dentists will continue to be insufficient and many men well adapted

for the work will be lost to the profession, to the detriment of the community.

Doctor Addison showed in his speech at the opening of the new headquarters of the British Dental Association what the policy of the ministry of health is, when he said that the aim should be a coordinated service of medical men, dentists, nurses and midwives. All are or will be registered, the dentists like medical men being on the panel. It seems as if it meant the beginning of a state medical service, or at any rate, the practice of preventive medicine on coordinated lines rather than as hitherto by industrial action. Medical men and dentists will lose, to some extent, their independence and be in a degree as servants of the people but if it is for the public good, the interest of class must be subordinated to the interests of the people. However, this has yet to be proved. In the meantime, no one can cavil at the resolution of those in authority in Great Britain to raise the standard of dentistry to a high plane. There is no doubt that such a departure is in the best interests of the health of the people.

* * *

Reference has been made on several occasions to the hopeless inadequacy of hospital accommodation in Great Britain. At every hospital there is a long waiting list, which means that many persons of limited means who urgently require the services of a specialist are unable to have such services at the time most needed and in consequence are not infrequently condemned to long suffering or to death because expert advice and treatment were not available when necessary. In addition hospitals throughout Great Britain are hampered by lack of funds and by ineffective organization. Moreover, the scope of the hospital in the country is widening. It is now recognized that hospitals are not intended alone for the treatment of critical advanced or emergency cases. Under changed conditions this idea was exploded and the criterion for admission to a hospital now should be essential treatment. Reconstitution of the hospitals and reorganization of the hospital system of Great Britain is needed to place these institutions and their management in keeping with the altered conditions of life which obtain here. Not only is there a hospital shortage in Great Britain but in all parts of Europe. In Paris the hospitals are full to overflowing and especially the maternity hospitals. One cause given for this congestion is that hospitals in France have always had sixty or seventy per cent. more patients than in England and owing to the want of sufficient housing accommodation in Paris and to the fact that the houses are not sufficiently heated the shelter and comfort afforded by the hospital are more eagerly sought by persons in ill health than ever before. Patients, who in ordinary times would be treated in their houses, under the abnormal conditions which now exist, seek hospital accommodation and treatment. Of course, the accommodation is wholly inadequate and a grave problem has to be solved. How this is to be done is one of the questions of the day.

Editorial Notes and Comments

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EXAMINATION OF THE EYE AS A FACTOR IN DIAGNOSIS.

Papers dealing with the importance of teamwork in diagnosis are plentiful. By teamwork is meant the thorough examination of each patient by each member of a group of practitioners and specialists gathered together for this procedure. Such groups have been formed and are in process of formation here and there, although the system has not been widely adopted. It is evident that the success of each group depends not only on the careful and painstaking manner in which each member performs the part of the work assigned to him, but also on the rule that each patient shall be examined by each and every specialist, and the rigid adherence to this rule even when no symptoms are complained of which would indicate the need for a certain specialist's services.

These remarks are suggested by a very interesting case reported by T. J. Dimitry in the *New Orleans Medical and Surgical Journal* for February. The patient, a man of forty-four, had been operated on two and a half years before for gallstones, when it was said that a ruptured gastric ulcer was found. A few months later another operation, gastroenterostomy, was performed. The symptoms which had called for these interventions recurred and in 1919 he came into the hands of a group which made and recorded a very thorough examination. Not a single indication pointed to a need

for an eye examination; all the evidence, including the laboratory and x ray examinations, seemed to point to a condition demanding an abdominal section. But the rule was adhered to and the ophthalmologist made a very thorough examination of the eyes, recording normal conditions of the tissues from the lids backward until he arrived at the fundus. Here he found a low degree of neuroretinitis in each eye, with a choroiditis associated with atrophic changes in the left, in spite of the fact that the patient had good vision. The fundus condition suggested syphilis. The blood Wassermann of both the patient and his wife was negative, that of his spinal fluid was negative up to one and a half c.c., but the globulins were increased. Although the blood Wassermann of his wife was negative, she showed the triad of Hutchinson indicating inherited syphilis.

Taking all of these facts into consideration the persistent symptoms referable to the right upper quadrant of the abdomen, the history *in toto*, the x ray pictures, and the gastric analysis were not incompatible with a luetic condition of the stomach. Antisyphilitic treatment was inaugurated and the patient at once improved remarkably. The diagnosis of transmitted hereditary syphilis seems to have been made conclusively. The strongest factor in the diagnosis was the eye findings, which would have escaped notice but for the rigid rule to examine every organ. Next in strength was the globulin increase in the spinal fluid. The two combined guided the group in the right conclusion in a case that was not so obscure as misleading in its symptoms.

THE DIAGNOSIS OF APPENDICITIS IN INFANCY AND EARLY CHILDHOOD.

It is more difficult to make a diagnosis of appendicitis in very young subjects or infants than in the adult, the principal difficulties being: The variable onset of the process, the difficulty of obtaining a correct history, and the child's defense against examination which prevents localization of maximum points of pain, while if the child is older errors in the interpretation of the symptomatology are likely to arise. In fact, a child does not always locate the abdominal pain on the right side, but rather in the regions of the umbilicus, epigastrium, and especially the stomach. Any young child who complains of abdominal pain, no matter in what part, should be regarded with suspicion and appendicitis seriously considered, because abdominal

affections met with in early life are few in number and for this reason the chance of making a wrong diagnosis is small.

The most common error is to make a diagnosis of gastroenteritis instead of appendicitis. Pneumonia at its onset may be mistaken for appendicitis; in young children the initial pleural painful point is usually absent, the child complaining rather more of pain in the abdomen. Vomiting at the onset of both pneumonia and appendicitis is common, but the vagueness of the painful symptoms, the softness of the abdominal walls, and especially percussion and auscultation of the thorax, particularly in the axilla, will prevent making a mistake. Occasionally, during the onset of coxalgia, the child will complain of pain in the iliac fossa, but at the same time it will usually complain of pain in the knee, while peritoneal phenomena will be wanting completely. A diverticulitis has the same clinical picture as appendicitis but as it requires surgical treatment an error in diagnosis will cause no harm and often the real condition of affairs will not be recognized until the abdomen has been opened. A difficult differential diagnosis is that of appendicitis and typhoid in its early phase because in addition to the usual symptoms the child may complain of pain in the right iliac fossa; but typhoid fever is more frequent after the age of five and is exceptional in younger subjects, although it occurs during the first year of life. In appendicitis beginning with vomiting, the diagnosis of pneumococcal, gonorrheal, or tuberculous peritonitis might be made, but the antecedents, the shape of the abdominal doughiness offering zones of dullness in the region of sonorous areas will allow one to eliminate tuberculous peritonitis. In the pneumococcal type diarrhea is present from the beginning instead of constipation as in the case of appendicitis. Gonorrheal peritonitis, which occurs frequently in little girls following a vulvovaginitis, may also have a sudden onset, but the process rapidly subsides in most instances. In these types of peritonitis the pain is more diffused than in appendicitis and does not become localized in the right iliac fossa.

The intensity of the constipation and vomiting may lead the physician to suspect a strangulated hernia, but a careful examination of the hernial rings will soon settle the question. The process most closely simulating appendicitis symptomatically is intestinal invagination, which is frequent in infants. There is constipation, distention, dullness, and even tumefaction in the right iliac fossa, but the onset of appendicitis is marked by a rise in temperature which is absent in invagination; the pain of intestinal occlusion, other than colic, does

not exist, while in invagination the stools will be bloody and fecal vomiting soon supervenes. Finally, the tumefaction in the iliac fossa when due to invagination is mobile transversally. Much importance is to be placed on the child's expression, which changes so quickly in early life. Rectal examination should never be overlooked, as it will reveal a tumefaction in the region of the cecum or a pelvic pus collection, essential diagnostic signs indicating urgent surgical intervention.

THE PREVENTION AND ARREST OF TUBERCULOSIS IN CANADA.

Dr. George Porter, secretary of the Canadian Association for the Prevention of Tuberculosis, contributed some interesting data regarding the control of tuberculosis in Canada. Apart from an annual subsidy to this association and quarantine at ocean ports, the federal government has not taken any part in the control of this disease, leaving all such matters of public health to the nine provinces. Recently, however, on account of returned tuberculous soldiers, the government has taken over the care of these; and now that Canada has a well organized Department of Public Health, a nationwide campaign may be expected against this disease.

Twenty years ago there was but one small institution of this character in Canada. Ten years afterward six were established. At the present time there are forty sanatoria in addition to those set apart for soldiers. Only thirty patients could be accommodated twenty years ago. In ten years there were three hundred and fifty beds. Now Canada has three thousand five hundred beds. More than a million dollars are spent annually in the maintenance of civilian institutions; and the total value of these institutions is more than three million dollars.

The National Sanatorium was the pioneer organization, which began work in 1906. This association has now accommodation for eight hundred patients in Muskoka and Weston, near Toronto. The province of Nova Scotia was the first to establish a provincial sanatorium, and the city of Hamilton, Ontario, was the first to establish a county or municipal institution of this character. The province of Ontario, while not conducting an institution of its own, allows one fifth of the original cost of the building up to five thousand dollars, and three dollars and fifty cents a week for each patient for maintenance, and the municipality from four dollars and ninety cents to seven dollars per week. Some provinces allow more, some less, while two of them have done practically nothing.

The incidence of tuberculosis in the Canadian Army is less than that in the civilian male population of military age. The number of returned tuberculous soldiers up to July 1, 1918, was about four thousand, with at that time about fifteen hundred abroad to be returned to Canada which at the present time has been accomplished. As there were fifty thousand, eight hundred and sixty nine Canadians killed in action or dying from wounds, Canada has had nearly as many civilian deaths from tuberculosis during the war period as fatalities among Canadian soldiers.

THE COMMON SENSE MODE OF PREVENTING AND TREATING INFLUENZA.

It must be admitted that the cause of influenza is unknown. That is to say, that although Pfeiffer's bacillus may have something to do with the causation of the disease and, in fact, may be the particular germ which initiates an attack of the influenza, it has not been proved definitely. It appears more or less certain that other and more deadly germs than that which has been known as the bacillus of influenza are concerned in the development of the malady and are responsible for the serious and fatal results. It is true that the influenza germ, if such germ is the Pfeiffer bacillus or another, may assume particularly virulent powers and yet weight of opinion perhaps bears toward the theory that fatal results from an attack are due to complications. It is not the cause, however, which we desire to discuss, so much as common sense measures of prevention and treatment.

The essential principles of protection may be stated as follows: Avoidance of unnecessary personal contact with persons suffering from influenza, however mild, or from so-called influenzal colds; the avoidance of chill, and the maintenance of physical vitality at the highest possible level. It is advisable to keep out of overcrowded, overheated and badly ventilated rooms in which a vitiated stuffy atmosphere lowers the resistance of the body as a whole, and especially of the breathing apparatus. Moreover, it is the act of discretion to take all common sense precautions against damp, cold weather. The diet is a matter of importance. Good nourishing food should be taken in plenty while pleasant but unnutritious food should be avoided. When epidemics of any kind are prevalent it is wise to keep the human machine in efficient working order. Influenza often spreads because individuals will not be warned by the typical symp-

oms. They continue to go about and spread the infection broadcast. When an epidemic is known to be in the district, or even in the country, the occurrence of several of the symptoms of influenza should immediately arouse suspicion, and the person affected should be put to bed immediately, while other members of the household should seize the opportunity of putting into practice measures of prevention.

Bravado is foolish, criminal rather, where influenza is concerned. It is a disease not to be trifled with, for not only will it bring down swift vengeance on the head of the rash and heedless trifier, but carelessness may be the means of disseminating infection. Bed is the only place for persons suffering from this ailment of protean guise, as what may seem at first a mild illness may develop with tragic rapidity into a deadly disease unless the greatest care is observed.

The patient should stay in bed until the temperature has gone down to normal and remained so for twenty-four hours. There is no therapeutic specific for influenza and treatment largely depends upon eating light and nutritious food, proper nursing, assistance of the general bodily functions, and the most meticulous care as to avoiding chill. The question of the value of alcohol in the treatment of influenza is a vexed one. Some medical men pin their faith on its judicious use and others utterly condemn its administration. It is difficult or rather impossible to write dogmatically on the point. It is a matter which should be left to the medical attendant and treatment should be in accordance with the symptoms exhibited.

The subject of vaccine treatment is another debatable point. No vaccine has been devised that will surely prevent influenza. At the same time, this is not to say that vaccine treatment is valueless for preventive purposes. Many medical men have satisfied themselves as to its efficacy and it has been stated recently that the British Ministry of Health has arranged for a supply of special vaccine for general practitioners who wish to use it.

Do not worry, is another common sense axiom for avoiding influenza. The mental state reacts on the body and tends to predispose to infection. The sufferer from influenza should be isolated as far as possible. This is to safeguard the community, at least to some extent.

There are no golden rules for the prevention or treatment of influenza, but the rules of common sense are nearly golden according to our present knowledge of the prevention and treatment of influenza. That an ounce of prevention is worth a pound of cure is especially true of influenza.

ANOTHER MARTYR TO SCIENCE.

The death of Dr. Cecil Lyster, director of the radiotherapeutic department at the Middlesex Hospital, London, adds one more name to the list of martyrs to science. Doctor Lyster died on January 26th, following a devotion to scientific work continued for seventeen years, during which time he was repeatedly called upon to undergo operative treatment for the relief of symptoms acquired in the course of his investigations. Although his main object—to determine the influence of radioactivity upon malignant growths—remained unaccomplished, he was buoyed throughout his work by the conviction that eventually success would attend his efforts. The *Medical Press*, in commenting upon his death, says:

"The name of Lyster is now to be added to the list of those who have lost their lives as radiologists, and we cannot help feeling that for these men some means should have been found for conferring a special distinction upon them. In the pursuit of science they died the martyr's death in the cause of humanity. A cold irresponsible world left them to linger out their numbered days, uncheered by any official recognition of their devoted self-sacrifice. The heroism of Lyster's work peculiarly entitled him to some honor or mark of distinction. The standard of his heroism was equal to that in which military life is rewarded by the Victoria Cross. It is possible to imagine that had some distinction been conferred upon him he would have derived happiness during his last illness from the reflection that his fellowmen were grateful for his scientific work. The sympathy which the announcement of his death has caused has thrown into strong relief the opportunity which has been lost of fulfilling a duty to a dying man. As we go to press we note that the name of C. R. C. Lyster is included in the list of those awarded the honor C. B. E. Perhaps the spiritualists will be able to throw some light upon its posthumous value."

SANITARY REFORMS IN SPAIN.

Now more than ever Spain needs the cooperation of her medical profession, for she is about to institute extensive sanitary reforms, among which is the creation of a ministry of health. In the ministry of the interior a director general of public assistance has been appointed, with a complete reorganization of that important function. There has also been approved a plan for the creation of a central institute of hygiene at Madrid and of ten provincial institutes, designed, among other things, to furnish free serum and vaccine to charitable organizations and hospitals, have charge of the potability of drinking water throughout Spain, and to inspect food products. At the same time, private enterprises are not lacking. An institute of biology and serotherapy has been established at Madrid under the direction of Doctor Pittaluga, with professors Cortezo, Maranon, and Pi Suner among the administrators. The institute is dedicated to the study and preparation of serums, vaccines, and opotherapeutic products. Under the

leadership of Dr. Aguado Marinoni there has been established, also at Madrid, an institute of social medicine, among the founders of which are Doctor Pittaluga, Doctor Maranon, Doctor Pinilla, Doctor Montaldo, and Doctor Malo de Poveda. A committee of education, hygiene, and health has been formed at Madrid under the presidency of Doctor Cesar Chicote, assisted by Doctor Verde, Doctor Ellicequi, Doctor Masip, Doctor Albeniz, and Doctor Taboada, to spread abroad hygienic ideas and propaganda for scientific progress. This organization is aided by a woman's committee on public health.

News Items.

Doctor Bozzolo Dead.—Professor Camillo Bozzolo, a member of the faculty of medicine of Turin University and of the Italian Senate, died February 28th at Turin.

Medical Society of the Missouri Valley.—This association will hold its annual meeting September 6th and 7th at Omaha. Dr. Charles Ryan, of Des Moines, Iowa, is president, and Dr. Charles Wood Fassett, of Kansas City, is secretary.

Volunteer Hospital Closes.—The Volunteer Hospital, which was opened in Baltimore several weeks ago when influenza threatened, closed temporarily, to reopen later, as a general hospital. It is hoped to have repairs completed so that the hospital can be opened by March 1st.

Hospitals to Get a Million Dollars Each.—Through litigation connected with the will of Charles G. Thompson, of New York, at least \$1,000,000 each eventually will go to the Presbyterian Hospital, the New York Hospital, and various other educational and charitable institutions.

X Ray Movie.—A press dispatch from Paris tells of the perfecting by Professor Lormon and Professor Comandon of a combined x ray and motion picture apparatus which permits observation of the functioning of various organs. Up to the present films have been taken only of animals, but modifications of the apparatus are expected to render possible the photography of human interiors.

Women Members of College of Physicians.—Two women physicians, Dr. Anna Weld, of Rockford, Ill., and Dr. Leila Andrews, assistant professor of pediatrics in the University of Oklahoma School of Medicine, were admitted to membership in the American College of Physicians, at its meeting in Chicago in conjunction with the Congress on Internal Medicine. They are the first women members of this organization.

Prophylactic Stations for Baltimore.—The announcement by Dr. George Walker, of the Johns Hopkins Hospital, of a plan to combat venereal disease by the establishment of prophylactic stations in Baltimore has brought out differences of opinion among medical men and others. Many Johns Hopkins physicians are reported to be in favor of the project, which was given endorsement at a recent meeting of the Baltimore City Medical Society.

Doctor Blumer to Leave Yale Medical School.

—Dr. George Blumer, dean of the Yale Medical School, has offered his resignation, to take effect at the close of the school year in June. It is understood that he will take up consultation practice. Doctor Blumer has been professor of medicine for thirteen years and dean of the medical school for ten years.

New Baltimore Hospital.—The Morrow Hospital for the advancement of social hygiene and the treatment of social diseases will be opened shortly in the buildings of the Hahnemann General Hospital, Baltimore. It will be under the guidance of the U. S. Public Health Service, the Maryland State Board of Health, and the Baltimore Health Department. The new hospital was founded following the suggestion of Dr. Hugh Young and Dr. Anthony G. Rytina.

International American Sanitary Congress.

The sixth International Sanitary Congress of the American Republics will be held December 12 to 20, 1920, at Montevideo, Uruguay. The program will be issued by the International Sanitary Bureau in Washington, of which Dr. Rupert Blue, formerly surgeon general of the U. S. Public Health Service, is acting chairman. The chief subject for discussion will be the improvement of sanitary conditions in American countries. Dr. E. Fernandez Espiro is chairman of the organization committee.

Health Poster Competition.

—The Bureau of Venereal Diseases of the New York State Department of Health offers a prize of \$100 to the person who best interprets the expression Healthy Parents Head Happy Families in a colored drawing that can be reproduced as a poster in public health work. Posters in use by the Bureau at present picture the horrors following in the wake of venereal diseases, and it is felt that for the sake of constructive work a poster depicting robust health should be employed. The time limit for the competition is May 1, 1920.

Seaboard Medical Association.

—At the annual meeting of the Seaboard Medical Association, of Virginia and North Carolina, the following officers were elected: President, Dr. Cyrus Thompson, Jacksonville, N. C.; vice-presidents, Dr. E. C. S. Taliaferro, Norfolk, Dr. Zenas Fearing, Elizabeth City, N. C., Dr. Thomas B. Luxford, Princess Anne, Va., Dr. Stuart M. Mann, Moyock, N. C.; secretary, Dr. Clarence Porter Jones, Newport News, Va.; treasurer, Dr. George A. Caton, Newbern, N. C., both of the latter reelected.

Wesley Hospital Plans Expansion.

—A five year program of expansion determined by the officers of Wesley Hospital, Chicago, involved the addition of \$10,000,000 worth of new buildings and the raising of an endowment fund of from \$10,000,000 to \$15,000,000. Sufficient funds have already been pledged to insure construction of the first of the four new buildings desired, which will be utilized as an addition to the nurses' home. The second building will be a new section to the hospital proper which will add 1,200 beds to its capacity; a building for contagious diseases will next be erected, and lastly a new power plant.

Woman's Medical Society of New York State.

—The fourteenth annual meeting of this society will be held March 22nd at the Hotel McAlpin, New York, under the presidency of Dr. Elizabeth B. Thelberg, of Poughkeepsie. An interesting program has been provided for both the morning and afternoon sessions, including a paper by Dr. Winifred Cullis, of London. At luncheon the members of the State society will be guests of the Women's Medical Association of New York City. In the evening there will be a banquet at which Dr. Josephine Baker, of the Department of Health, will be toastmistress.

Priority Phone Privileges Wanted by Physicians.

—Priority telephone service for physicians, surgeons, and dentists has been requested in a suggestion made to the New York Telephone Company, the health commissioner, and the public service commissioner of the second district by the Doctors' Service Corps, of New York. The plan suggested is that the symbol capital D be prefixed to the telephone number of every physician, surgeon and dentist in New York city. A similar mark should be placed over each such number at the various operating station switchboards, so that the most efficient service possible could be given on these priority calls.

Académie de Médecine to Celebrate Centenary.

—The Académie de Médecine, which meets in Paris but has associates and correspondents throughout France and all civilized countries, is about to celebrate its centenary. It was founded by royal decree on December 20, 1820, and during its hundred years it has numbered among its officers such great leaders as Laënnec, Pinel, Dupuytren, Magendie, Trousseau, Cruveilhier, Claude Bernard and Pasteur. This year it has chosen as its president M. Laveran, the discoverer of the malarial parasite. The Académie de Médecine holds a position unique among the medical societies of the world.

Vital Statistics, New York State.

—Both the birth rate and the crude death rate of New York State in 1919 were more than ten per cent. less than the average, according to a tabulation of the movement of mortality in the official bulletin of the State Department of Health. The infant mortality rate was eighty-three, as compared with ninety-seven in 1918, and the death rate of children under five years of age declined 25.8 per cent. below the average. The death rates by causes, with four exceptions, were from one to ninety-five per cent. below the average for the five year period 1913-1917; the exceptions were diphtheria, influenza, cancer, and automobile accidents, each of which showed an increase. The death rate from automobile accidents alone showed an increase of more than 106 per cent. The death rates from typhoid fever, measles, and whooping cough were each more than fifty per cent. less than the average; the pulmonary tuberculosis rate was eighteen per cent. less; diarrhea and enteritis (under two years) showed a decrease of more than one third, and puerperal septicemia showed a decrease of thirty per cent. The death rate from suicide decreased more than twenty-three per cent.

Western Electrotherapeutic Association.—The annual meeting of this society will be held May 27th and 28th, at the Little Theatre, Kansas City, under the presidency of Dr. Burton B. Grover, of Colorado Springs. A number of men of national reputation will present papers. Immediately preceding the meeting, during the week of May 24th, a second postgraduate course of lectures on electrotherapy will be given by Doctor Grover.

Augustana Hospital Campaign.—Augustana Hospital, Chicago, has instituted a campaign for \$700,000 for new building and equipment. The plans call for the construction of a seven-story pavilion containing 200 private rooms, an administration building, and a heating and power plant which will be constructed as a separate building. It is proposed to build the new hospital at the corner of Garfield avenue and Sedgwick street, as there is no room to build any additions to the present structure.

Hospitals to Get Fund at Once.—Announcement has been made by the United Hospital Fund, of New York, that because of the shortage of funds of many of the member institutions, a preliminary distribution of approximately \$400,000 would be made at once. The remainder of the fund, which is still in the process of collection, will probably be distributed about May 1st. The basis of distribution is the number of days of free treatment given during the past year and the cost a day. Under the preliminary distribution St. Luke's receives \$27,850.90, Mount Sinai \$27,752.32, New York \$23,118.26, Presbyterian \$18,472.12, Lincoln \$16,567.90, Lenox Hill \$14,409.42, Roosevelt \$13,318.92, Postgraduate \$11,868.72, French \$6,789.28, Flower \$5,945.54 and Hahnemann \$3,649.32.

Personal.—Dr. Walter C. Allen has been appointed surgeon to the Rochester plant of the General Electric Company.

Dr. Ludwig Hektoen, of Chicago, has been elected an honorary member of the Pathological Society of Philadelphia.

Dr. Griswold D. Nammack, of Far Rockaway, N. Y., has been appointed senior resident surgeon at Bellevue Hospital.

Dr. Marcus A. Curry, Graystone Park, N. J., has been appointed superintendent of the Morris Plains State Hospital pending the election of a permanent superintendent to succeed the late Dr. Britton D. Evans.

Count Pierre de Nouy, who worked for the French Mission here during the war, has arrived to take charge of the new laboratories of the Rockefeller Institute, in connection with Dr. Alexis Carrel's research work.

Dr. Edwin O. Jordan, professor of bacteriology and chairman of the department of hygiene and bacteriology at the University of Chicago, has been chosen a member of the International Health Board of the Rockefeller Foundation.

Dr. Swale Vincent, professor of physiology at the University of Manitoba, Winnipeg, has been appointed professor of physiology in the University of London, Middlesex Hospital, and will probably assume his new duties early in May.

Ripe Olive Danger Removed.—A statement made by Dr. Carl Alsberg, chief of the bureau of chemistry of the U. S. Department of Agriculture, is to the effect that ripe olives may be eaten with impunity within a few months as a result of changes being made in preserving methods. One of the principal packing changes is abandoning glass containers, which prevent proper sterilization. All cases of ripe olive poisoning have originated from olives packed in glass, headed, and none have resulted from olives packed in tin cans nor from pickled green olives.

Night Medical Service for Paris.—The Prefect of Police of Paris has organized a service of night doctors for Paris, who will be available from ten o'clock at night until seven in the morning. The number will at first be thirty, to be increased if necessary. Paris is divided into five sections, in each of which a doctor, is permanently on duty during the hours stated at a central police station, where a room containing the necessary accessories will be available. The call for the doctor will be made to the nearest police station by the patient, and a telephone message will then be sent to the central station and at the same time an automobile will be despatched to take the doctor to the patient. Each car is furnished with a case containing first aid appliances. The medical service is so organized that the turn of each doctor comes once in six days. Labor cases will be served by the midwives attached to the night medical service; if a midwife has to resort to a doctor for help she will be able to requisition his services on the lines indicated. The charge for night visits by the doctor will be a uniform one of fifty francs, except in cases of extreme poverty.

Free Diagnostic Clinic for Buffalo.—The Board of Managers, Department of Hospitals and Dispensaries, of Buffalo, N. Y., announces the inauguration of a free diagnostic clinic for the use of physicians of Buffalo and Erie County. The clinic is for diagnosis only and is designed primarily for the use of physicians' pay patients who cannot afford the customary consultation fee. No treatment will be given. A report of the findings in each case, signed by the examiner, will be mailed to the physician sending the patient. The members of the diagnostic staff are chiefs of divisions on the attending staff of the Buffalo City Hospital and also hold professorships in the medical college. They are: Dr. T. B. Carpenter, urology; Dr. G. F. Cott, otolaryngology; Dr. F. C. Goldsborough, obstetrics; Dr. J. E. King, gynecology; Dr. H. G. Matzinger, psychiatry; Dr. E. R. McGuire, general surgery; Dr. D. C. McKenney, proctology; Dr. C. R. Orr, roentgenology; Dr. W. W. Plummer, orthopedics; Dr. J. W. Putnam, neurology; Dr. DeLancey Rochester, Dr. N. G. Russell, general medicine; Dr. E. A. Sharp, special neurology; Dr. DeWitt H. Sherman, pediatrics; Dr. D. H. Squire, dentistry; Dr. E. G. Starr, ophthalmology; Dr. G. W. Wende, dermatology; Dr. H. U. Williams, laboratory; Dr. A. E. Woehner, tuberculosis. Dr. Herman K. DeGroat, medical superintendent of the Department of Hospitals and Dispensaries, will be in charge of examinations.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

PHYSIOLOGICAL EXTRACT OF DIGITALIS.

BY CHARLES GREENE CUMSTON, M. D.,
Geneva, Switzerland.

For some time scientists in France have been experimenting with what are called physiological extracts of certain drugs, digitalis among others. The physiological extract of this plant is the direct consequence of E. Perrot and A. Goris's discovery of practical and industrial means for the sterilization of plants. By sterilization is meant the destruction of endocell diastases which, as is well known, are the cause of all the changes which the active principles undergo after the plant has been harvested. In the case of digitalis, particularly, Brissemoret and Joannin had previously shown that the oxidase of the leaves of digitalis was about the only thing responsible for the changes taking place in the tannoid complexes of the drug and the progressive decrease of its pharmacodynamic activity.

In order to realize this destruction of the endocell diastases, the plant, immediately after having been picked, is submitted to the action of vapors of alcohol at ninety-five degrees under moderate pressure and at a low temperature. Thus an unalterable primary base is obtained which can be at once employed for obtaining the galenical preparations and the physiological extract in particular, or it can also be used itself in its primal state.

The plants, when once sterilized by the Perrot-Goris procedure, are dried and powdered. The powder is treated by alcohol at a given percentage, according to the nature of the active principles. Evaporation is done in vacuum without the intervention of heat. The extracted mass, which contains chlorophyll, is malaxated with anhydrous ether. This dissolves the chlorophyll, as well as the fatty, waxy, and resinous matter, but leaves the active principles intact. The residue dried in vacuum—always without heat—constitutes the physiological extract.

Physiological extracts are in the form of a powdered mass and usually light in color; their odor and taste recall those of the fresh plant. Being very hygroscopic, for the most part, they dissolve in water in all proportions. Physiological extracts represent the total of the active complexes such as they are found in the vegetable in its natural state.

The physiological extract of digitalis is a yellow powdery mass, hygrometric, very bitter in taste, and with the odor of the fresh plant. A solution of twenty centigrams of the extract in twenty cubic centimetres of water is slightly cloudy, but after filtration gives a limpid yellow liquid. When shaken for some time a little froth results. The addition of a few drops of ammonia to the solution greatly increases its yellow tint.

Four cgm. of the extract are dissolved in a mix-

ture of two c.c. of alcohol, at ninety-five degrees, and one c.c. of water. One c.c. of this solution is poured into a small porcelain capsule and one drop of a very dilute watery solution of ferric chloride is added. The liquid becomes green, but is afterward decolorized by the addition of one drop of a one sixth alcoholic solution of sulphuric acid. If, at this instant, the capsule is placed on a water bath, and care taken to distribute the liquid uniformly over its sides, it will be noted at the end of evaporation that the walls will present a cinnabar red tint—reaction of the digitalin complex.

As I shall show, the pharmacodynamic action of the physiological extract of digitalis is comparable in certain respects to that of digitalin and other preparations of digitalis; however, it can be distinguished by distinct differential characters.

General toxicity.—This has been determined in the guineapig by intraperitoneal injections of the physiological extracts. The phenomena are identical and occur in the same order as in intoxication from digitalin. The animal, in the first place, manifests uneasiness and difficulty in respiration; then localized tremblings occur over the head and forelegs, the trembling may cease or, on the other hand, become generalized, or convulsions may arise at the same time, which are always bad from the viewpoint of prognosis. Occasionally, the phenomena subside and the animal survives, while in some instances the animal will appear to recover rapidly but dies suddenly a day or two later. The dose producing these toxic manifestations is from five to six centigrams to each kilogram of weight of the animal.

Cardiac toxicity.—This has been studied in the frog. The animal's heart is exposed and one centigram of the physiological extract is injected into the lymphatic sacs of the thigh. At the expiration of eight to ten minutes disturbances in the cardiac rhythm appear, consisting of an auriculo-ventricular dissociation and partial contractions of the ventricle. In a frog of medium weight the heart becomes arrested in systole in about twenty to twenty-five minutes.

Cardiotonic action.—This has been placed in evidence in the rabbit, cat, and dog, by H. Bosquet. After division of the bulb the thorax was opened and artificial respiration begun; two fish hooks stuck in the heart cavities transmitted the contractions by the intermediary of a wire to the registering apparatus. The solutions varied from one per cent. to 2.5 per cent. and were injected into the saphenous vein in the dog, and into the jugular vein in the rabbit and the cat.

Now, in these conditions, the cardiotonic action was manifest in the dog at the dose of five milligrams for each kilogram of body weight of the animal; in the cat and rabbit at one centigram. By practising coronary circulation on the isolated heart of the rabbit, a considerable increase in the height of the systoles, with a very fleeting hypo-

tonic effect, was observed with the extract in a dilution of one in 35,000.

Action on the rhythm.—Under the influence of digitalin the cardiac beat in the dog passes through three distinct phases: 1, A phase of slackening; 2, a phase of acceleration, and, 3, a phase of acceleration with arrhythmia. The last two phases are observed in animals having received two centigrams of physiological extract for each kilogram of animal; but in the dog and rabbit, the first phase, that of slackening, has never been observed. A medium dose of the drug has apparently no action on the frequency and increases it very little if at all. With larger doses the beats increase and become quite irregular. Cats are the exception to this and offer a slackening at the onset of the experiment. If digitalin, or a preparation of digitalis, is injected into a dog, from the very onset of the action of these preparations frequent extrasystoles will be noted, constituting the bigeminal rhythm. An analogous state is never observed with the physiological extract of the drug, according to H. Bosquet. The heart does not accomplish a supplementary systole. Arrhythmia occurs only at the last phase, but it has a disordered character and in no way recalls the classic bigeminism created by the ordinary preparations of digitalis. Frank had already remarked that before death from a heart intoxicated by digitalin the beats became regular and this premortal regularization is also observed when the physiological extract of digitalis is used; but there is never tetanization of the myocardium, nor fibrillar tremulation, as in the case of digitalis; death takes place suddenly with arrest of the heart in diastole. (H. Bosquet).

Action on the pneumogastric.—It is quite like that of digitalin and the usual preparations of digitalis. A period of heightened excitability is succeeded by a period of inexcitability which usually coincides with the phase of acceleration of the beats, but which may be manifest in non-accelerated hearts or those with slackening, as in the cat.

Action on the blood pressure.—Physiological extract of digitalis produces an increase of the arterial tension and this effect is manifest with cardiotonic doses; larger doses produce a temporary drop of the blood pressure before increasing it. This hypertensive action is a consequence of an increase of the amplitude of the cardiac beats; perhaps a vasoconstrictor phenomenon intervenes, but this point remains to be settled.

In conclusion it may be said that the physiological extract of digitalis possesses a pharmacodynamic action common to digitalin and the preparations of digitalis; but it also has its own special action. It does not slacken the cardiac rhythm during the first phase of its influence on the heart; it does not produce extrasystoles, and lastly, it does not give rise to tetanization of the myocardium nor to fibrillar tremulation in the premortal period of the in-oxication. Chauvenet studied twenty cases treated with physiological extract of digitalis, a number of which would be insufficient if all the peculiarities of the action of the drug were to be investigated, but he has come to some conclusions

of a general order in respect to its therapeutic value. We shall now successively consider the action it exercises over the different functions of the various systems.

Action on the skin and local absorption.—Hypodermic injections of digitalis and digitalin are very painful and it is not uncommon to encounter very serious local action, from simple lymphangitis to suppuration and sloughing. Injections of the physiological extract of the drug are usually devoid of pain; sometimes a little redness and discomfort may occur, but they are fleeting in duration. On account of the solubility of the extract, local absorption quickly takes place and no induration is left behind.

Cardiotonic action.—This is rapidly manifest after a hypodermic injection. The precardiac shock is stronger. The increase of the amplitude of the contractions is made evident by the pulse which becomes fuller and better struck. If the heart is dilated, it assumes its normal size, a fact which is shown by a decrease of the precardiac dullness; the heart sounds become more distinct and the murmurs reappear.

Action on the frequency of the rhythm.—The frequency is decreased and the rhythm becomes more regular. These data have been noted in all cases of cardiac insufficiency and in some were most distinct. The paroxysms of palpitation and extrasystoles have been happily influenced by the drug in some cases and not a single instance of bigeminism was noted, which is in perfect accord with data obtained experimentally with the physiological extract.

Action on the blood pressure.—The pressure is increased and in all cases the pulse becomes stronger and better struck. In one case the pressure was 110 before exhibition of the extract and rose to 114 after.

Action on the urinary secretion and absorption of edemas.—The diuretic action of the physiological extract can be compared with that of digitalis. Since Withering's publications, it is known that this action, although a completely indirect one, is subordinated to the presence of edema or serous collections. According to Huchard's expression, the patient micturates his infiltrated liquids. Now, the physiological extract has almost invariably shown itself to be a very powerful indirect diuretic; the amount of urine voided has been from 1,500 to 3,000 c.c., and far above the daily amount of fluid ingested by the patient. This action appears to be more rapid than with digitalis, since in most cases it took place in less than twenty-four hours after its hypodermic exhibition, in eight hours in one instance.

Action on the respiratory apparatus.—The physiological extract has a very marked influence upon the pulmonary symptoms consequent upon cardiac insufficiency; the respiratory movements become easier and more ample, while the dyspnea diminishes or disappears; on account of the more energetic work of the myocardium the pulmonary circulation is improved, stasis decreases at the bases and hematosis takes place with greater ease, with a decrease of cyanosis.

Digestive apparatus.—Of eleven cases in which this preparation was exhibited *per os*, two presented digestive disturbances which Chauvenet believes might have been avoided had the drug been given hypodermically. In the first case bilious vomiting occurred twelve hours after the ingestion of twelve and a half centigrams of the extract; in the second case diarrhea occurred the following day after exhibition of the preparation. A diminution of the hepatic congestion occurred in all the cases treated, being made evident by a diminution in the size of the viscus and less tenderness on pressure. In one patient the liver extended down to the pubis, but two days later it only attained the umbilicus.

As will be seen from the description given, physiological extract of digitalis slows the heart's action, reinforces its energy and regulates the beats. It has a diuretic action quite as marked and perhaps more rapid than digitalis, is consequently endowed with a therapeutic activity at least equal to that of the best preparations of this plant, and has the advantage over all of them from the fact that it can be given subcutaneously. It can, therefore, be exhibited in place of other forms of digitalis when these are indicated. The indications do not reside either in the lesions of the endocardium or pericardium, against which the drug is radically powerless, or in the more or less exaggerated size of the heart, which it is absolutely impossible to change, but solely in cardiac anomalies, or in other words, in certain anomalies of the cardiac functions.

Arrhythmia.—Certain arrhythmias occurring in anemic nervous subjects, or in connection with dyspeptic disturbances, should never be treated with digitalis, but this does not apply to extrasystoles consequent upon a lesion of the heart, as dilatation of the organ favors extrasystoles. Since digitalis diminishes this dilatation it will, for this very reason, have a favorable influence over extrasystole, and in one of Chauvenet's cases this was very marked. The extract can be exhibited for modifying the attacks of paroxysmal tachycardia in Basedow's disease; the other tachycardias can be treated with digitalis which, in moderate doses, will bring about a notable slackening of the pulse rate within a very short time. In the perpetual arrhythmias occurring in arteriosclerosis, small doses of digitalis, although they may not cause the arrhythmias to disappear, will at least improve the phenomena consequent upon insufficiency of the myocardium.

Hyposystolia.—All cases of cardiac insufficiency, whether the result of valvular lesions or of the myocardium, of pulmonary or renal affections, should, according to Huchard, be treated with digitalis. The physiological extract can therefore be prescribed every time the phase of compensation commences to wane—*en systolia*—and the first time that evidences of myocardial weakness appear, such as exertion dyspnea, paroxysms of pseudoasthma, precordial palpitation or pain, slight pulmonary edema, obstinate bronchitis, malleolar edema, and decrease of the urinary secretion.

Asystolia.—The physiological extract is indicated

in all cases of asystolia. The symptoms will be quickly improved, unless the patient is too accustomed to digitalis.

Dropsy.—In cardiac dropsy the beneficial effect of digitalis is evident, but this does not always apply to renal or dyscrasic forms which, nevertheless, may sometimes be benefited by the exhibition of the drug. On account of its diuretic power the physiological extract seems to be particularly indicated.

Infectious myocarditides.—It is classic to exhibit digitalis in pneumonia, bronchopneumonia, and in influenza, but in typhoid its administration is a very moot subject. Skutetzky and Jaksch, not longer ago than 1911, advised the use of an infusion of digitalis leaves to which twenty drops of sulphuric ether were added, in cases of weak myocardial action in typhoid, but on account of the necessity of sparing the digestive track in this affection as far as possible, it would be more prudent to select the physiological extract which can be given subcutaneously.

Indications and contraindications.—The special indications for the use of the physiological extract are derived from the fact that the extract can be used subcutaneously. It should be substituted for all other preparations of digitalis when a rapid action of the drug is desired; when an exact dose of the drug introduced into the organism is wanted, the extract can be given subcutaneously, when its absorption will be constant and complete, which does not always occur when the drug is exhibited *per os*; and also when it is impossible to prescribe it by mouth; finally, and this is its particular indication, in all cases where the digestive tract must be handled with care, as in gastric intolerance, with nausea, pain or vomiting, in diarrhea, and intense hepatic congestion. The contraindications to the use of the drug are aneurysm, uremia, renal impermeability, coupled rhythm, and angina pectoris.

Posology.—The extract is given in doses of from one to two centigrams in twenty-four hours as a cardiac tonic; from four to five centigrams as a cardiac sedative given for two or three consecutive days; from fifteen to twenty centigrams in one dose in cases of asystolia. This dose in asystolia cannot be kept up *per os*, therefore the extract should be given subcutaneously in a dose of from five to ten cubic centimetres.

Treatment of Delirium Tremens.—F. Wyatt-Smith (*British Medical Journal*, December 6, 1919) reports on the use of sedatives in delirium tremens. He found that hyoscine in pharmacopœial doses was useless, but when used in large doses repeated at frequent intervals it gave excellent results. For a slower acting though more permanently useful drug, he considers sulphonal as the best drug. Hyoscine in doses up to one thirty third of a grain, repeated in four hours if necessary, produced no untoward effects in the acute early stages. Thirty grains of sulphonal, night and morning, likewise produced only desirable results. Two cases are reported.

Surgery in Diabetics.—Marcel Labbé (*American Journal of Surgery*, November, 1919) asserts that there are few situations more delicate than that of the physician who has to assume responsibility for surgical intervention in a case of diabetes. One of the main conditions rendering operations in diabetics dangerous is hyperglycemia, which favors suppuration. Some years ago the reduction of the hyperglycemia by a suitable diet, prior to operation, was approved. Today suppuration is less feared. In aseptic operations it is rarely a fatal complication and numerous cases of healing by primary intention could be cited. In order to cause suppuration there must be not only a predisposition but bacteria, and these are not usually introduced by the surgeon. Complications resulting from hyperglycemia, while they often delay the cure, are practically never fatal. They can be prevented by reduction of the hyperglycemia and glycosuria, by appropriate diet, with carbohydrate restriction. This preventive treatment is especially useful when surgery is performed in areas like the perineum, subject to soiling by the urine.

Acidosis is a much more serious menace. It causes postoperative coma and hastens death in many diabetic patients. Numerous conditions affect the course of postoperative acidosis, viz., the severity of the diabetes, the nature of the operation performed, the anesthetic employed, and the treatment followed.

In diabetic patients, suffering from emaciation and acidosis, the slightest operation is dangerous; chloroform is almost always fatal, and a simple incision, even without anesthesia, may lead to coma. In diabetic patients who are not emaciated but in whom acidosis exists the danger is also great, but the resistance is better. Many of these patients survive after operations under general anesthesia. In diabetic patients without emaciation or acidosis, coma, as a rule, need not be feared, but it should not be forgotten, because operation under an anesthetic may cause the appearance of an acidosis in a subject who did not present this condition before operation. Such a complication was noted in a woman suffering from diabetes. Before operation the urine contained no diabetic acid; at the end of the operation a catheterized specimen of urine gave a strong Gerhardt reaction. The patient was in danger, but due to energetic alkaline treatment, she recovered and the acidosis disappeared. In this manner the preoperative condition of the patient assists in determining the prognosis. Three degrees of severity may be distinguished: 1, Diabetes with emaciation and acidosis; 2, diabetes without emaciation but with acidosis; 3, diabetes without emaciation or acidosis.

The nature and gravity of the operation are conditions which influence the danger of acidosis. Extensive operative traumata and operations requiring a long time are most to be feared. Preoperative fear may also play a part; one case was seen in which a severe attack of acidosis had been induced by fear alone. The anesthetic is more dangerous than the knife in operation upon diabetic patients and the most dangerous anesthetic is chloroform. It may even produce mild acidosis

in nondiabetic subjects. This is supposed to be caused by the chloroform abstracting the alkalies from the tissues. In diabetic patients with malnutrition and acidosis chloroform is fatal. Chloroform should also be feared in subjects with liver lesions. Ether is supposed to have a less toxic action than chloroform, but this cannot be depended upon. Prolonged ethyl chloride anesthesia seems to be the best tolerated. Spinal anesthesia by lumbar injection of cocaine or novocaine is preferable to either chloroform or ether. Local anesthesia, by means of subcutaneous injections of cocaine, stovaine, or novocaine is the method of choice in patients with diabetes.

For the preoperative and postoperative treatment a vegetable or milk diet, either of which counteracts acidosis, and the administration of a large dose of bicarbonate of soda before the operation may diminish the danger of acidosis. It has been suggested that preventive injections of glucose be given to combat acidosis. This may be of use in healthy subjects but there seems to be no advantage in giving it to a patient who can not burn the sugar. Great care should be exercised in any event and each patient should receive careful consideration.

A New Operation for Suspension of the Uterus.

—F. G. DuBose (*Southern Medical Journal*, January, 1920) asserts that the following operation has permanently held the uterus in the desired position in a large series of cases over a period of time apparently sufficient to determine its efficacy. He describes its technic as follows: A linen or silk thread on a full curved needle is carried through the broad ligament, as a running stitch, close to and immediately underneath the round ligament, beginning at the internal abdominal ring, carried across the fundus of the uterus, engaging superficially under the peritoneal coat, passing underneath the opposite round ligament until the other internal ring is reached. The needle is unthreaded and a ligature carrier is passed through the aponeurosis of the rectus muscle about an inch from the abdominal incision, and on a level with the internal abdominal ring, through the musculature of the anterior abdominal wall until it emerges from the parietal peritoneum at the internal abdominal ring. The linen suture is threaded on the carrier and drawn through the abdominal wall.

The same technic is carried out on the opposite side. Then both ends of the thread are caught and the uterus pulled up to the desired position. Two hemostats are then applied to the thread; one on either side where it emerges from the aponeurosis of the rectus muscle. The peritoneum is then closed, the aponeurosis of the rectus muscle sutured, and while the forceps are still in position, the linen suspension thread is tied. The placing of the forceps here described prevents the drawing too tightly on the suspension suture, which would bring the uterus too far forward, and possibly so narrow the space between the uterus and abdominal wall as to result in hernia or obstruction. The hemostats are removed after the tying of the suspension suture. The closure of the abdominal skin incision is then completed.

A Specific Treatment of Vincent's Angina. Capitan (*Bulletin de l'Académie de médecine*, December 9, 1919) presents a report on 212 cases of Vincent's angina, all confirmed bacteriologically, and comments on the fact that the clinical picture varies considerably in this affection, as in other forms of sore throat. In mixed cases the characteristic fusiform and spiral organisms are combined with cocci or various bacilli. In simple cases there is no fever—merely some lassitude and depression, generally no pain, and slight dysphagia. In the submaxillary region on the same side there is always a hard, enlarged, but slightly tender lymph node. The breath is nearly always stale or foul, the author comparing it with that of a dog's mouth. The tonsillar ulceration is covered with a yellowish gray exudate, which, in exceptional instances, extends to the pillars. The specific treatment recommended consists in the intramuscular administration in the buttock of six mils of colloidal arsenic, prepared by Fouard, the author's laboratory assistant during the war. In 200 cases thus treated, the ulceration was regularly sterilized in forty-eight hours and completely cured in a few days. Locally, irrigations or gargling with boric acid solution or hydrogen peroxide may be ordered, but are not essential. One day after the arsenical injection the ulcer margins spread out, the exudate begins to be eliminated, and the fusiform and spirillar organisms show marked diminution or almost complete absence. On the next day all germs have usually disappeared and the patient feels entirely well. Exceptionally, if a few germs still persist, a second injection of six mils may be given. In cases with mixed infection, swelling, redness, local pain, and some constitutional disturbance may be kept up even after the Vincent organisms have disappeared. In such instances, two or three successive injections of three or four mils each at two day intervals are recommended.

Treatment of Empyema.—R. Sevestre (*Lancet*, December 13, 1919) goes very thoroughly into the diagnosis and treatment of empyema. It is emphasized that the diagnosis should be made early and confirmed by exploratory needling in order to avoid the long intoxication and resulting loss of strength otherwise involved. Pneumococci and streptococci are by far the most frequently found organisms, one half, three quarters and one quarter being approximately their respective proportions in all cases. The pleura walls off the purulent matter by adhesions and, of importance in surgical treatment, frequently numerous small pockets are formed by the walls. Ulcerations of the visceral pleura are not uncommon and in the late stages interstitial changes appear in the lung itself. In all cases a thick pyogenic membrane is produced about the pus.

The aims of treatment are to restore the function of the lung and to evacuate the pus. The methods of treatment are as follows: 1. Repeated aspirations are rarely curative but are often of value to relieve pressure or to tide over a case during acute stages of the primary condition. 2. Incision through the intercostal space is of use occasionally, but it affords an inadequate view of the

field and fails to permit of satisfactory drainage, consequently is not a method of choice in most cases. 3. Rarely thoracotomy without drainage, but with the immediate suture may be employed. When the membrane enclosing the sac can be removed entire, this is occasionally successful. 4. Thoracotomy with drainage is most satisfactory. This should be done through a wide opening in which at least three to four inches of rib have been removed. The pockets must be thoroughly explored, the membrane removed, if possible, or at least the pus completely evacuated, and a wide bore drainage tube fixed in place with the wound sutured tight around it so there is no leakage of air or of pus about the tube. This, held in place for three days, keeps the dressings clean by leading the pus to a conveniently placed bottle and lessens the danger of secondary infection.

Aftertreatment should usually be carried out with irrigations of Dakin's solution, or of eusol. It is rare that any untoward effect results from the irrigations, though in a few cases unexplained death has resulted. Never irrigate when there is the slightest possibility of a bronchial fistula. The Carrel tubes must be arranged so that all parts of the cavity are sprayed with the solution and may be stiffened to hold their positions by passing a wire through the bore. Smears must be made daily from the pus in the wound until for three successive days the bacterial count has maintained suture standard. Then the wound may be sutured if it is too large to heal rapidly by itself.

Treatment of Recurrent Malaria.—H. Fraser (*Lancet*, December 20, 1919) reports observations and investigations in 8,000 cases of recurrent malaria with special emphasis on the conclusions regarding treatment. Most of the men who have had so much quinine feel that it is useless or that they cannot tolerate it; hence they must be taught that they can take it without ill effects. When the tongue is clean, intolerance to the drug is not observed. It is best to use a solution of the drug as this dose cannot be so readily evaded as the tablet. Fifteen grains of quinine sulphate in single daily doses prevent relapses. In a relapse give such doses twice a day for five days and thereafter once a day. The first dose is given during a decline in the temperature. The treatment should be continued as long as possible even after the man has been discharged and has gone to work. Blackwater fever was seen in seven cases. Quinine was withheld while the urine was abnormal; all the patients recovered.

Uses of Nonspecific Therapy.—William Boyd (*Journal of Laboratory and Clinical Medicine*, November, 1919) describes several cases of infective arthritis, toxic iritis and neuroretinitis and one of bronchial asthma in which the administration of typhoid vaccine produced remarkable curative results in each instance. In selecting this method of treatment he states that there should be evidence of a general, as well as a local, toxic absorption. It will probably give most satisfactory results in patients showing general symptoms, such as malaise, mild pyrexia, sweating and palpitation.

Miscellany from Home and Foreign Journals

Technic of Citrated Blood Transfusion.—Henry C. Marble (*Boston Medical and Surgical Journal*, February 5, 1920) has presented so concise a description of the technic of blood transfusion that it can scarcely be abbreviated. In performing citrated blood transfusions these points must be borne in mind: 1. The recipient must be carefully typed; 2, the donor must be carefully typed and, if time permits, a Wassermann performed; 3, only donors of the same or of higher types than the recipient shall be used; 4, blood is a fragile tissue, the processes of coagulation begin almost instantly when the blood leaves the vein, so the blood must pass quickly, easily and cleanly into the sodium citrate solution and be immediately mixed with it before coagulation begins; 5, having obtained the blood and carefully mixed it with sodium citrate, the process of administering it to the recipient may be carried out much more leisurely than in other methods, the problem of coagulation having been eliminated. Although citrated blood will keep for two days, it is well to complete the transfer as quickly as possible.

The microscopic method of typing is thus described: On a clean glass slide place three drops each of Type II and Type III serum. This is human blood serum from known types, the serum having been separated from the blood and citrated. Prick the ear lobe of the recipient and from it take a drop of blood on a clean knife and mix with Type II serum on the glass slide. Carefully wash the knife, take a second drop and mix with the Type III serum. Gently rotate the slide forward and backward to mix the blood and serum thoroughly. In five or ten minutes changes will begin to take place in the appearance of the little pools; the blood may agglutinate in one or the other and form in small clumps, having somewhat the appearance of the top of a saltcellar. If agglutination occurs in both Type II and Type III serum, the recipient is necessarily Type I. If it occurs in Type III but not in Type II, the recipient is Type II. If it occurs in Type II but not in Type III, the recipient is Type III. If there is no agglutination, the recipient is Type IV. This process is then repeated on the prospective donors and their type numbers found. A safe rule to follow is that a recipient may receive blood from his own type, or from any type higher. A Type I may receive blood from Types I, II, III and IV. A Type II may receive blood from Types II, III, and IV. A Type III may receive blood from Types III and IV. A Type IV may receive blood from Type IV only. If known type sera are not available this method may be used: Draw the blood from the recipient as for a Wassermann. Allow it to clot and the serum to separate. Pipette off the serum and centrifuge until clear. Add normal sodium citrate solution (3.8 per cent.) in the proportion of one part to ten parts serum. Use this as a type serum. Mix it with blood from donors as before, rejecting those that agglutinate. To draw the blood we need a large graduated flask similar to a

Vincent tube but of a capacity of 1,000 c.cm., a short rubber tube about two inches long, a sharp, clean, large needle, fourteen to sixteen gauge, and a long glass stirring rod. The donor's arm is extended on the table and the area over the median basilic vein is scrubbed with soap and water followed by alcohol. A light rubber tourniquet is applied to the upper arm sufficiently tight to dilate the veins. Inject a few drops of novocaine over the site of puncture. A small quarter inch transverse incision may be made in the skin over the vein to facilitate entrance. Assemble the apparatus and pour into the flask the fifty c.cm. of freshly made sterile isotonic sodium citrate solution (3.8 per cent.). Pinch the rubber connecting tube to prevent escape of the solution, allowing a few drops to run out of the needle to moisten it. Point the needle toward the hand and introduce it under the skin and into the vein. While the blood flows into the flask hold the needle immobile with one hand and the flask upright with the other, while an assistant gently stirs the citrate solution into the blood with the stirring rod. If this is not done the citrate solution will float on top of the blood and not mix properly. With fifty c.cm. of the citrate solution and with careful mixing as much as 500 c.cm. of blood may be drawn, making a total solution of 550 c.cm. Pinch the rubber connecting tube, remove the tourniquet, withdraw the needle, close the flask with a rubber stopper, and hold it in a horizontal position. Disconnect the needle and rubber tube and have them washed immediately in cold water. Take the flask of blood to the recipient and reverse the process.

In introducing the blood we need a connecting tube three feet long with a glass window near the distal end and a metal needle connection. The needle is smaller, nineteen or twenty gauge. Apply a light tourniquet, prepare the arm and expose the vein as before. Introduce the needle directing the flow upward. Remove the tourniquet, elevate the flask, release the flow and allow the blood to pass into the vein by gravity, not faster than fifty c.cm. a minute. After the blood has been injected, withdraw the needle and the transfusion is ended. It is good practice to stop the flow for a minute after the first thirty c.cm. have been injected to note possible symptoms of hemolysis.

The advantages maintained for this method are: 1. The whole apparatus may be sterilized by boiling and used repeatedly. 2. In drawing the blood if there is clotting in the needle a new one may be substituted without losing or harming the blood already drawn. 3. Citrated blood will keep several hours if necessary. 4. The blood may be drawn in the operating room, carried to the ward in the flask, and there introduced into the patient. 5. The therapeutic results compared with other methods of transfusion are identical. 6. The whole operation may be done easily, surely, and without haste. 7. The blood may be administered through a very small needle without incision, which is of value in hemorrhagic patients.

Torsion of the Spermatic Cord.—Vincent J. O'Connor (*Surgery, Gynecology and Obstetrics*, December, 1919) states that the onset of torsion occurs with a varying degree of pain in the lower groin of the affected side. In the cases which do not subside the pain becomes progressively more severe and localizes in the testis and lower cord. Swelling of the scrotal contents follows for from twenty-four to forty-eight hours. The swelling involves the cord to the degree of the height of the twist and the scrotum becomes diffused, reddened and tense. The outline of the testis and epididymis soon becomes obscured and the swelling appears to be drawn upward in the scrotum or inguinal canal due to the shortening produced by the torsion. Nausea and vomiting frequently follow the onset of pain and in acute cases a general weakness and malaise are present. The general reaction is seldom severe. If no attempt is made to untwist the torsion there is usually a slight subsidence of all pain after a week or ten days, but the swelling and local tenderness still persist.

Epididymitis may be ruled out by the history, examination of the urine, and rectal palpation of the prostate and seminal vesicles. Orchitis will be differentiated by the character of the swelling, the high position of the testes, involvement of the cord, and absence of history pointing to etiology. Hydrocele, fibroma of the cord, acute ruptured varicocele, and lymphadenitis of the horizontal chain of glands can be readily ruled out. Strangulated hernia or incarcerated omental hernia are frequently diagnosed or are ruled out with greater ease, but the differentiation from hernia is more difficult. A coincident Richter's hernia can hardly ever be entirely excluded as a possibility.

In recurring torsion the attacks will continue and will probably result in a varying degree of atrophy accompanied by a neuralgic pain unless an orchidopexy is performed. Some cases have had no recurrence after the first manipulation to untwist the cord, but these were always in cases seen and recognized in the early part of the first attack. In acute cases with marked symptoms there was usually no relief except by manipulation or operative interference. So far as recorded torsion of the spermatic cord has never proved fatal.

Detorsion has been successful in a few cases of torsion in fully descended testes when seen very shortly after the onset of symptoms. It should, therefore, always be attempted in cases seen early but only in those where the testes are outside the external abdominal ring. It is obviously impossible where the strangulation has existed long enough for enlargement of the testis to occur, or for much fluid to accumulate in the tunica vaginalis. Detorsion is accomplished by grasping the testicle between the thumb and second finger and slowly rotating on the vertical axis, first trying from within outward, as the torsion most often found has occurred in a counter clockwise direction. No force should be used and torsion should be continued until relief is felt or pain and resistance become so severe that it is obviously in the wrong direction. It is always unwise to attempt detorsion in an undescended testis.

Orchidopexy should be performed in all cases where it is deemed advisable to save the testis and where there is no anatomical condition present that will interfere with the success of the procedure. The usual transposition can be done on undescended testes with satisfaction. In more fully descended testes any operation that performs and accomplishes a fixation preventing recurrence will achieve a cure. A simple eversion and suture of the tunica vaginalis is usually sufficient.

Orchidectomy is indicated in an adult where transposition of the undescended testis cannot be satisfactorily accomplished, or in any case where necrosis, gangrene or persistent circulatory obstruction is present.

Osteosynthesis in Fractures of the Malleoli.—E. Juvara (*Presse médicale*, December 6, 1919) states that nailing of the inner malleolus through the skin is indicated in cases of fracture with but slight displacement and without splintering. In recent fractures reduction is readily obtained, and a long, thin nail is driven obliquely upward through the detached portion of the malleolus into the sound bone for a distance of six or seven centimetres. If desired, a second nail may be introduced, crossing the first, but usually a single nail is sufficient. In more severe fractures, nailing after exposure of the bone should be resorted to, a U shaped incision being made about the malleolus in order to avoid wounding the internal saphenous vein. The broken surface of the detached fragment is directly inspected and cleansed with a small curette. Blood or splinters between the joint surfaces should be removed. Fibrous tissue, periosteum, or annular ligament tissue preventing good opposition are trimmed off. The fragment having been reduced, fixation is obtained by means of two nails, directed in a direction oblique to the axis of the tibia and slightly crossed. The fibrous sheath, periosteum, and annular ligament are then brought together with a few sutures of fine catgut, and the skin wound closed with silkworm gut. The outer ends of the nails must pass out freely between the margins of the wound. In readily reduced fractures of the outer malleolus a nail ten to twelve centimetres long, slightly curved to follow the fibula, is driven up through the latter bone for seven or eight centimetres. In other cases, an incision is made, beginning somewhat below the upper extremity of the malleolus and extending upward for six or seven centimetres. Cleansing and coaptation of the bone fragments are facilitated by approximate movements of the foot. The coapted fragments are then fastened together with a slightly curved nail, driven up along the axis of the fibula, and the wound is entirely closed around the nail. In oblique fractures of the fibula above the malleolus wiring with the author's special wire carrier is resorted to, while in a case of transverse fracture at this level the fibular fragments were fixed indirectly by driving two nails through them into the adjoining tibia and drawing the nails more tightly together with a wire passed about them outside of the skin. All nails are removed on the eighteenth to the twenty-fifth day.

A Case of Complete Pseudohermaphroditic Androgynia.—E. Schwartz (*Bulletin de l'Académie de médecine*, December 2, 1919) reports the case of a woman aged twenty-five who sought advice on account of masses in both inguinal regions, which became somewhat larger and slightly painful in the evenings or after walking. A diagnosis of bilateral omental-inguinal hernia was made and the radical operation proceeded with. On the left side the hernial sac proved to be the tunica vaginalis containing a well formed testicle with its epididymis and vas deferens. Microscopic examination after removal revealed an organ in a condition of slight atrophy, such as might be expected in a case of ectopia testis. On the right side another testicle was found, which was then fixed in the labium majus after separation of the abdominal wall. The external genitals were of a completely normal aspect. The vaginal orifice was broad and the vagina twelve centimetres deep, with a uterine cervix presenting a small central opening through which, however, a probe could be passed only a short distance. Combined palpation showed an elongated, fingerlike uterine body, without the usual annexa. Fat distribution, body hair, and breasts were of feminine appearance, and hair was abundant. The voice, however, was rather deep and the feet large and bony. Inquiry revealed that she had never menstruated, but had been married for two years—being a widow at the time of examination—and had always felt an attraction for the male sex. Pozzi, in collecting all cases of pseudohermaphroditism in the literature, had found only four of this complete type, and none of them had presented as perfect an external genital configuration as that in the present case. Schwartz advises that in such cases care be taken not to remove the genital glands on both sides, lest a prejudicial effect on the general condition result from removal of the internal secretion of these glands. The author's patient remained at work and in good health after the operation.

Catarrhal Jaundice Associated with Influenza in Children.—E. Bronson (*British Journal of Children's Diseases*, April-June, 1919) was impressed with the fact that he was seeing an unusual number of cases of jaundice in his out patient service during the influenza epidemic of 1918. During a period of six weeks late in the epidemic and six weeks subsequent to it, he collected twenty-two cases which he classifies as follows: 1. Twelve cases of acute catarrhal jaundice in children who had been exposed to influenza, but who did not have the disease in the usual form. 2. Two cases in children and one in an adult in whom the jaundice followed a typical attack of influenza. 3. Four cases in which the association between influenza and jaundice was doubtful. 4. Three cases for control, seen after the epidemic had subsided. He concludes that the occurrence of jaundice during the epidemic was much more common than at ordinary times and infers that influenza was the cause, though most of his patients showed no respiratory symptoms and no enlargement of the spleen, which would be expected in the jaundice usually associated with influenza.

Grave Familial Jaundice in the Newly Born.—Humphrey Rolleston (*Practitioner*, January, 1920) says that in grave familial jaundice successive infants become jaundiced a few hours to a day after birth, pass into a drowsy condition, and usually die within a week, often with convulsions. It resembles physiological jaundice in its onset, and does not show any gross postmortem appearances to account for the condition. He discusses the etiology, morbid anatomy, clinical features, and the differentiation from other forms of jaundice in the newly born. He suggests that in its most complete form the disease is hereditary, the mothers becoming jaundiced during the pregnancies of jaundiced infants, and that the usual familial form is an incomplete manifestation of the morbid process. The prognosis is bad; out of 130 collected cases 100, or seventy-seven per cent., proved fatal. As regards treatment, on the hypothesis that this grave familial jaundice of the newly born is due to fetal toxemia of maternal origin, the prophylaxis should consist of care in the mother's diet and the administration of intestinal and biliary antiseptics, such as hexamine, salicylate of sodium, minute doses of calomel, tetrachloride of naphthalene, salol, and guaiacol. Ballantyne recommends chloride of calcium. The infant should be treated with small doses of calomel and should not be given the breast.

Fracture Dislocations of the Ankle.—R. P. Rowlands (*British Medical Journal*, December 6, 1919) considers that it is a very difficult thing to obtain good position in Pott's and Dupuytren's fractures about the ankle joint by the ordinary methods. Because of the importance of obtaining good functional results in young men he feels that in many instances open reduction by a skilled surgeon is the method most suitable. He discusses the diagnosis and then gives detailed directions for the conservative reduction and fixation by usual methods. Then follows a description of the technic for the open reduction within a week of the injury and fixation by means of a plate, screw, or wire. Finally, there is the method of reduction and restoration of function late, up to three months after the injury. He feels that in selected cases the second method, because of its satisfactory functional results, is the best.

Facts and Fallacies Relating to Maternal Feeding of Infants.—J. D. Love (*Southern Medical Journal*, January, 1920) says that the gross appearance of breast milk furnishes but an unreliable index to its suitability for the baby. Before pronouncing milk too rich in quality, the presence or absence of colostrum bodies should have been determined by microscopic examination. The mere fact that milk is scant in quantity furnishes no valid excuse for the withdrawal of the infant from the breast, but rather calls for supplemental feedings. Conclusions drawn from chemical examinations of breast milk, as usually practised, are apt to be misleading. In influencing the quality of breast milk the maternal dietary, while of some importance, is a smaller factor than causes which operate through the medium of the mother's nervous system.

Proceedings of National and Local Societies

PHILADELPHIA CLINICAL ASSOCIATION.

Stated Meeting held on December 8, 1910.

The President, Dr. WILLIAM DUFFIELD ROBINSON, in the Chair.

FUNCTIONS OF THE CEREBROSPINAL FLUID.

Injections of Arsphenaminized Serum.—Dr. FRANCIS X. DERCUM, of Philadelphia, said that to him it seemed that the rôle and function of the cerebrospinal fluid had been strangely misinterpreted and that this had led to attempts at therapeutic administration which might be justly characterized as unscientific. These efforts had not been without danger and had either failed or such success as seemed to attend their application was due to other and purely incidental factors which had been overlooked. A consideration of its physical and chemical constitution, location, and distribution, the laws of physics which it must obey, its source, renewal and escape, its relation to the vascular and lymphatic systems, the pressure under which it existed, its movements and other cognate factors, seemed to justify the following conclusions:

1. The cerebrospinal fluid was preeminently a fluid for the hydraulic suspension of the brain and cord; its function was essentially hydrostatic.

2. Its chemical constitution was essentially that of the innocuous three quarters per cent. common salt solution of the histological laboratory; it had no action upon the tissues with which it came in contact; it was absolutely neutral and negative.

3. It was distributed through the ventricles and subarachnoid spaces; it had no relation to the perivascular, pericapillary, or perineuronal spaces.

4. It possessed no function of and played no rôle in nutrition. The nutrition of the brain and cord took place, as did that of the other tissues, through the blood vessels, the perivascular spaces playing the same rôle as did the perivascular lymph spaces in the other organs and tissues. The old belief that the brain and cord had no lymphatic system must be abandoned.

5. The cerebrospinal fluid had its source in the choroid plexuses and perhaps in the general serous surfaces of its containing cavities. It left the subarachnoid spaces of the cranium by passing through the arachnoid villi into the venous current of the sinuses; also to a lesser extent by the lymph sheaths of the cranial nerves; from the spinal subarachnoid space it passed out by the lymph sheaths of the spinal nerve.

6. Attempts at medication of the brain and cord through the subarachnoid space, as in the Swift-Ellis method, were unscientific. Substances introduced into the cerebrospinal fluid rapidly disappeared by passing out through the arachnoid villi and the lymph spaces without in the slightest degree penetrating the nervous parenchyma. The beneficial effects hitherto ascribed to the Swift-Ellis and kindred methods were due entirely to the incidental spinal drainage.

7. Medication of the nervous parenchyma must be attempted through the alimentary tract, through

the skin, through the areolar tissue, or directly through the blood.

8. A remedy should be sought whose ions would readily osmose through the capillary walls.

9. Spinal drainage was urgently indicated in tabes and paresis.

Dr. Charles H. Frazier said that it was hard for him to believe that the function of the cerebrospinal fluid was essentially or preeminently hydrostatic. In research work carried out in his laboratory on the function and origin of the cerebrospinal fluid, Doctor Frazier was particularly impressed by the behavior of the choroid plexus. He believed that the choroid must be considered as a secretory gland, the product of which was the cerebrospinal fluid. Furthermore, the function of the choroid was susceptible to the influence of drugs and tissue extracts. He had found that the brain caused an increase in the cerebrospinal fluid and that thyroid extract had an inhibiting effect upon the choroid plexus quite independent of blood pressure changes. It would seem, therefore, that the cerebrospinal fluid must have some very important functions to perform apart from those which were hydrostatic. His investigations, together with those of Goldmann and Kafka, suggested that the cerebrospinal fluid with the choroid plexus played the rôle of protector of the central nervous system. The accumulating evidence from the laboratory would seem to give support to his conception of the cerebrospinal fluid, namely, that its function was only incidentally hydrostatic. He was in accord with Doctor Dercum concerning the chemical consistency of the fluid. Regarding his third conclusion, the investigations of Key, Retzius, Mott and Hill, Quincke, Goldmann, and others showed that the canalicular system, composed of perivascular lymphatics, was continuous on the one hand with the pericellular and perineuronal spaces and, on the other, with the subarachnoid space. If we accepted their observations, should we not grant that the cerebrospinal fluid as it passed through the subarachnoid space and along the perivascular and pericellular spaces, was a medium of exchange between the blood in the capillaries and the nerve cells?

Regarding Doctor Dercum's fourth conclusion that the cerebrospinal fluid possessed no function of, and played no rôle in nutrition, Doctor Frazier said that he had made no personal observation warranting acceptance or refusal. He could only say that the researches of Mott, Dixon and Halliburton seemed to indicate that the cerebrospinal fluid played an important rôle in the metabolism of the nervous system, conveying nutrient material to the cells and recovering the cast off products of metabolism. Mott suggested that the cerebrospinal fluid gave up water and carbon dioxide to the blood in exchange for oxygen and sugar. He concurred with Doctor Dercum in his deduction that we must abandon the old belief that the brain and cord had no lymphatic system if we were will-

ing to go so far as to regard the circulatory mechanism of the cerebrospinal fluid as the analogue of the lymphatic system. Such interpretation was in keeping with all laboratory experiments. At least, he did not believe that there was a lymphatic system of the brain and cord wholly independent of this. His conception of the course and circulation of the cerebrospinal fluid was quite in accord with Doctor Dercum's viewpoint. His laboratory experiments had convinced him that ninety per cent. was derived from the choroid plexus. Where the rest came from, he did not know although he was sure that none was derived from the lining membrane of the ventricles.

As to the practical problem of the treatment of syphilis in connection with the subject, he had heretofore concluded that the results of the Swift-Ellis method did not justify persistence in its use, considering the physical discomfort to the patient and the serious accidents which sometimes occurred. He did believe that there was a foundation for the belief which Doctor Dercum expressed that the withdrawal of cerebrospinal fluid might encourage a larger output from the vessels, of drugs which could be administered in that way. It had been demonstrated that a greater percentage of a drug was present in the cerebrospinal fluid if lumbar puncture was done before the intravenous injection.

Dr. Albert P. Brubaker said that if the statements which Doctor Dercum had made could be substantiated there would be a great change in the conceptions of the physiological relation of the cerebrospinal fluid to the cerebral cells. He doubted very much that the conclusions of Doctor Dercum could be dismissed by saying that he had made a mistake in interpretation. That might be true, but it must be demonstrated. One of Doctor Dercum's conclusions was that there was no relation between the cerebrospinal fluid and the perivascular, pericapillary, or perineuronal spaces. Assuming that the cerebrospinal fluid did pass into these spaces, one conception of its function was that it not only bathed these cerebral cells, but administered to their physiological activity. We had been told that this fluid was neutral, negative, innocuous, and nothing but a three quarter per cent. solution. Those qualities, however, were relative, and a substance might be neutral in one direction and positive in another. An interesting demonstration in proof of this had been seen in the experimental use of the solution found in the physiological laboratory, which in its composition was not unlike cerebrospinal fluid, with the exception that it did not contain any protein and was never highly charged with oxygen. With this solution the heart of a monkey which had been dead for three days was made to beat for many hours, and the heart of a child twenty hours after its deaths from double pneumonia was made to beat for six hours, just as when in the body of the child. This fluid, therefore, under these circumstances, instead of being inert and innocuous had a most positive, stimulating, and reviving power upon the heart. It was possible that the cerebrospinal fluid had a similar effect upon the cerebral cells.

Dr. William Egbert Robertson said that when a person in a position such as that occupied by Doctor Dercum uttered a pronunciamiento in regard to a subject, it carried with it a medicolegal aspect which he thought should not be ignored. If, for instance, the method of Swift and Ellis or a modification of it, was practiced and ill results followed, if the weight of professional evidence was against us we made ourselves culpable. He had given the Swift-Ellis treatment and its various modifications, in a great many cases, and had never seen any serious results. He was quite sure that results were equally good and less likely to be serious when the intravenous route was followed.

Dr. Sherman F. Gilpin believed that results by the use of mercury by inunction and drainage had been quite as good as those reported by the Swift-Ellis method. In one case of tabes the patient remained well for fifteen months after treatment. He emphasized the fact that the patient who knew how to rub in mercury, who would stick to the doctor month in and month out, the patient who would keep himself just on the verge of pyralism, was the patient who would get results either in tabes or paresis if the diagnosis was made before the disease was advanced.

Doctor Dercum, in closing, said that he had been greatly interested in the discussion. He did not expect concurrence with his views; it was a difficult thing to give up ideas adhered to for the greater part of one's life.

SOUTHERN SURGICAL ASSOCIATION.

Thirty-second Annual Session, Held at New Orleans, La., December 16, 17, and 18, 1919.

The President, Dr. JAMES E. THOMPSON, of Galveston, Tex., in the Chair.

(Concluded from page 352)

President's Address: Embryology and Surgery.—Dr. JAMES E. THOMPSON, of Galveston, Texas, opened his address with a reminiscent sketch of the Louisville meeting in 1892, and a eulogy on the high character of the scientific work presented before the society and its value from an educational viewpoint. Some embryological aspects of surgical pathology were then considered. Familiarity with common anomalies ought to be the ordinary stock in trade of every surgeon, and the broad educational value of a minute acquaintance with all errors of development could not be overestimated. Comparative embryology must not be neglected because many anomalies, especially those affecting the genitourinary organs and the rectum, could only be explained by studying them side by side with adult conditions in the lower vertebrates. A detailed description was given of the rotation of the midgut and its effect on the final disposition of the jejunum, ileum, and the part of colon involved. Nonrotation and arrested rotation were illustrated by examples taken from the human body and from the lower vertebrates. In this connection misplacements of the vermiform appendix and abnormalities of the colon were discussed; also volvulus of the small intestine and retroperitoneal hernia into the fossa duodenojejunalis.

The latter part of the address dealt with the origin of some cysts of the neck of branchiogenetic origin. A type of cyst lying in the upper part of the neck under cover of the parotid gland and the lower jaw was described carefully. The cysts had thin walls lined sometimes by tessellated epithelium and the contents were thin mucus. They occupied a definite position and had the following boundaries: Above, the base of the skull represented by the under surface of the petrous portion of the temporal; behind, the anterior border of the mastoid and styloid processes and the bodies of the upper cervical vertebrae; externally, the parotid gland and the medial surface of the ramus of inferior maxilla. They often communicated by a narrow neck with a similar cyst in the submaxillary region, and occasionally by means of the submaxillary cyst with a true ranula in the floor of the mouth. Numerous examples of such cysts were displayed, which supported the view that ranula was probably derived from the cervical sinus which had been carried from its original cervical position into the tongue by migration of muscles belonging to the segments of the primitive embryo supplied by the hypoglossus nerve.

The Carrel-Dakin Treatment of Infected Wounds.—Dr. E. DUNBAR NEWELL, of Chattanooga, Tenn., stated that it was almost universally observed in the hospitals of the American Expeditionary Force that patients whose infected wounds had been properly treated by the Carrel-Dakin method, suffered less pain, had less systemic infection, were more alert and cheerful, had a more rapid convalescence, and the wounds closed far earlier and with less deformity and less morbidity than in those patients whose infected wounds were treated by other methods. It was his firm opinion that in the Carrel-Dakin method we had the most valuable contribution to the treatment of infected wounds since the days of Lister.

The Results and Feasibility of Treating Lymphangiomas.—Dr. FRANCIS REDER, of St. Louis, Mo., said in his service of ten years at the City Hospital, he had had occasion to observe only four cases. The scarcity of patients affected with a true lymphangiomatous growth seeking hospital care must be ascribed to some extent to the fact that these tumors seldom threatened life; that they did not cause pain, nor did they cause the individual to feel sick. Lymphangiomas were usually congenital, and the thought of a mother taking her baby to a hospital for a small tumor mass somewhere on its body which did not cause pain, was rather a remote one. When confronted with a tumor of any sort the thought uppermost in the surgeon's mind was whether or not the growth was a suitable one for excision. Extirpation was the radical and most satisfactory measure in the treatment of lymphangioma, if the operation could be safely done. In that form of nevoid lymphangioma affecting the tongue, causing marked enlargement of that organ and forcing it to protrude from the mouth, partial removal by a cuneiform excision was the only measure, even at the risk of causing progressive inflammation or lymph fistulae. A similar procedure, but with greater risk, could be

undertaken when the disease had attacked the lip.

In comparing the results obtained in the lymphangioma with those of the hemangioma it must be said that they had been somewhat disappointing. This must be attributed to the difference of the fluids in these tumors. So far eight patients had been injected with boiling water. The reaction following the injection seemed unusually severe when compared with the reaction following the injection of a hemangioma. For twenty-four hours the patient gave evidence of feeling sick and usually registered a temperature of 100° to 101° with a pulse of 100-110. When the reaction had passed off, which was generally after the third day, the feeling of euphoria returned. The increase in the size of the tumor after the injection, although considerable, bore a minor ratio to the increase seen in hemangiomas after injection. Inflammatory processes seemed active and prolonged, the skin giving evidence of the severity by a marked reddish discoloration. Retrogression seemed very slow. It required from four to six months to show that the tumor had decreased in size. In the case of a baby whose left foot was about four times its normal size, it required two years for the foot to attain a size to be fitted with a shoe. If the initial injection had been a thorough one subsequent injections were almost impossible; the tumor mass was so hard that no hot water could be forced into it. Of the eight patients injected with boiling water, all had been benefited, but in none had the tumor entirely disappeared.

Plastic Operations on the Rectum.—Dr. HARVEY B. STONE, of Baltimore, Md., stated that in certain special types of stricture of the rectum, an application of the principle of the Heineke-Mikulicz pyloroplasty was helpful. These strictures were of the diaphragm type; that is, firm, with small lumen, but narrow and annular in their involvement of the long axis of the bowel. The stricture was incised in the posterior midline down to its space, and the superior and inferior edges of the incision were sutured to each other, so that the line of repair ran transverse to the long axis of the bowel. In tubular strictures of the rectum, occurring in the lower four inches of the bowel in multiparous women the utilization of the part of the voluminous vaginal mucosa as a transplant into the rectum had been tried.

The posterior vaginal wall was incised longitudinally in the midline, exposing the strictured rectum from the front. Some of the scar tissue about the rectum was dissected away and then it was incised longitudinally in the anterior midline. The edges of the vaginal incision were sutured to the corresponding edges of the rectal mucosa, thus forming a rectovaginal fistula, then on bearing the fistula was amputated and the stump of proximal bowel sutured to the anal skin as in Whitehead repair. The perineal incision was also closed. The advantages of this operation were direct closure of the urethral orifice, the complete removal of the fistulous area of rectum, the interposition of perineal structures between rectum and urethra, and the temporary diversion of the urine. It had proved very successful in practice.

Autogenous Bone Grafting for Repair in Fractures of Long Bones.—Dr. FRANK MARTIN, of Baltimore, Md., said in removing and implanting grafts many factors could easily enter which would weaken or destroy the viability of the graft, such as chemical contact, drying or burning graft with a too hot saw, or other mechanical injury, and to achieve the best results these factors must be guarded against. The more quickly and surely the graft was implanted and definitely fixed, the more promptly was nourishment assured. Intimate apposition, which would assure early adhesion between the wound edges and the transplant, would more certainly serve the function of supplying as quickly as possible nutrition to the graft. The most important contributing factor to failure, next to improper technic, was imperfect hemostasis, as it prevented intimate adhesion of the graft with the wound edges and invited infection. The chief factors for successful bone grafting were perfect aseptic technic; avoidance of mechanical injury or trauma to the graft; scrupulous avoidance of traumatizing tissues; definite and firm fixation of the graft; allowing a long interval to elapse after complete healing of the wound. Grafts would not remain viable where there was infection. There should be perfect hemostasis.

Oxycephaly.—Dr. STEPHEN H. WATTS, of Charlottesville, Va., stated it was only in recent years that operative measures had been undertaken with the object of combating the symptoms of increased intracranial pressure, especially the threatened blindness. Since most observers thought that this increased pressure was due to the disproportionate growth of the brain and skull, decompression seemed to be the operation of choice; moreover, it had the advantage of simplicity and relative safety. It should be done early, for in cases with irreparable optic atrophy and no other pressure symptoms, operation was not indicated. The results of this operation in the small number of cases in which it had been done were distinctly encouraging, in spite of the fact that the optic atrophy was rather advanced in most instances. In 1916 Sharpe reported four cases of oxycephaly in which he had done subtemporal decompression, unilateral in one, bilateral in three. The three cases in which the bilateral operation was done were followed and found to be greatly improved; the other case could not be traced.

An Efficient Treatment for Carbuncle.—Dr. A. C. SCOTT, of Temple, Texas, said that by strong traction the mass was lifted out of its bed while the cautery swept back and forth between it and the cellular tissue below or skimmed along the fascia covering the muscle beneath or penetrating muscle, if necessary, until the entire mass was free. Should any vessels spurt freely or fail to close when the dark red cautery was held in contact with them a few seconds, they should be at once seized with mouse tooth hemostats and later ligated, if necessary. A touch of the cautery for a few seconds to the end of the hemostat while in place would often render ligation unnecessary. Any doubtful places beneath the remaining skin margins should be explored by the cautery tip. If

the emission of steam was noted, it should be applied until the cavity was apparently dry. Such a wound was now sterile and might be handled as any sterile burn. Dakin's solution might be used to advantage to keep the wound sterile and hasten the preparation for skin grafting. As soon as all burned tissue had been cleared away, perforated skin grafts sufficient to cover the granular surface soon completed the cure. The conclusions reached by him were based on the observation of thirty-two cases of carbuncle treated by the application of the cautery. Compared with former experiences, the period of convalescence appeared to be conservatively fifty per cent. less than by the old methods of treatment.

Letters to the Editors.

DR. HORATIO C. WOOD.

NEW YORK, February 2, 1920.

To the Editors:

A quarter century ago the writer sat under the instructions of Doctor Wood, whose death last week in Philadelphia marked the passing of an American medical scientist of first rank; one who for forty years gave an embellishment to therapeutics, causing this difficult branch of knowledge to become most attractive to aspiring third year medical students privileged to be of his classes. Doctor Wood was a truly great teacher, for his magnetic personality contrived to so strongly accent all his works that the most stupid hearer failed not to be revived and have his mental processes quickened and impressed during the lively stimulations of the lecture hour. Professor Wood was a most skillful word painter, and his pleasing choice and easy flow of language, with all the mellow richness of his marvelously musical voice as he planted knowledge, so stirred up flavor in his hearers' minds as served to charm their ears and senses; often, indeed, his speech, so timed and finished in degree, became like poetry of the science. Ever did the well spring of truth which came forth from this noble, simple mind—simple as prophet mind is simple and as penetrating—and welled up from the depths of his sincere heart give out lessons and influences as one; pearls of truth mounted in the settings of his rich life's experiences. Doctor Wood united great learning with such rare degree of common sense, tintured with a fine humor, as to approach the ideal physician; able to meet the high and low of ailing and distressed humanity upon planes of greatest helpfulness, whether ministering to the sick body or troubled mind. Professor Wood's lectures were the event of the undergraduate week, packing the hall where he held forth, while his final examination of classmen was the culminating drama of the scholastic year for aspiring medics. Upon such latter occasions the "anxious bench" in Doctor Wood's reception room at his Chestnut Street residence was both a pain and a delight for the candidate to behold, depending upon whether such a one was billeted as the next one in for

examination, or viewed casually as he "passed" out. It was, however, the "charades," so called, which Professor Wood presented to his student body individually when they appeared before him at the annual oral review, that tried their spirits so sorely, more especially if the unlucky one had failed to absorb all the intricacies of the physiological manifestations of a dose of the designated drug on the genus homo. The "charade" consisted of a combined description and more or less graphic and dramatic depiction by the professor of the effects of a given drug upon the human subject after an administration of full physiological or toxic dose, and it was up to the future disciple of Æsculapius to explain the therapeutic riddle by answering promptly at the end of the tableau the name of the drug. If one didn't know his "charade"—and everybody got one at the last of his examinations—he was lost and there was no help for him.

The writer had never personally met Professor Wood up to the close of the late spring afternoon when called to enter the sanctum for examination; after being duly taken over the hills and through the valleys of his apportionment of the subject, Doctor Wood began his justly celebrated "charade" for aconite. With compelling words he held the writer's absorbed interest as he carried him along with a vivid description of the unfortunate individual being mastered by an overpowering dose of the deadly monkshood tuber. Doctor Wood seemed like one about to be engulfed when at the close, slowly sliding down in his chair, he gasped out in a dwindling whisper: "Doctor, the patient says he is dying;" then recovered himself in crisp tones that bade the writer bestir. The smiling eyes of that keen but kindly visaged gentleman are still pictured in the writer's memory, as he was dismissed from his examiner's presence with the cheering words: "Go home, and tell father you were a good boy."

It is not unseemly to recall our memories of the great departed in medicine, whom it is one's privilege to have known. None know so well as doctors how rare is a great physician.

F. GRIFFITH, M. D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Our Nervous Friends. Illustrating the Mastery of Nervousness. By ROBERT S. CARROLL, M.D. Medical Director, Highland Hospital, Asheville, N. C. New York: The Macmillan Company, 1919. Pp. iv+258.

Partly, I suppose, because all the things in youth which were to "do us good" were generally unpleasant, lessons, pills, powders, washing, bed, etc., an antagonism towards any such treatment was created which endured right on through life. Fortunately, the sugar coated pill and the insinuating capsule have superseded the atrocious forms of drug administration, just as the charming stories of today have supplanted the "moral tales" of long

ago wherein the good boys prospered and the naughty ones suffered and died, there being no mistake, even before reading, because a neat tombstone adorned the last page.

But Doctor Carroll, in presenting *Our Nervous Friends*, relies on the fact that many will read a story who will flee an essay, and, though the few tombstones are only cryptically shown, it is made clear that the occupier did deliberately head for them and was not suddenly "cut off" by those natural calamities which insurance papers term "a visitation of God."

The stories are capital pen and ink sketches of people we meet every day, and whose autointoxication we tolerate with boredom or contempt. We recognize them; the thing is, to make them recognize themselves, and, to this end, Doctor Carroll delicately strips away their wilful ignorance and shows the ungraciousness, the hideousness, of adding to the world's discomfort by assuming failings or vices to the hurting of our fellow men.

The Neurotic, The Nervously Damaged Mother, The Willing Illness, The Suffering of Selfpity, The Slave of Conscience, The Crime of Inactivity, Emotional Tyranny, are some of the stories which may touch the flabby conscienced neurasthenics and neurotics, and the term "nervous," on the title page will not, perhaps, scare from reading, because, as a rule, they are mighty proud of "not having a whole nerve in (their) body," or being "just a mass of nerves." They will not be pleased to find themselves regarded, not as objects of pity, but as public malefactors destroying peace and weakening others.

Births, Marriages, and Deaths.

Died.

BAHN.—In Spring Grove, Pa., on Friday, February 13th, Dr. George W. Bahn, aged sixty-four years.

BRUNDAGE.—In Scranton, Pa., on Sunday, February 22nd, Dr. Frank M. Brundage, of Conyngham, aged fifty-nine years.

DANIELS.—In Buffalo, N. Y., on Friday, February 13th, Dr. John Havemeyer Daniels, aged fifty-two years.

DEERY.—In Bridgeport, Conn., on Monday, February 9th, Dr. Joseph Patrick Deery, of Fairfield, aged thirty-four years.

FERRER.—In New York, N. Y., on Monday, February 23rd, Dr. Jose M. Ferrer, aged sixty-three years.

GREEN.—In Muncie, Ind., on Saturday, January 24th, Dr. George R. Green, aged sixty-eight years.

HERSHEY.—In Denver, Colo., on Tuesday, January 27th, Dr. Edward P. Hershey, aged fifty-nine years.

HINCKLEY.—In Newark, N. J., on Sunday, February 22nd, Dr. Livingston Spraker Hinckley, aged sixty-five years.

OVERLOCK.—In Worcester, Mass., on Friday, January 30th, Dr. Melvin George Overlock, aged fifty-five years.

SCHOENENBERGER.—In New York, N. Y., on Friday, February 20th, Dr. Frederick James Schoenenberger, aged forty-five years.

TATE.—In Pittsfield, Mass., on Wednesday, February 11th, Dr. Harry John Tate, aged thirty years.

VAN DER POEL.—In New York, N. Y., on Sunday, February 22nd, Dr. John Van der Poel, aged sixty-two years.

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Original Communications

THE PSYCHOLOGY OF FLYING.*

BY HALLIDAY G. SUTHERLAND, M. D. (Edin.),
London,

Honorary Consulting Physician to St. Marylebone Tuberculosis Dispensary; Assistant Physician to the Royal Chest Hospital, London; Sometime Emergency Surgeon Royal Navy, and Captain Royal Air Force.

The psychology of flying attempts to explain the processes whereby airmen become aware of and respond to their surroundings and implies some relation between body and mind. All perception by sight, hearing, taste, smell, or touch involves two distinct and separate processes. In the first place there are physiological events in the sense organs. When we look at anything, rays of light are focussed on the retina and a nervous impulse is thence transmitted to the visual centres of the brain. Then there are conscious experiences in the mind—in this case visual sensation. The organs of sight enable the mind to have visual sensation, but neither movements of the iris nor biochemical changes in the brain can of themselves make up the consciousness of sight. All we know of consciousness is that it exists. Descartes said long ago, that doubt implies the truth. If we seek further we come to philosophies wherein mind and matter seem to be only different appearances of one underlying reality, and beyond these philosophies are the transcendental heights of revealed religion.

BODY AND MIND.

Body and mind thus seem to be interdependent. We could not see without eyes and without physical impression on the senses could not experience those changes in consciousness which make up our mental life. On the other hand purposive muscular movement cannot occur except in relation to that conscious process in the mind called will or volition. Between the mind and the cerebral cortex there is some intimate relation because without the cortex a man or animal becomes a living automaton, only capable of reflex actions which never occur except in a uniform manner and in response to appropriate stimuli. But conscious changes in the mind and biochemical changes in the cortex are separated by a great gulf. We know nothing of how that chasm is bridged. Two possibilities have been suggested, each of which implies a miracle.

INTERACTION.

There may be some link between the cortex and the mind whereby a conscious process in the mind induces a nervous impulse in the cortex, and biochemical changes in the neurones induce sensations in the mind. Nothing we know of matter or consciousness can explain the nature of this link.

PARALLELISM.

It is also possible that changes in the cortex and in the mind occur simultaneously without any interaction between body and mind. This possibility of psychophysical parallelism may be expressed perhaps more clearly in metaphor. Imagine the body and a shadow, impressions on the body instantly felt by the shadow, and every volition in the shadow simultaneously accompanied by a movement of the body—that I think illustrates parallelism, a possibility arising out of a certain metaphysical explanation of the universe. For practical purposes any stimulus, producing a cortical change concomitant with a sensation may be regarded as the cause of that sensation in the mind, and any volition in the mind, concomitant with a cortical change, may be considered as the cause of subsequent muscular movement.

ONESIDED ACTION.

There remain two impossible suggestions. According to the earliest physiologists the habitation of the mind or soul was in the pineal gland—later on it was promoted to the lateral ventricles—and from there it played on the brain as a man plays on an organ. That implies onesided action and that sensation exists in the mind independent of the brain, whereas in reality we cannot see without eyes, or hear without ears. Another kind of onesided action was suggested in the nineteenth century—that the brain creates mind as the liver creates bile. Without wishing to hurt the feelings of the most sensitive materialist, it is necessary to point out that consciousness cannot possibly be a function of the cerebral cortex, in the sense that digestion is a function of the stomach. Digestion is the function of the stomach, and consists of movements and secretions of the stomach through whose existence food is converted into chyme. The function of the cerebral cortex consists of biochemical changes through whose existence physical impressions from the external world are in some way associated with changes of consciousness, and volitions in the mind are associated with

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movements of the body. It is more logical to believe that the stomach creates both food and chyme than to believe that the cortex creates mind, because if biochemical changes can produce consciousness, which is neither matter nor energy, then something has been created out of nothing. Moreover the fallacy implies that no action is ever due to motives but to molecular changes, of which the illusion of will is a byproduct. In fact, this unhappy dogma means not only that a conscious man never thinks or acts freely, but also that as a conscious man he never thinks or acts at all.

In recent medical literature there is a tendency to regard the mind as identical with the nervous system, just as if, let us say, the emotion of anger in the mind could be likened to neuritis in a nerve, and essentially psychological tests have been described as pertaining to the nervous system, whereas in reality they are tests of the mind. Apart from introspection mind can only be approached or tested through the nervous system, but psychological tests through the medium of the nervous system are nevertheless experiments on the mind itself. Let us take a rough illustration and a concrete instance. If we receive a reply to a telegraphic inquiry for market prices, we have tested the telegraphic system between here and London, but we have also ascertained the mood on the stock exchange.

PHYSIOLOGICAL EXPERIMENTS.

In testing acuity of vision we find out the physiological or pathological condition of a portion of the nervous system, but in testing the time in which an object is perceived and recognized we learn something about the mind. For example, there is an apparatus whereby a colored card is suddenly exposed to an individual, the moment of exposure being marked on a moving kymograph by an electric tuning fork vibrating at 100 a second. The individual is told to lift a key as soon as the card is exposed and the movement of lifting the key stops the tuning fork. In this way the time between the exposure of the card and the pressing of the key is recorded in one one hundredth of a second, and the muscular reaction to light is timed. It is usually eighteen one hundredths of a second, but eighteen one hundredths of a second does not represent the time required for the mind to become conscious of the stimulus, as it includes the nervous process of transmitting the signal to the cortex and the answer to the hand.

If a red card was exposed in the first experiment, the subject is told that in the next experiment red or green may be shown, but that he is only to lift the key if the color is red. Again a red card is exposed and the time between its exposure and the lifting of the key is now twenty-seven one hundredths of a second. In this experiment the movement of the key was delayed until the mind realized the color to be red, and the difference in time, nine one hundredths of a second, was the time taken by the mind to form the sensation of red. It is possible, therefore, to test at least the elements of mind, and from this point of view the minds of airmen may be studied in relation to their aerial surroundings.

AERIAL SURROUNDINGS.

After centuries of progress on earth and sea, man in a generation has conquered the air. He enters a machine and the propeller is started. Against the noise of the engine doing one thousand revolutions to the minute, speech is impossible. He signals with his hand to mechanics who pull from the wheels the wooden chocks that held back the machine. It rushes forward, jolting over the ground. Suddenly the jolts cease and the machine feels steadier than a motor car. On looking over the side the ground seems to be rapidly moving away and in a second or two the machine is at a height from which the earth looks like a modelled map.

The aeroplane is steady except when it enters a pocket of rarefied air and drops suddenly a hundred feet. Above the noise of a great wind humming through wires is the roar of the engine and the machine, weighing well nigh a ton, is like some gigantic bird ploughing its way across an ocean of air. By the wind screen the pilot's face is protected from a gale that carries a fine spray of castor oil. Far from the homely earth he rises to heights of intense cold where snow is falling and through dark mists into a place of brilliant sunshine on a sea of rolling clouds. Everything is strange and new.

In a few minutes he has passed from conditions of probable safety to those of possible death, from stability to uncertain equilibrium, and from relative calm to incessant noise. By virtue of quick perception, skilled judgment, and rapid action, he is rushing at great speed through surroundings entirely foreign to inborn instincts of the long mammalian line. His muscles are more or less tense and in rarefied air muscular fatigue comes on rapidly. For example, after a flight the pilot may want to sit down and rest, while his observer or passenger feels restless and goes for a walk. Again rarefied air leads to deeper breathing and to quickened pulse. Martin Flack has shown that this ultimately means a strain on the heart at a time when the available oxygen is diminished. These physical changes have their own influence on the mind.

Then come the risks of war—the great North Sea when the patrol is finished, crossing the lines at 17,000 feet with bursting shells seeking the range, firing near the ground on massed infantry, long raids in the night, aerial fights, collisions, dives of a thousand feet, and machines in flames. On his nervous system there is sudden intermittent strain, of a variety and intensity such as man has never known before. The nervous system is the pathway to the mind, and there the results of these things accumulate.

EFFECT ON THE MIND.

We cannot describe the sensations of airmen, because no man can read the mind of another, and I can only tell of what a passenger felt on one or two peaceful and unadventurous flights. There was exhilaration, strangeness, and curiosity, leading to various speculative reflections about the earth, sensations of satisfaction, loneliness, discomfort, uneasiness, and several hours afterwards,

fear. It would be ridiculous to attribute these sensations to other people because no two minds think alike. Some pilots feel the loneliness and discomfort, but many have led a crowded life of danger for months without turning a hair. Yet there is a limit to mental endurance, and there comes a time when even the bravest of the brave begin to show the need for rest.

DISABILITIES OF THE MIND.

Although we cannot read the thoughts of another, it is yet possible to detect the presence of disabilities in the mind owing to their expression through the body. It has been said that all consciousness is motor, and that is certainly true of emotions. For example, the emotion of anger "initially expresses and satisfies itself by a peculiar form of motor discharge." Disabilities in the mind include any mental state or emotion that interferes with perception, judgment, and action. Of the many disabilities we may attempt a brief analysis of the emotion of fear.

THE GENESIS OF FEAR.

Fear is a painful state of consciousness arising from the sudden perception of anything immediately antagonistic to the will to live. No man fears a tiger in a Zoo, and if fear comes over him on meeting a tiger in the forest, it is because his life is threatened. Were he confident of killing the tiger, there would be no fear in his mind.

Sudden or intense impressions may lead to fear, and in those prone to the emotion an unexpected noise or a peal of thunder will cause alarm. Again the perception or recollection of something associated with pain or discomfort may cause fear. For example, a child attracted by the brightness of a flame, takes it in his hand and is badly burnt. Afterward the sight of a flame will cause fear, which is not merely the memory of the burning, because in the emotion of fear no actual sensation of burning is present. Fear may also arise from any startling event, in direct contradiction to ordinary experience, such as the apparition of a ghost, and it is on record that a dog was terrified into an epileptic fit on seeing a bone drawn across the floor by an invisible thread. Lastly, fear may be due to a concept of the mind itself, such as the thought of annihilation.

This emotion of fear is just as natural as the will to live. It is not synonymous with cowardice, the latter being a question of ethics. Every airman is brave, as otherwise he would not be where he is, nevertheless he may experience fear. Moreover, fear may be related to the peculiar circumstances of the danger rather than to the danger itself. Thus it has actually happened that an airman has lost his nerve for flying, transferred to the infantry, and won the Victoria Cross in France. Again, under any given conditions to which the same individual is exposed, the presence or absence of fear is to some extent determined by the state of his general health. A man in poor health may feel afraid under conditions which he might accept with equanimity were he in good health. In the same way, a man rising in the morning with a slight degree of visceral toxemia is moved to anger

by events which he disregards when in perfect health. Possibly toxins in the body cause toxic changes in the cortical cells, or possibly a toxic state of the nervous system alters the nature of all sensory impulses received by the brain. However, it comes about, toxic conditions of the body have their reflections in toxic states of mind, and so, too, physical disabilities of the muscular, respiratory, and circulatory systems, associated with flying, contribute towards the development of disabilities in the mind.

When the emotion of fear arises, either from perception or recollection, it is generally more violent and disagreeable than the actual experience which induced it. For example, an airman was engaged for a period of nine months in daylight raids. One morning after two hours' flight, he was over the target. At that moment one of his comrades, flying above him and unaware of his presence, began to drop bombs, which whistled past within a few feet of his propeller. He side-slipped out of the way, dropped his own bombs, noted the results, and returned to his aerodrome thinking nothing very much about it. Three nights later, as he was going to sleep, he suddenly realized what might have happened—and from that moment his nerve was gone.

The disability of fear is that it destroys judgment and so hinders the man from escaping the very thing against which the emotion of fear is a violent protest. Some writers on evolution regard fear as advantageous, as it causes the weaker animal to take to flight. The rabbit will run from a lion, and as there are more rabbits than lions in the world, fear is doubtless advantageous to the rabbit, but it is at least possible for an onlooker to doubt whether this actually represents the survival of the fittest. Moreover, even in the hunt and chase of evolution, fear serves the hunter more often than his frightened prey. The bird sits spell-bound until the snake has seized it, and the frightened rabbit will rush from the ferret straight at the dog. Nay, more, from the nature of its physical expression, fear is always a disability.

THE EXPRESSION OF FEAR.

Animal experiments in America have shown that, associated with fear, are signs of fatigue in the cortical cells. Fear may find expression in tremor of the lips, shallow breathing, pale skin, contracted capillaries, a rise of pulse rate and a fall in blood pressure, the shudder of gooseflesh, various visceral sensations, and weaknesses or even paralysis of muscular movement. The degree of expression is governed by the control of the will and the intensity of the emotion. Many a man has felt afraid without his comrades knowing it, but a suitable apparatus would have recorded changes in the circulatory system over which he had no control. At the other extreme there may be persistent inhibition of speech.

INHIBITION OF SPEECH.

The patient eats, sleeps, and writes without difficulty. In some cases there is muscular tremor, in others there is none. Reflexes are generally exaggerated. Something prevents speech and

laryngoscopic examination shows a normal larynx. Having explained to the patient that his voice will be restored without an operation, open ether is given until he is half intoxicated. Then we tell him in a firm voice that his nerves are all right, that he has fear in his mind, that this fear is natural because of the terrible sights and sounds he saw and heard, that fear may be conquered by reason or by duty, that he is proud of being a soldier, that he is no longer afraid, that he can speak, and that he will now say in a loud voice: "I can speak." There is a burst of strange tears, the man speaks, and you encourage him to repeat the words until he is quite out of the anesthetic. The anesthetic blurs a state of consciousness, so intense and painful that certain processes of thought are suppressed, and then by suggestion the will is urged to regain control. Consequently fear is cast out and the man is cured. Among sailors and soldiers during the war, I have thus treated six patients for loss of voice, and one of them had not spoken for two months.

PSYCHASTHENIA.

Inhibition of speech is rare among airmen, possibly because they are generally fitter at the start in mind and body than their fellows, and possibly also because the unfit are the first to be killed. But psychasthenia, one of the conditions causing a pilot to go stale, may be the expression of fear or strain in the mind. After a varying time of exposure to discomfort and to danger, some pilots begin to make bad landings, to feel uneasy in the air, and to become stale. If this is due to a disability in the mind, other signs are generally present.

There is loss of sleep, unpleasant dreams, nightmares, starts, apprehensions, greatly increased reflexes, tremors, and poor muscular control. He may have dark lines under his eyes, and look apathetic and tired. Psychasthenia may endure for weeks or months even when the patient is removed from surroundings amidst which the condition developed. The patient may resemble a man dog tired after a long tramp on the moors, but whereas the latter after sleep will awake like a giant refreshed, the psychasthenic pilot feels no change on waking. In his mind there is a disability that finds constant expression in a lowered tone of the whole body. And thus neurasthenia may be the expression of psychasthenia.

The patient should be removed from anything that recalls these unpleasant or painful sensations. Ground duties in an aerodrome may aggravate his condition, and it is better for him to go to a quiet country place, where body and mind may be diverted and the vicious circle broken.

Psychasthenia is best prevented by maintaining a high level of bodily and mental health. Smoking should not exceed six cigarettes a day, or two ounces of pipe tobacco a week. Airmen should do without alcohol, play outdoor games, and have some real intellectual interest. More encouragement and greater facilities might be given for the study of languages, such as French, because life in the service is likely to be intellectually monotonous, and this tells especially against those who

have joined in their teens. One of our greatest airmen insists that everyone in his distinguished squadron in France shall train as for a race. Every man is in his bed by nine o'clock at night, and those who find this irksome are transferred to another squadron. This should be known because some young pilots are likely to think in error that great skill and daring in the air are the counterpart of a "full out" tendency in more earthly pursuits.

PSYCHOLOGICAL EXPERIMENTS.

The object of the following experiments was to find out whether disabilities of the mind can be detected in their earlier stages, before they find expression in obvious physical changes. To this end, a record was kept of the time taken by the mind to recognize simple concepts and to form associations with them.

Free associative reactions.—The association was free because the subject replied to the word heard by giving the first associated idea that came into his mind. A series of thirty words is spoken to the subject, a new series being used at each experiment. As each word is spoken a stop watch, graduated in tenths of a second, is started by the operator, and as soon as the subject replies the watch is stopped, and the answer and time taken noted down. It is essential that the subject give the first associated idea coming into his mind. Thus, one pilot, whose replies were generally quick, on hearing the word "crab," replied after a lapse of 2.4 seconds, "foot." He explained the association as follows—"crab" called up "sand," "sand" recalled a watering place in North Wales, where he went for a bathe and felt a crab on his foot. Instead of making this long mental journey, he ought to have answered "sand," and could have done so in a much shorter time.

At the end of the experiment the various times taken to answer the thirty words are added up. The result divided by thirty gives the time of association. The value of an average depends not only on the number of observations but also on the extent to which each individual observation varies from the average, and consequently it is necessary to record the median time and the mean variation. The median time is the measurement that occurs most frequently in the series. The mean variation (m. v.) is the average of all individual variations from the average of the series.

For example, the figures obtained in one experiment were as follows:

Operating word.	Repix.	A.	B.	C.
		Time.	Median.	Mean variation.
1. Donkey	Pump	1.2	1.0	—1
2. Clock	Watch	1.1	1.0	—2
3. Ice	Cold	1.2	1.1	—1
4. Cherry	Ripe	1.2	1.1	—1
5. Door	Mat	1.1	1.1	—2
6. Wine	Drink	1.0	1.1	—3
7. Steel	Malleable	1.2	1.1	—1
8. Clouds	High	1.6	1.1	+3
9. Brush	Comb	1.2	1.2	—1
10. Ship	Buy	1.1	1.2	—2
11. Jail	Prison	1.2	1.2	—1
12. Rug	Mat	1.2	1.2	—1
13. Crystal	Water	1.1	1.2	—2
14. Cod	Fish	1.2	1.2	—1
15. Tombstone	Funeral	2.0	1.2	+7
16. Cork	Water	1.2	1.2	—1
17. Hatch	Light	1.2	1.2	—1
18. Egg	Beaten	2.6	1.2	+13
19. Gate	Open	1.2	1.2	—1
20. School	Closed	1.4	1.2	+1

Operating word.	Reflex.	A. Time.	B. Median.	C. Mean variation.
21. Flames	Fire	1.4	1.2	+1
22. Mouse	Trap	1.1	1.41	-2
23. Class	Clear	1.0	1.41	-3
24. Cycle	Wheel	1.4	1.4	-1
25. Mouth	Wash	1.5	1.5	+1
26. Leaf	Falling	1.2	1.5	-1
27. Steam	Hot	1.4	1.5	+1
28. Lid	Heavy	1.5	1.6	+2
29. Comb	Brush	1.1	2.0	-2
30. Hops	Picking	1.4	2.0	-1
Average		39.0	1.2	6.2
Mean variation as percentage of average, 20.				

THE MEAN VARIATION.

In column A the average is found, in column B the median and in column C the mean variation. The mean variation is more important than the average when comparing the associative reactions

mean variation of .26 is twenty per cent. of its average, and the mean variation of .27 is fifteen per cent. of its average.

APPLIED TO PILOTS.

Any emotional tendency in the mind may raise the mean variation of a response. Thus, one pilot (No. 12 in the table), gave consistently steady replies, average 1.4, until he came to the word "cards" when he answered "games," after a pause of four seconds. From his childhood he had been taught that it was wrong to play cards, the words aroused a moral doubt in his mind, and consequently his mean variation over the series of words was increased.

When some disability is present the mind has difficulty in selecting one out of the many associated

TIMES OF FREE ASSOCIATIVE REACTIONS.

Case No.	Rank.	Date.	Circumstances.	Time.	Median.	Mean Variation.	Remarks.
GROUP A. BASES OF SERIOUS MENTAL DISABILITY.							
1. Army officer	30	5/18	Convalescent shell shock	4.30	3.60	1.80	41.8
2. Lieutenant (stores)	18	3/18	Neurasthenia and insomnia	4.10	4.00	1.64	40.0
Average.				4.2			40.9
GROUP B. PILOTS KILLED OR INJURED SUBSEQUENT TO TESTS AND OWING TO MISTAKEN JUDGMENT							
3. Lieutenant	9	3/18	Before flight	1.70	1.80	.43	25.2
	9	3/18	After ninety minutes' flight	2.50	1.60	.26	17.3
	11	3/18	After ninety minutes' flight	3.20	1.70	.48	40.0
	12	3/18	Before flight	4.30	1.50	.27	20.7
	12	3/18	After thirty-five minutes' flight	5.30	1.50	.28	22.0
4. Lieutenant	13	3/18	Before flight	1.10	1.30	.20	18.1
	30	5/18	Before flight	1.80	1.90	.34	18.8
	30	5/18	Ten minutes, after crash	2.50	1.70	.27	18.0
	6	6/18	Before flight, after leave	4.50	1.60	.28	18.3
5. Lieutenant	9	3/18	Before flight	2.52	2.70	.45	17.8
	9	3/18	After forty minutes' flight	2.30	2.20	.51	21.6
	11	3/18	Before flight	3.18	2.00	.40	21.5
	11	3/18	After forty-five minutes' flight	4.16	1.80	.26	15.8
	12	3/18	Before flight	1.50	1.50	.24	15.9
	12	3/18	After 60 minutes, flight	1.58	1.70	.17	11.3
Average.				1.63			20.2
GROUP C. PILOTS REPORTING THEMSELVES AS STALE OR AS UNFIT TO FLY.							
6. Lieutenant	27	5/18	Complains lack of nerve.	1.80	2.20	.53	29.4
7. Lieutenant	27	5/18	Has had "preseniments".	2.30	2.20	.30	38.0
	27	5/18	Reports himself unfit.	2.00	2.20	.46	23.0
8. Lieutenant	21	5/18	On ground duty six months.	1.50	2.00	.40	26.6
9. Lieutenant	1	6/18	Landed in sea 29/5/18.	4.10	1.50	.42	38.1
10. Lieutenant	21	6/18	Shot down Hun on 19/6/18.	2.00	3.20	.69	23.7
11. Lieutenant	1	7/18	Wishes to stop flying.	1.74	1.40	.68	39.0
Average.				1.87			32.5
GROUP D. PILOTS FLYING WELL AND APPARENTLY FIT.							
12. Lieutenant	17	4/18	Before flight	1.80	1.70	.44	29.3
13. Captain	27	6/18	Before flight	1.80	1.70	.45	25.0
14. Lieutenant	23	6/18	Before flight	1.83	1.90	.39	21.8
15. Lieutenant	4	6/18	Fought 3 Huns 1/6/18.	1.50	1.60	.26	17.3
16. Captain	20	6/18	Before flight	1.30	1.40	.10	14.6
17. Lieutenant	13	7/18	Before flight	3.10	1.30	.16	12.3
18. Lieutenant	21	6/18	After leave	1.50	1.60	.29	13.1
9. Lieutenant	13	2/18	Before flight	1.50	1.70	.34	22.6
	13	3/18	After 30 minutes flight	2.70	1.80	.47	27.6
10. Lieutenant	14	2/18	Before flight	3.10	1.40	.25	20.8
	12	7/18	After leave	2.00	1.80	.47	22.5
11. Lieutenant	13	7/18	After several flights as passenger.	3.10	1.30	.16	13.3
Average.				1.52			20.0

of different individuals. One mind may act consistently quicker than another and give a lower average time of response, and yet both may be acting consistently and steadily. No matter what the average time is, when a mind is acting steadily the mean variation will be slow, and when a mind is acting erratically the mean variation will be high. But the value of the mean variation depends on its ratio to the average. For example, a mean variation of .26 to an average of 1.3 is higher than a mean variation of .27 to an average of 1.8, so that for comparison the mean variation must be expressed as a percentage of the average. The

ideas that arise. As will be seen from the table, the two cases of serious mental disability gave an average mean variation percentage of over forty. In the shell shock case the test was stopped at the tenth word as the subject was in great mental distress owing to the effort.

The figures in group B of pilots subsequently killed or injured, owing to mistaken judgment, show nothing definite, as the average mean variation percentage, 20.2, is practically the same as that of pilots flying well and apparently fit, although the pilot in case 3, on one occasion, gave a percentage of forty. The man in case 4 crashed,

on a windy day, in a type of machine of which he had not much experience, and his great mental control is apparent from the fact that a crash from forty feet had no effect on his associative reactions, as tested ten minutes later. The pilot in case 5 was killed two months after the last test was made and there is no evidence as to his reactions in the interval.

Pilots reporting themselves as stale or unfit to fly gave an average mean variation percentage of 32.5 as compared with twenty in the case of pilots flying well and apparently fit. Moreover, a comparison of groups C and D shows that those pilots who resumed flying, after leave or after regaining confidence by flights as passengers, subsequently gave a much better reaction.

DEFECTS OF ASSOCIATIVE REACTION TESTS.

The first defect in these tests is that the association of ideas is not really "free." When the word "tree" is spoken we usually visualize a mental representation of a tree, and thereafter select one appearance of that representation, such as green, for our first associated idea. In reality the first associated idea was the visual representation of a tree, and yet to repeat the word heard would suggest the intellect of a cretin.

Again, the operator's part in the test is against accuracy, for the times will be lengthened or shortened according to his own reaction at the moment. Moreover, only a fraction of the times recorded actually represent the mental process of cognition and association in the mind of the subject. The operating concept has to pass from one mind to another via the organs of speech and hearing, while the response must be returned in the same way before the time can be registered on the stop watch. Lastly, a tenth of a second is but a crude measurement of time, when the electric tuning fork will record in hundredths, and the chronometer in thousandths of a second.

Nevertheless these experiments suggest that in experimental psychology we may have something whereby those who are temperamentally unfitted to fly can be eliminated and whereby life can be saved.

The cost of this research has been generously met by the Carnegie Trust for the Universities of Scotland.

26 NEW CAVENDISH STREET.

SOMATIC SYMPTOMS IN NERVOUS AND MENTAL DISEASES.

With the Report of an Interesting Case.

By FRANCIS X. DERCUM, M. D.,
Philadelphia.

Somatic or visceral phenomena in nervous and mental diseases present themselves under three different conditions. First, they may be directly due to and symptomatic of the underlying nervous affection. This is notably the case in the great neuroses, neurasthenia, hysteria and hypochondria. For example, in neurasthenia the fatigue neurosis, the deficient innervation and lessened inhibition

present may give rise to characteristic phenomena presented by the circulatory apparatus, the digestive tract, by the sexual apparatus, or by various glands. This is borne out by the common illustrations of the feebleness of the circulation, the tachycardia, paroxysmal or persistent, and other signs of weakness and irritability of the circulatory apparatus. This is also true of atonic and delayed digestion, constipation and other gastrointestinal phenomena which are present. All are expressive of a lowered nervous output, a fall in the energy normally supplied either through the autonomic or sympathetic nerves or through both. In hysteria, the list of visceral phenomena that may be present is very large. I need but mention the anorexia, the vomiting, the tachycardia, the vasomotor phenomena, the cough, the rapid breathing, the aphonia, polyuria, anuria, phantom tumor, and especially the local pains which so commonly lead to abdominal and other unnecessary operations. In hypochondria, again, a neurosis much neglected and commonly unrecognized, the various obscure visceral sensations of which the patient complains lead at times to mistaken diagnoses and again, though less frequently than in hysteria, to unnecessary surgical operations. Surgical operations are, however, performed in hypochondria every now and then both in men and women. I shall recall to the minds of my hearers an interesting case which I presented some years ago, in which because of the insistent complaint of pain, the left testicle, apparently entirely normal, had been removed. The pain, hypochondriac or, to speak more accurately, hallucinatory in character, at once transferred itself to the remaining testicle. Similarly much attention is at times given, especially in unrecognized cases of hypochondria, to the eyes, the nose, the throat, the digestive tract, and other organs. I may mention a woman who had thirteen pairs of eye glasses, twenty odd sets of false teeth, who had been on every conceivable diet and who finally had had her stomach scrubbed out by the method of Doctor Turck, and all to no purpose.

When we turn our attention to organic diseases, e. g., tabes and paresis, the story that unfolds itself is also very suggestive. It is not by any means unusual to find a tabetic patient in whom a laparotomy—perhaps several—have been performed for supposed visceral disease when the symptoms were really due to tabetic pains and crises. One of my paretic patients again had had four laparotomies. I may also mention a case of brain tumor in which the vomiting present had led to surgical intervention of the upper abdomen.

To repeat, the first condition in which visceral or somatic phenomena are present consists of nervous affections in which these phenomena are directly expressive of and are part and parcel of the nervous disease itself. The second condition is one in which nervous symptoms are present but are secondary to visceral disease. For instance, general weakness sooner or later supervenes upon visceral disease but this weakness differs radically in its symptomatology from that of neurasthenia, and is especially featured by the pains and other phenomena which direct attention to the structures

involved, or, it may be, to the general morbid process at work. Again, the exhaustion and the toxemia resulting from somatic disease may in given instances give rise to mental disturbances, confusion, stupor, or it may be delirium. It at once becomes apparent that the nervous symptoms which cause the outgrowth of somatic affections offer very different pictures from those which are characteristic of the various forms of nervous and mental disease.

A third condition which is met with—but on the whole infrequently—is one in which primary nervous disease and primary visceral disease coexist in the same patient; for example, brain tumor and hysteria, pelvic disease and hysteria. Here the situation may at times be misleading and difficult to unravel. The most difficult situation of all, however, occurs when the patient presents a visceral affection and is at the same time in the developmental period of a mental disease. The one or the other condition may be overlooked. The following is a case in point.

CASE.—H. S. T., aged twenty-one, white, sailor, was admitted to the Jefferson Hospital, July 10, 1917, complaining of difficulty in swallowing.

The family history revealed no features of moment. Father and mother living and well. A sister died in infancy. No other children. No history of cardiac, pulmonary, or renal disease. An aunt is said to have died from cancer.

The personal history was as follows: The patient had had measles and mumps in childhood. Had never had typhoid, pneumonia, or rheumatic fever. Denied venereal infection. Used neither alcohol nor tobacco. Had had no operations.

He had had an intermittent discharge from the right ear in childhood. According to the mother, the patient had a convulsion at six years of age. The patient himself states that he had two convulsions at nine years. According to his account, which is not very satisfactory, these began in the index finger of the right hand. He added that he was unconscious for several hours. In 1914, while at work, his sweater caught on the shaft of a donkey engine and he states that he was turned around the shaft five times. He sustained a four inch scalp wound over the left temporal region. His right ankle also was hurt; it became painful and swollen and was stiff for some two weeks. Two years before admission he again had two convulsions, separated by an interval of a day. He says that he was eating breakfast at the time of the first attack and that his jaws became stiff. The convulsions each lasted about an hour and a half and each was followed by many hours of unconsciousness; sometimes he says two hours, sometimes he says four. Asked whether he bit his tongue he answers yes.

Present illness.—He states that a year ago, while eating in a restaurant, he felt a contraction in his throat which he thought was the beginning of another convulsion. He went out into the open air, but returned in a few minutes and finished his meal—an oyster stew—though he did so with much effort. He had difficulty in swallowing, and this difficulty in swallowing, he asserted, has persisted

ever since. He states that it exists especially for solids and that swallowing is accompanied by much belching and often by regurgitation of food. He has lived for a long time past mainly on milk and eggs; during the past year he has been very constipated and he has suffered very much from headaches.

Condition on admission.—Well nourished, adult, male. No signs of visceral or organic nervous disease. Questions fail to elicit any subjective symptoms. Merely complains of difficulty in swallowing. Is very insistent with regard to this. An esophagoscopy by Dr. Chevalier Jackson, made on July 14th, disclosed a superficial erosion in the upper third of the esophagus contraindicating insertion of the tube beyond this point. Doctor Jackson suggested that a second esophagoscopy should be done later. Further questioning revealed the fact that because of the occurrence of two convulsive attacks while chewing food at breakfast, the patient is now afraid to chew his food, thinking that it will bring on a convulsive seizure. He has therefore been bolting his food and it would appear that the bolting of a large bolus of food is attended by a special effort which brings on some sensation of distress or possibly a spasm of the esophagus. The act is further followed by much regurgitation and belching.

The x ray examination was negative; there was no evidence of stricture of the esophagus. The Wassermann and other clinical examinations were likewise negative. Under suggestion the patient was gradually persuaded to chew his food properly and he swallowed without apparent difficulty. No convulsions were induced. Regurgitation or belching were also absent.

The case was now regarded as probably hysterical in origin, although other and typical hysterical stigmata could not be elicited. The patient was later placed upon ordinary house diet, ate normally, and was apparently relieved. On July 23, 1917, he was discharged. During his stay in the ward he was noted as rather peculiar. He was faultfinding and disagreeable; at times sullen and insubordinate; at times captious and complaining about his food. While these facts were noted at the time, no special emphasis was laid upon them. No convulsions, it should be stated, were observed at any time during his stay at the hospital.

He was readmitted on October 27, 1917, again complaining of difficulty in swallowing. He said that while chewing his food his throat felt as though it were swelling. He had again had special difficulty in swallowing solid food. The sensation of swelling in the throat passed away after taking a sip of water or after actually swallowing the food. He also complained again of regurgitation.

A physical examination resulted negatively as before. An esophagoscopy by Doctor Jackson on November 15, 1917, failed to reveal any erosion, any stricture, or any spasm of the esophagus. As before the patient was treated by suggestion and as before successfully. As before it was noted that he was a little peculiar. While he finally admit-

ted that he no longer had difficulty in swallowing, he insisted that he had regurgitation. This, observation failed to confirm. It was now especially noted that he was reserved, uncommunicative, and suspicious in manner and that he was very introspective. Every now and then he would ask the meaning of some medical term which he had heard used in connection with his case. He was quite disturbed by the word functional. It was noted also that he frequently busied himself writing upon small pieces of paper, fragments of envelopes and other odds and ends. Upon one occasion he handed to one of my assistants, with much solemnity, an envelope, containing minute clippings of newspapers, a blade of a safety razor, the stump of a lead pencil, and pieces of paper containing much closely written matter. The latter when examined consisted of a rambling and disconnected account of his symptoms and feelings in which a distinctly paranoid attitude of mind was discernible. He now also began talking of various strange sensations which he referred to the upper portion of his abdomen. His descriptions and the fact that the examinations of the abdomen resulted negatively made it apparent that these sensations were to be regarded as visceral hallucinations.

He left the hospital on December 7th, to live with an aunt. The latter noted at once that his conduct was peculiar. He was uncommunicative and kept to himself. He also adopted a rather strange course in regard to his meals. He refused to eat the food provided on the table of his aunt, and to which, according to my inquiry, there could have been no reasonable objection, but purchased his meals outside at various cheap restaurants. He offered no explanation, and it is not improbable that his conduct was the outcome of delusions, delusions possibly having their origin in various visceral hallucinations. The latter he continued to refer to the throat and to the abdomen. Hallucinations of taste also appear to have been present.

This case is especially interesting and instructive because of the manner in which the symptoms were evolved and because of the gradual manner in which the true nature of the case was revealed under observation. The early history suggested an actual lesion of the esophagus due to some trauma in the act of swallowing—perhaps from a bolus of hard or mechanically irritating mass of food, and the first esophagoscopy seemed to confirm this. Later it seemed as though the symptoms had their origin in a spasm of the esophagus; later still the symptoms suggested hysteria, particularly as they disappeared for a time under suggestion.

However, the convulsive seizures, which were neither reconcilable with those of hysteria or of a true epilepsy, remained unexplained. It was only the later appearing mental features which led to a correct appreciation of the case. Evidently the case was one of dementia præcox in an early stage, the symptoms of which at the time he first presented himself were just beginning to reveal themselves. His early conduct and general demeanor in the wards became increasingly explicable as the

patient continued under observation. It would appear, further, that the convulsions which the patient described and which were difficult to classify, are to be regarded as among the epileptiform attacks—the motor crises—every now and then met with in cases of dementia præcox, especially in the developmental period. Finally, the case teaches a valuable lesson as to the interpretation of local or visceral symptoms, when the latter have no or little physical foundation, and when, still further, hysteria offers an inadequate and unsatisfactory explanation.

VARIETIES OF TREMOR AT THE FRONT.

BY TOM A. WILLIAMS, M. D.,

Washington, D. C.,

Foreign Correspondent M. Neurological Society of Paris, etc.

Among the most troublesome functional disorders arising at the front were the frequent divers manifestations of tremor. In the first place, the differential diagnosis between the four chief etiological types is not always easy, and in the second place, the cure is generally difficult even when possible.

The four types are: 1, Tremor due to organic disease of the nervous system, such as paralysis agitans, insular sclerosis or even the chorea of Sydenham, cerebellar and rubrospinal lesions. 2, The tremor of mild intoxication, such as in hyperthyroidism or alcoholism. 3, Perhaps the tremor of anxious and other emotional states is of a similar nature, although it is placed in a different category by French observers under the name of emotional tremor. 4, Pithiatic or hysterical tremor, which must be entirely distinguished from those produced by emotion directly.

It is this last kind which is the most remediable, although every neurologist does not succeed in curing the majority of his patients. The difference in results, however, seems to depend upon the differences of personal technic, for some neurologists declare that it is rare for them not to be able to arrest pithiatic tremor.

The onset of any of these forms may be abrupt, and the consequence of a severe shock, the organic disease being produced by concussion of the cerebrum, the emotion, which may in turn induce hyperthyroidism, being that of fright, and the hysterical tremor being due to autosuggestion or imitation.

In any of the types, however, the development may be delayed. This is remarkable in the case of organic disease; but it is indubitable that in some cases of organic tremor the symptoms do not show themselves for several days after the shock which seems to have been their cause. Of course, the factor of coincidence must not be neglected in the interpreting of any such case.

TREMOR AND TONUS.

It is when the central apparatus has been damaged that tremor may manifest itself. In one variety of this it is most conspicuous in the resting position. It is believed to be due to the spontaneous variations of muscular tonus due to the interruption

of the centrifugal impulses from the cerebellum. This type of tremor sometimes ceases when voluntary movements are made. We must suppose that in these cases the clonic element of volitional movement either overcomes or masks the irregularity of the tonus impulses. This is the picture in paralysis agitans.

Another variety of tremor only occurs when movements are attempted. This is believed to be due to the irregular passage of the motor impulses because of malnutrition of the nerve fibres, such as occurs upon the disappearance of the medullary sheath in the disease known as insular sclerosis. But intention tremor occurs also in toxic states and syphilitic infiltrations, more especially in the course of dementia paralytica. In the latter disease we find irregular and diffuse interferences with and destructions of nerve tracts. In the toxic cases the lesions are found to be minimal and mainly chemical. We know, however, that in such severe cases as toxic neuritis there is a breakdown of the myeline, and that there is an interference with the integrity of the marrow in certain toxic states. We therefore have a right to assume and thereby account for the tremulousness on the general ground of interference with the conductivity of peripheral nerves as well as of the central nervous system. Thus, in toxic tremors we can invoke a modification of tonus as the main cause of the tremulousness that they show.

But it is in rubrospinal lesions that tremor becomes so violent and uncontrollable. These are explained by the complete failure of tonus regulating impulses to pass down their efferent tracts, so that the muscles are influenced only by the projection fibres of the precentral area of the brain beginning in the pyramidal betz cells there, and running to the motor nuclei of the spinal cord by way of the pyramidal system. The muscles then lacking the tonus necessary to react quickly to a motor impulse, act as would the flapping of a loose string or strap, with violent oscillations instead of a steady movement. The contrary phenomenon occurs in states of athetosis, where there is an exaltation of the tonic in comparison with the clonic function, which hinders the rapid movements.

A paroxysmal, recurrent localized tremor occurs as a consequence of severe emotion in some cases. It is especially likely to ensue after fatigue. The movements are sometimes slow and rhythmic, but in some cases rapid and irregular. It may be confined to even a small segment of the body. It may precede, sometimes even by days, a Jacksonian attack. It may be preceded by, or accompany, or alternate with paresthesia of the muscles concerned. It is most often seen in the fingers and thumb, and the movement may resemble that of paralysis agitans. However, it is to be distinguished by its paroxysmal and intermittent nature, and by the accompaniment of the symptoms of Jackson, pallor or flushing of face and extremities, and sometimes momentary loss of consciousness.

The tremor of emotivity, too, may not develop at the time of the shock which seems to have started the patient on the downward path, but may only

show itself after an aggravation of the emotivity, perhaps weeks later. It is likely, however, that some of these late tremors are in reality hysterical. The long persistence of a tremor which was in the first place emotional is attributed by some psychopathologists to a subconscious mechanism continuing the habit after the occasion that produced it has ceased to have a conscious effect. Formerly some neurologists even went so far as to attribute the long continuance of symptoms to the persistence of ideas of which the patient was unconscious. Not much importance need be attached to this explanation in view of the fact that a proper technic elicits from the patient without much difficulty, the idea which is responsible for the emotional disturbance, and it is in reality very farfetched to say that it is the idea itself which acts in an unconscious manner.

Dumas thinks, in view of the clinical nature of emotion itself, that the interpretation that the effects of emotion persist because the emotion itself continues perhaps for weeks or months is untenable. This is very different from denying that in a given patient the emotion may be revived, either by an active reproduction of the incident which has aroused it in the first place—as by narration or allusion or spontaneously, especially in the dreams of sleep. But in these cases the manifestations of the emotion fluctuate in accordance with the occasion; besides which, they can be made to disappear rapidly by a relatively simple affirmation or suggestion which changes the patient's attitude toward the situation. This is a reaction which makes them scarcely differentiable from the reactions which must be classified in the fourth category we are discussing as regards tremor at least—namely, the pithiatric. In some cases, however, the patient is autosuggested by the very fear of the state he wishes to avoid. A hysterical tremophobia is thus constituted, but it is a phenomenon of suggestion, to which the emotional state is secondary, and it is curable like every other kind if induction psychosis by the reconditioning of the reaction through the change of the patient's mental attitude regarding the phenomenon.

The statement of Dupré that emotions developed in the patient anterior to a shock are likely to affect the organ having to do with the function which he was exercising at the time of the shock, is explicable upon the above grounds, namely, that it is with the function exercised at the time that the patient afterwards associates his difficulty. It is in perfect correspondence with the behavior of the dogs in Pavlov's experiments in which the response could be so simply conditioned. This explanation is proved by the fact that in many patients we are able to invalidate their interpretation regarding the mechanism of their difficulty, and to show them that it is not the result of an emotion which overcame them, but is begun at the time of their recovery from the shock, and during the period when their suggestibility was at its maximum.

The resemblance of reactions to those of fear may not be because the subjects are afraid at all, but because both reactions are chiefly elementary motor manifestations, always remembering, how-

ever, that in a large proportion of cases there is a tendency towards imitation of the fear reaction because of motives discussed in another part of this report. (See forthcoming book on *Disorders of the Nervous System in Warfare*.)

The onset of the hysterical form depends largely upon circumstances, that is, whether the victim becomes imbued with the notion that he should tremble at the time of the accident, or only later. In some cases he does so during recovery from a real commotion (1). The mechanism of this comes from the autosuggestion which occurs from the irregularity and the tremulousness of the first movements after he rises from bed.

DIFFERENTIAL DIAGNOSIS.

Pithiatic tremors can usually be distinguished by an imperfection in the rhythm of the movements, which vary both as regards intensity and rate from moment to moment, and independently of modifications by changes of attitude or movement, muscular tonus and of emotion. They present the kind of characters which distinguish false ankle clonus from that due to disturbances of the motor projection fibres. Careful observation reveals these characters, and they can be demonstrated quite clearly by kinographic tracings. The exaggeration of the excursions of movement on voluntary effort when attention is called to them, is not a distinguishing sign, for in organic conditions, this exaggeration is the rule. In multiple sclerosis it is one of the conspicuous characters, and most organic tremors are accentuated when an emotion interferes with what motor control the patient retains. A most important character of pithiatic tremors, however, is the forcible muscular contractions which accompany them. Indeed, it is by the alternation of action of agonist and antagonist by these forcible contractions that the patient produces the tremor.

The observer can easily detect the projection of the muscles under the skin, and upon palpation it is noted with what difficulty relaxation is obtained, the muscles appearing to be in a state of perpetual vigilance; whereas in paralysis agitans, the muscles, although they also project, give the impression of passivity even when trembling, and the whole aspect is more staid and fixed looking. Moreover, rapid passive movements do not produce either the series of jerky interruptions so characteristic of paralysis agitans in its early stage, nor yet do we receive the sensation as of stretching cheese given in the latter stages of that affection when the limb is pulled upon.

Furthermore, if the trembling limb or segment is firmly held so as to arrest its movement, the tremor pervades the neighboring segment, which is not the case in tremors of organic or emotional origin. Again, when one succeeds in accomplishing the relaxation of these contracted muscles, the tremor ceases also. Indeed, this manœuvre is one of those to be employed in reeducative treatment of pithiatic tremors. A trembling upper limb is not usually held in the position so characteristic of paralysis agitans, where the elbow is semiflexed and the arm slightly inverted and abducted so that it is away from the patient's side, and one does not find

the lower extremity in slight passive flexion and abduction as in this disease. Furthermore, the voluntary movements do not have that slowness manifested by a patient with Parkinson's disease.

Pithiatic tremors usually disappear in sleep, but this is by no means an absolute differential characteristic; for, since the war, cases are not few where even the giving of four grams of chloral is not sufficient to do more than diminish tremors showing the characteristics we are describing, and which gets well by persuasive reeducation. Of course, this is not strictly demonstrative, for the recovery of the tremor may have been merely coincident with the application of reeducative measures and it may have been really a disturbance due to physical changes in the nervous system which gradually recovered spontaneously.

A not infrequent characteristic of pithiatic tremor is that when the position of the limb is changed, the tremor changes its direction. For instance, pronatorsupinator tremor when the arm hangs down, is changed when the arm is lifted up into flexorextensor tremor. This is an exceedingly important sign, and may be regarded as pathognomonic.

Another characteristic of pithiatic tremor is the disproportionate exaggeration of the tremor which is likely to occur in the doctor's presence, or when the patient thinks it is observed, and the protestations he makes about the seriousness of his condition during examination, and when attempts at treatment are undertaken. Sometimes the patient can be detected in an attempt to sidetrack the attention of the doctor in directions other than that of the tremor. Again, a valuable sign is the ease with which in some patients some of the characteristics of the tremor may be modified by suggestion; and lastly, of course, the therapeutic test, although I am far from asserting that because one fails to cure the case it cannot therefore be pithiatic (2).

The tremblings of definite pithiatic type, usually not completely defined, being more frequently confined to one or more members (but there are exceptions to this) are for the most part rapidly curable by various forms of suggestion, or still better, in the cases which desire to get well by reeducative procedures. In the patients who are not willing to cooperate, and who prefer to remain inert, it is necessary to invoke their apprehensions of the discomforts entailed by a long and disagreeable treatment. In very many cases, however, the very simple suggestion of an imposing electric apparatus with an affirmation of curability is sufficient to cause the disappearance of the tremor if these means are employed at an early period of its development.

The whole matter including details of treatment is much more fully considered in a forthcoming book, *Disorders of the Nervous System in Warfare*.

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1621 CONNECTICUT AVENUE.

THE PROBLEMS OF EUGENICS IN CONNECTION WITH THE MANIC DEPRESSIVE TEMPERAMENT.*

By B. ONUF, M. D.,

Rutherford, N. J.,

Attending Neurologist, Barnert Hospital, Patterson, N. J.

The existence of a special mental makeup of patients suffering from mania and of a makeup of patients suffering from melancholia was first called attention to in this country by Aug. Hoch (8). These two makeups, the manic and melancholic, form a certain contrast to each other, just as mania and melancholia in their pure forms are the opposites, one to the other. But just as Kraepelin (11) has shown the various mixtures and alternations of these antagonistic states, i. e., of mania and of melancholia, creating the disease group of the manic depressive psychoses, so further observation has shown mixtures of the manic and melancholic (depressive) makeups, and it has become justifiable to speak in general of a manic depressive makeup with leanings in many cases to the manic, in others to the melancholic or depressive side.

This makeup has since been described by various authors under various names. Deny (4) and Kahn (10), for instance, speak of it as a *constitution cyclothymique*. Reiss calls it an *affective Verstimmung*, which literally translated means a being out of tune of the affects or emotional qualities. Strohmeier, with Kraepelin, calls it an abnormal congenital affective constitution. Deny (4), Kahn (10), Reiss (16), Strohmeier (21), Stransky (20), and others have recognized its importance in the causation of the manic depressive psychoses.

As the names, so also does the description of this makeup vary, one author laying stress on one or two special points, another one on one or two others. Personal observations as well as study of the literature have led the writer to characterize the manic depressive makeup as follows, the name manic depressive temperament being chosen because it seems most denominative of the basic condition we have to deal with:

Persons possessed of the manic depressive temperament respond intensely to emotional factors both in feeling and in external expression thereof. They are easily moved to joy and grief, laughter and tears, in response to the emotional stimuli affecting them. They are also likely to have a high and hasty temper, becoming easily indignant or angry and as quickly regaining their placid mood. They usually have strong likes and dislikes. Their affections when engaged are usually very strong; they make intense lovers, very fond parents or children. Their mood is subject to rapid and abrupt changes under the influence of the impressions received. The *Himmelhoch jauchzend—zum Tode betrübt*, although meant by the poet to apply to a lover, aptly characterizes this temperament.

The fluctuations of weight which we find so markedly developed in the cyclic cases may also be

put down as a frequent manifestation of the manic depressive temperament.

A further characteristic of this temperament is the manner of reacting to damaging influences like continued emotional strain, protracted fatigue, continued lack of sleep, physical diseases, in a special way, i. e., by the appearance of symptoms of the manic depressive order. If, as a result of physical disease, say, typhoid fever, erysipelas, pneumonia, heart disease, a high fever, etc., a psychosis develops, it will usually show a manic depressive coloring, even if the main psychosis should have some special character conforming with the physical disease which gives rise to it.

To Adolph Meyer (12) great credit is due for having called attention to mental reaction types, of which the manic depressive is a representative instance. It should be repeated here that some patients of this group have chiefly a manic, others mainly a depressive reaction type, others a mixed one, manic or depressive reactions occurring according to the nature of the damaging influence giving rise to them.

We may add to this the tendency to resort to stimulants, sedatives, and hypnotics to find relief for emotional strains, fatiguing influences, unhappiness, insomnia, and other conditions.

Of the manic variety of the manic depressive constitution Strohmeier (21) gives this interesting picture, which is only applicable to somewhat extreme cases:

"The individuals thus endowed have for their motto: 'How much does the world cost? I'll buy it.' Or, 'Come on, try to beat me if you can.' Such individuals show a carefree optimistic mood, expecting from the tomorrow still more beautiful things than from the today. They show self-conceit, a one sided egocentric, superficial judgment. They are the born jokers but also born rowdies, strong willed and irritable if one does not do just as they want one to. Their mimicry is vivid, the manner of speaking precipitate and overloud. Like the true manic patient they give preference to the striking and loud in style or fashion. Consideration and discretion are their weak points. They go straight ahead, whether they collide or not. In school they are the gallows birds and leaders in all bad pranks. Early they become the devotees of tobacco, alcohol, and sexuality. Their aims lack steadiness. Today they want this, tomorrow they admire that. The vocation or profession is equally changed. Adventurous plans fascinate them most, each new idea is taken up with enthusiasm but their zeal becomes paralyzed as quickly as the flame of enthusiasm was kindled. In spite of good ability and many brilliant ideas they do not attain financial success or any prominent position, owing to the lack of stability."

Here is the counter picture of the depressive type:

They are usually of a serious disposition, looking at the serious side of everything. Most common things that others do not find worth giving a second thought are a cause of great concern and worry to them. They are the born pessimists, always ready with gloomy forebodings. In

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case of an illness or injury the outcome of one or the other usually gives them deep concern and misgivings. Death of near relatives or friends leaves a lasting impression of sadness. In the fulfillment of their duties they are usually conscientious, steady, reliable, thorough, though slow.

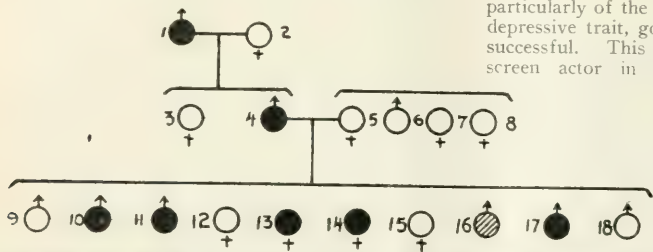


FIG. 1. (Family W.) Genealogical tree, taken from W. H. Strohmeyer's monograph *Das Manisch-depressive Irresein*. 2, Melancholia, died in hospital for the insane; 4, periodic melancholia, died of apoplexy; 10, melancholia, died by suicide; 11, melancholia, died by suicide; 13, melancholia, died by suicide; 14, melancholia at age of sixty-four, terminating in dementia; 16, last trace of in Russia; 17, alcoholic, periodically insane.

They are likely to be cautious in their expenditures, sometimes to the point of penuriousness. Their judgments are arrived at with deliberation, and then not easily changed; decisions are not easily made. The depressive type has a certain affinity with the shut-up personality of the individuals who are prone to become dementia præcox sufferers. In the manic depressive type described at the beginning, we have a blending of the two last described, the manic and the depressive.

My eugenic interest in the manic depressive temperament was aroused mainly by a study from literature of a series of great musical composers which showed how closely allied to or identical with the manic depressive temperament was the mental makeup of most of these composers.

In regard to this, I had already pointed out in a previous paper (14) that the reverse conclusion was justified, namely, that in combination with other factors giving him mental superiority along definite lines, this temperament particularly fits an individual for the musical profession, especially for composition.

That this temperament, however, does not adapt an individual for musical activities only, but also for certain other vocations, if associated with other additional mental equipment and aptitudes, was likewise alluded to in said paper, from which I take leave to quote literally:

"This does not imply that this constitution or temperament is adapted only to the performance of the art of music. It undoubtedly is adapted also to the art of acting as expressed in comedy, drama, tragedy, musical comedy, and screen acting. In all these fields the play of emotions successfully rendered forms an important part of the activity of those following out the said vocations, and a great emotivity, a great response to those stimuli which act on our emotions, is a prominent characteristic of the manic depressive temperament. What is known of some of our great actors, more particularly perhaps the prima donnas and tragedians, shows indeed that in their life off the stage they exhibit marked manic depressive traits.

The irascibility, emotivity, great lack of selfcontrol and of adaptation to the restrictions of social rules and customs, leading to unusual outbursts of passion, to murder and suicide, to divorces, are noted with particular frequency among theatrical folks. The mobility of physiognomy, so characteristic particularly of the versatile actor, is another manic depressive trait, going a long way in making him successful. This has special reference to the screen actor in whom the great mobility of facial expression and of action in general forms an important feature of success.

"But aside from the field of music and acting, the manic depressive temperament has a fruitful field in literature, and especially in poetry. In the paper already referred to, Dr. Eva Charlotte Reid (15) collected some very interesting material in that respect, demonstrating the manic depressive traits and in some cases well pronounced psychoses of the manic depressive type in some of the prominent English poets and writers, such as de Quincy, Poe, Coleridge, Keats, and others." For detailed evidence on which this conclusion is based, the reader is referred to the original paper.

Similar traits of the manic depressive order were noted in some authors and poets, some of whom were decided cyclothymics, i. e., they showed alternating periods of depression, indicated by inactivity and insufficiency, alternating with periods of exaltation and increased efficiency and productivity. Such were the poets Goethe (13), Alfred de Musset (9), Conrad Meyer (21), and the Russian author Gogol (1). In all of these the mental activity moved in cycles of the description mentioned, covering shorter or longer periods which, in the case of Alfred de Musset and Gogol, had the duration of a few days or weeks only, in the case of Goethe (according to Strohmeyer) (21) of seven years for each cycle, while in the case of Conrad Meyer the various mental phases evidently covered months or years, one depression at least being recorded which lasted several years, namely, from the beginning of the seventh decennium of age to at least the sixty-seventh year of age. I omit going into details of the mental states of all these authors, quoting only as especially interesting those of the genius Goethe, described in his own words, as follows:

"The winter passes and I do nothing. I cannot accomplish anything. My spirit is incapable of any effort. I submit to this state with patience. I have passed so many times through similar periods. I have learned to suffer and to be resigned. I cannot work, I cannot read, I even cannot think, except in short lucid moments"; and, again in a letter dated November 3d, of the same year: "What state! What suffering! The morning and evening do not exist for me any more, no activity, not a clear idea."

These periods of depression which Goethe him-

self considered as pathological were followed by periods of exaltation, which, says Bagenoff, were rightly considered by Moebius as hypomanias, and elsewhere Goethe himself speaks of "a cycle of good and bad days which revolve in my soul. The faculties of invention, of execution, of method as well as of humor, joy, sadness, energy, weakness, initiative, prostration—all move in a regular cycle."

This may give some inkling wherein the eugenic interest of the matter lies. It was pointed out in more or less detail, how many great men along the lines of music, especially composition, of play acting, screen acting, poetry and literature, of fiction in general, are endowed with a manic depressive temperament.

In a monograph, in course of preparation, the writer calls attention to the hyperproductivity and good quality of the work that may be done in mild hypomanic states and to the increased memory, the easy command over an increased store of material of the unconscious, occurring in these states. This, to be sure, was at the expense of a certain loss of guiding power and other drawbacks, which, however, it is likewise demonstrated in this monograph how to minimize or obviate.

The questions of eugenic interest that arise are therefore these: May it be beneficial to mankind to propagate the manic depressive temperament? Can this be done safely, i. e., without bringing actual psychoses in the trail? Can this temperament be transmitted in combination with qualities of a superior order, fitting the individual for accomplishments of a high order?

In answering these questions the first point to be discussed is whether at all the manic depressive temperament can be hereditarily transmitted. In view of the close affinity between the manic depressive temperament and the manic depressive psychoses the above point cannot be elucidated properly without first discussing the subject of transmissibility of the manic depressive psychoses *per se*.

On the marked general psychopathic heredity of manic depressives all authors appear to agree. As Strohmeyer (21) expresses it: "There is hardly a disease picture where so unanimously the hereditary factor is recognized." The percentages of heredity given by different writers vary between seventy-five and eighty-five per cent., according to this author. As to similar heredity, this has likewise been found to be very strong in the manic depressive psychoses. Sioli (19), Vorster (22), Reiss (16), Strohmeyer (21), and Foerster (6) all emphasize this on the basis of convincing material.

Sioli (19) selected for study twenty patients at the insane hospital at Leubus whose father or mother had likewise been patients at Leubus, accurate history records existing for all. These

patients he divided into two main divisions, namely:

Division A.—Families in which the descendant became mentally diseased solely or chiefly as a consequence of hereditary transmission.

Division B.—Families in which the disease of the descendant did not depend on transmission from the parent, in spite of the psychosis of the latter.

Division A he again divided into three groups: 1, Simple psychoses, mania, melancholia (three families); 2, atypical psychoses; 3, paranoias. The group interesting us here is Group 1 of Division A, having for a base the simple psychoses, mania and melancholia of the descendants. The latter, with the exception of A and B of Family II, were all personally observed by Sioli; all of the ascendants' institutional records, except in case of F of Family II, evidently not personally observed nor recorded, were at his disposition.

Small as the number of manic depressive cases collected by Sioli (19) is, the manner of picking them out made the result valuable. The latter was strikingly uniform if we consider it in the light of Kraepelin's classification, which apparently had not been made yet at the time when Sioli made his investigation. So much more interesting is it to note Sioli's conclusions formulated as follows:

"The mental disorder of the ascendant (parent) has the tendency to transmit itself as an identical or similar one on the descendant. Melancholia, mania and cyclothymia substitute each other in the hereditary transmission, whereas the affective forms (meaning manic depressives) on one hand and paranoia on the other exclude each other in hereditary transmission." It must be remembered that Sioli wrote at a time before Kraepelin's views and doctrines on dementia præcox had gained a footing and probably many of Sioli's cases of paranoia would now be considered as cases of dementia præcox.

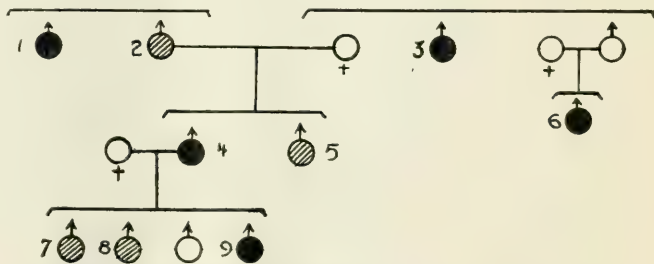


FIG. 2. (Family L.) Genealogical tree, taken from Wilt, Strohmeyer's monograph *Das Manisch-depressive Irresein*. 1, Melancholia, died by suicide (shooting); 2, pathological rages (Zorn-affekte); 3, melancholia, died by suicide (hanging); 4, melancholia, died by suicide (hanging); 5, very excitable temperament (natural); 6, melancholia, died by suicide (hanging); 7, died by shooting (in a so-called American duel); 8, lost trace of; 9, patient, who came under treatment for melancholic depression.

Vorster (22) likewise selected cases of manic depressive psychoses personally observed by him, whose ascendants, one of the parents, or descendants (usually one, sometimes two of the children) had likewise been inmates of the institution in which Vorster made the personal observation. Here, like-

wise, records of all the cases utilized existed. Although his collection comprised only nine families, the result was quite striking. In seven of them the heredity was similar, parent and child (or children) suffering from a manic depressive psychosis usually of the same particular form, and only in

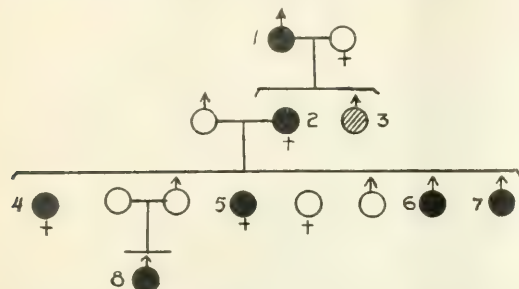


FIG. 3.—(Family H. J.) Genealogical tree taken from Wilt. Strohmeyer's monograph *Das Manisch-depressive Irresein*. 1, Melanolia; 2, melanolia; 3, very excitable; 4, melanolia; 5, melanolia; 6, died by suicide; 7, permanently in an institution, because of dementia præcox; 8, only son (patient), melanolia.

two out of the nine families the heredity was dissimilar, namely, as follows: First case, ascendant, numerous manic and depressive states; descendant, epilepsy; second case, ascendant, periodic insanity; descendant, moral idiocy.

An interesting parallel investigation on the same basis, with the same manner of selection, was made by Vorster on cases of dementia præcox. This group comprised eight families in which the ascendants suffered from dementia præcox, and all the descendants under observation suffered from the same disease, none from manic depressive insanity.

Dana (2) states that "the functional psychosis known as manic depressive insanity shows itself often as a recurrent depression." This psychosis is directly transmissible and is of direct ancestral origin in nearly one third of the cases. Its presence in a family should lead to great caution in the marriage of the descendants. Dana's conclusions are based on a study of 111 selected cases in which he was able to obtain a good history of the parents, grandparents, and usually of the collaterals. The cases were all cases in the better walks of life, of whom the family history was well known. In one group of fifty-one cases (eighteen males and thirty-three females) he found: Direct parental heredity of one parent in fourteen cases; indirect heredity alone in six cases and inheritance of similar psychosis in nine cases.

Reiss (16), drawing his conclusions from a considerable number of manic depressive psychoses, mainly, however, depressions of that order investigated by him, confirms the importance of the hereditary factor in the development of the manic depressive psychoses and finds that in a general way the hereditary transmission is a similar one in even a closer sense. Thus among the pure forms of depressions he could not trace in any of the patients a manic psychosis in the family history. In three of the patients with pronounced manic phases, well marked constitutional depres-

sives were among the relatives. In a fourth one the heredity anamnesis was typically cyclic. It must be recalled that the number of manic patients investigated by Reiss was relatively small. Reiss's grave forms of manic depressive disease, so far as an anamnesis could be obtained, had typical cycles among their forefathers, in some instances the cyclic predisposition having transmitted itself over several generations.

Strohmeyer (21) states that all observers agree that within the manic depressive domain the similar (hereditary) transmission predominates in a striking manner and found among the 105 repeatedly quoted cases of his private clientele one third to be surely hereditarily tainted by mental disease. In twenty-seven of the cases he could note the occurrence of manic or melancholic disease in the ascendancy and in the collaterals. He quotes ten instances and gives six manic depressive pedigrees which are very convincing and are rendered in this article.

The question of the hereditary relationship between the manic depressive psychoses and the manic depressive temperament is one more difficult to establish in view of the fact that not sufficient attention has been given to this point by the authors who have studied manic depressives. Nevertheless the investigations of Reiss and Strohmeyer give us some information on this subject, vague as it is. Reiss (16) found in a predominant majority of cases with the transmission of a morbid affective predisposition a handing over, not only of this general predisposition, but also of the special disease form (meaning that in the case of a depressive temperament a depressive form of the psychosis, in the case of manic temperament a manic form of the psychosis was transmitted).

Yet in a series of cases of pure forms of constitutional depression investigated by him there were among the relatives a few of a cheerful or sunny temperament, who, however, in no way aroused at-

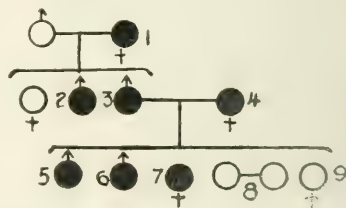


FIG. 4.—(Family Sch.) Genealogical tree, taken from Wilt. Strohmeyer's monograph *Das Manisch-depressive Irresein*. 1, Bigoted, but withal occasionally very eccentric, gave birth to an illegitimate child while a widow; 2, insane (form of psychosis not to be elicited); 3, passed through a state of melancholic depression during his youth; 4, allegedly died from typhoid fever (?) which she is said to have contracted by a great excitement; 5, hydrocephalus, died at the age of eight; 6, enormously sensitive, drowns himself; 7, periodic mania; 8, twins, not viable; 9, died as a child from measles.

tention and hardly could be interpreted as manic temperaments. With others who likewise had cheerful or sunny natures among their relatives, one could prove (in the pedigree) aside from a

transmission of the constitutionally depressive temperament, a transmission of the cheerful temperament, in such manner, however, that the depressive states occurred only in the depressively predisposed individuals of the family.

In three of his patients with pronounced manic phases, he found well marked constitutional depressives among their relatives and of patients with a manic temperament only four presented a purely manic family anamnesis. Reiss concludes that hereditary investigations and clinical observations bear each other out in the importance of *Konstitutionelle Verstimung* (a term evidently homologous to manic depressive temperament) as a special essential type of affective disturbance.

Strohmeyer (21) presents the most valuable material for the subject of the transmissibility of the manic depressive temperament in those of his hereditary data embodied in the five pedigrees given by him regarding manic depressive families. In his pedigree No. II (Family L), the psychoses in which were all of the depressive order, we find one case of pathological rages (*Zorn affekte*) and one of very excitable temperament, both of which are suggestive of being actually manic depressive

temperaments. Likewise the third one who died by shooting in a so-called American duel was presumably of a high keyed temperament, although we must admit in all three cases the description is too laconic to allow of a definite interpretation. Strohmeyer's Pedigree No. V (Family Kr) shows a predominance of manics (3, 4, 8, 10) among the numerous psychoses registered there, only one of these being a depression with suicidal termination (14). It is interesting because of the considerable number of individuals which one feels strongly inclined to interpret as embodying manic depressive temperaments.

The daredevil character prone to bravado stunts is likely a manic temperament representative, whereas numbers 6 and 7, recorded as excited, and 11 and 12, registered as nervous, probably showed the emotional highkeyedness characterizing the manic depressive temperament, perhaps with more manic leanings.

Two further instances for hereditary transmission or family occurrence of the manic depressive temperament are represented by the cyclothymic poets Goethe and Konrad Meyer. The cyclothymic states of Goethe have already been alluded to in this paper. Of Goethe's sister Cornelia, Strohmeyer (21) says that she was pronouncedly manic depressive, which, he declares, only people without sense can deny. As Strohmeyer does not speak of

actual psychoses in her case he may and quite likely does mean manic depressive temperament.

In the case of the poet Konrad Meyer the maternal grandfather showed irritability, changes of mood and melancholic turns, characteristics conforming to those of the manic depressive temperament. Konrad Meyer's mother had melancholia at twelve and again when she was sixty-four. She died of suicide in the latter attack. For details of Konrad Meyer's cyclothymic states the reader is referred to Strohmeyer's monograph. (21)

Both poets, Goethe and Konrad Meyer, presented periodically changing affective states, periods of depression in which they felt were unproductive and periods of exaltation in which they were alert, bright, active and productive. While these states were within physiological boundaries the definite periodicity or cyclicity with which they occurred and the great extent to which they were dependent on inner or endogenous factors rather than on external causes, also the duration of the periods, (in Goethe's case seven years for each cycle) stamped them as pathological. While the points brought out are perhaps too vague to base any fargoin conclusions on, it may safely be said that, as Strohmeyer

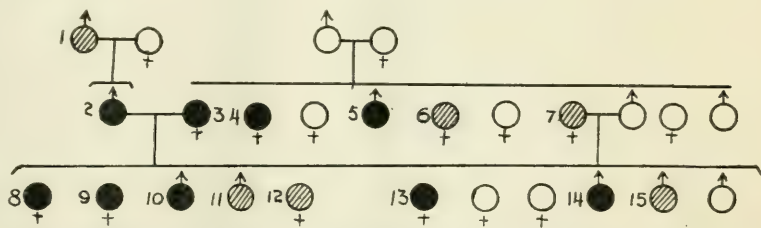


FIG. 5.—(Family Kr.) Genealogical tree, taken from Wilt. Strohmeyer's monograph *Das Manisch-depressive Irresein*. 1, Daredevil character, inclining to bravado stunts; 2, died from general paresis; 3, periodic mania; 4, repeatedly treated for mild manic exaltation; 5, alcoholic, died from cirrhotic kidney; 6, exalted; 7, exalted; 8, one single manic exaltation; 9, grave hysteria (somnambulism and cataleptic states); 10, periodic manic exaltation; 11, nervous; 12, nervous; 13, grave hysteria; 14, commits suicide in a depression; 15, died in a duel.

expresses it, "in the hereditary course of a family mania, melancholia, periodic and cyclic forms can substitute each other and alternate with each other." Whether and to what extent the above facts conform with Mendelian laws, still needs elucidation.

The question of the hereditary relationship between the manic depressive psychoses and the manic depressive temperament is one more difficult to establish in view of the fact that not sufficient attention has been given to this point by the authors who have studied manic depressive conditions. It must not be forgotten that these studies have been done chiefly in public institutions where generally full fledged psychoses, rather than the milder derangements and borderland states, present themselves for study. Thus the facts which I present on that score are more vague.

Nevertheless, so much can be said safely: There is a close relationship between the manic depressive psychoses and the manic depressive temperament clinically and from the point of view of heredity. Thus, manic depressive temperaments are found among the ascendants, descendants and collaterals of patients suffering from such psychoses, and it is

a justified mathematical deduction that the reverse relation holds true, namely, that patients with a manic depressive temperament have, among the kin mentioned, relatives with manic depressive psychoses besides those with manic depressive temperament only. And again in case of pure depressions the kinship is likely to show up mostly purely depressive temperaments beside pure depressive psychoses, and vice versa, purely depressive temperaments will have in their kinship mostly depressive temperaments and psychoses. A similar hereditary relation holds true for manic temperaments par excellence and pure manic psychoses, whereas in mixed cases the kinship will be correspondingly mixed. A cyclic case, for instance, may have manic—direct or collateral—ancestors on one parental side, depressive and perhaps one or two cyclic ancestors on the other parental side, and in either of these ancestries manic depressive temperaments may be interspersed, mainly manic ones on the side where most of the manias are found, mainly depressive ones on the side on which most of the depressions occur.

How far these facts can be utilized for our purpose, the propagation of musical, literary, political or allied genius, depends partly on a closer study of the hereditary conditions which the writer for lack of material furnished so far by the literature could only present in a sketchy manner; it will partially depend on the willingness to cooperate to that end of those whose mutual mating might produce the most beneficial results. This willingness will much depend on the propagation of eugenic ideals, which, if finding proper soil, may modify considerably the ideals guiding sexual attraction and mating.

Some negative conclusions in the form of sounding a note of warning may now be given. Thus, Strohmeyer (21) in calling attention to the pedigrees published by him and rendered in his monograph says: "These not exactly every day genealogical tables show the uncanny hereditary tendency to similar transmission of the manic depressive psychoses with all its social consequences, most of all, the terrific accumulation of suicides in many families." Dana (2) sounds a similar warning note for the depressions. Deserving of notice here is also the experience of Reiss (16) who found that the patients suffering from grave forms of manic depressive diseases, wherever an anamnesis could be obtained at all, had typical cyclics among their forefathers, in some instances the cyclic predisposition having transmitted itself even over several generations. On the other hand, Strohmeyer makes a remark which, in view of his great experience, may serve as a very valuable guide in utilizing the knowledge of the hereditary relationships of manic depressive states and predisposition. He says, "There are families in which the manic depressive heritage is handed over in the most varied states of development, or as I am tempted to say in the most varied dilution or concentration. Some members become afflicted in such manner as to need institutional care, others are affectively distinctly stigmatized, but they hold their own humanly and socially with their constitution and never come in contact with the physician as objects of treatment."

(To be concluded.)

ENCEPHALITIS LETHARGICA.

By SMITH ELY JELLIFFE, M. D., Ph. D.,
New York.

"Life is short, art long, and memories fallacious," while a misquotation of a medical classic, is verified by the history of the development of the idea of encephalitis lethargica. Originally employed by v. Economo, of the Psychiatric Clinic of Vienna, in 1917 (1) to designate a special type of disease which he described as an epidemic disorder, also occurring sporadically, and due, he thought, to v. Wiesener's organism, the widespread distribution of this general type of case has given rise to much study and experimentation all over the globe.

From the historical side studies soon appeared showing the antiquity of the observations made upon epidemic types of encephalitis, and among these were not wanting certain students of antiquity who traced the epidemic occurrence of lethargic and sleepy states, analogous in some sense to our present day disorder under discussion, back to Hippocrates and even to Homer. Thus Crookshank has brought together sufficient proof to uphold the contention that during epidemics of influenza a certain number of cases of encephalitis were bound to occur and Leichtenstein has cited many instances in literature in which the causal relationships of mesencephalitis and influenza admit of little controversy.

Present day neuropathology can see no particular reason why this should not be so since it recognizes that a vast variety of different causes through action at or upon certain regions of the anatomical pathways can produce almost identical results and that noxa derived from influenza, pneumonia, poliomyelitis, measles, syphilis, alcohol, food and other toxins can each produce a mesencephalitis with the precise syndrome of v. Economo's lethargic encephalitis. Moreover, it recognizes that, whereas all of the agents cited have been actual etiological factors, as a matter of fact, certain ones are more likely to be in evidence and this is really the nucleus of the problem.

It is certain that the encephalitis in the midbrain structures, due to the influenza organism, was among the first to have been recognized—and certainly the first outlined. Crookshank, as cited (2, 3, 4), in a series of articles has laid emphasis upon these observations. Thus to mention but one leading observation he cites an interesting reference in Le Palmier's work of 1578 to a *paraplegia inaudita sed lethalis quae in Thaso contigit*. We cannot here go into a more extended quotation from this (3), the last of Crookshank's papers, interesting and profitable though it is, but the evidence of the intercurrent in the past of at least two types of cases causing lethargy and eye palsies, namely, the influenzal and poliomyelitis types, is unmistakable.

With these very brief notes on the historical aspect we turn to the development of the present situation, for soon after Economo's report, Austrian, German, English and French observers commenced to publish similar observations. The first

English reports chiefly concerned themselves with the food toxin hypothesis (botulism) as applicable to their cases, but it soon became evident that this premise was not altogether tenable although the faulty olive packing which has been going on under the stress of war situations must not be entirely left out of consideration.

Netter (7 and 8), in France, accepted v. Economo's term, lethargica encephalitis, which is now more or less in vogue to indicate an encephalitis involving chiefly the structures of the midbrain, pons, and cerebellum.

Distribution.—The distribution has been worldwide as might be expected. Case reports have come from Austria, England, France, Italy, Spain, Germany, Norway, Sweden, Switzerland, Australia, Canada, the United States, Mexico, and many South American countries. It would not be practical to quote them all (9).

Clinical.—V. Economo's original study may be taken as the starting point for the present discussion. It is a study of the epidemic which made its appearance in Vienna in the winter of 1916. The most prominent symptom was the tendency to sleeping fits of long duration. After the exclusion of nutritional and toxic disturbances as the etiological factor influenza was the one suggested. v. Wiesener found a diplostreptococcus which in monkeys produced a similar disease picture. This diplostreptococcus may perhaps be regarded as the cause of a disease resembling grippé, the most marked clinical feature of which is encephalitis lethargica. At times it may assume a hemorrhagic character and may also lead to a general hemorrhagic diathesis. Clinically the onset of the disease is acute. There is sometimes fever, but not always, and there is often delirium which is independent of fever. There is nearly always tendency to sleep, usually without stupor upon awakening. It is not yet determined whether the tendency to sleep is a general symptom, or is the local one in the sense of an interruption of the connection between the sense organs and brain cortex or an inhibition of the functions of the cortex through a centre in the mesencephalon. There seems to be as a rule a slight cell multiplication in the spinal fluid. The number of polynuclear cells is usually increased. Often there are ocular disturbances, especially oculomotor paralysis (which however may disappear), as well as other bulbar disturbances. Slight paralysis of the extremities is frequent as well as disturbances of the reflexes; sometimes there are long continued spasms of rigidity, athetosis, and more frequently ataxic affections, so that the disease picture may resemble that of acute multiple sclerosis.

The prognosis *quad vitam* is unfavorable; of thirteen five died, not from the severity of the symptoms but from the final extension of the disintegration processes in the oblongata. *Quad restitutionem* the prognosis is favorable. Macroscopically there is strong hyperemia of the soft brain membranes and, in acute cases, of the gray brain substance.

Microscopically, in acute cases, there is a slight involvement of the meninges in the form of foci, as well as of the brain cortex, of the basal ganglia

down to the oblongata, also infiltration of blood vessels, interstitial infiltration of the gray substance and neuronophagia. The escape of hematogenous elements into the nerve tissue is ascertained though it is not certain that the greater part of the infiltration cells are of this origin. Polynuclear leucocytes were seldom found in the nerve tissue, especially in the more acute cases. The discovery of the neurophagia or rather the neurocytophagia has nearly the value of a pathognostic discovery, but this phenomena is always an isolated one, the part affected being at times entirely surrounded by sound tissue. The whole picture corresponds to polioencephalitis superior. The virus of infection seems to have a special affinity for the gray substance.

Encephalitis lethargica is a true inflammatory process of the nerve parenchyma with secondary small cell infiltration. The author compares his findings with those of other forms of encephalitis and comes to the conclusion that some of the forms hitherto described belonged to this group. He assumes that polioencephalitis lethargica produced by the diplostreptococcus of Wiesener may be epidemic but that it may also appear sporadically. He separates those encephalitides in which vascular changes occupy the foreground from the true inflammatory parenchymatous type of which one form, the myeloencephalitides, attack principally the medulla and another form, the polioencephalitides, attack principally the gray substance.

In his latest communication, v. Economo (10) would separate his type from other types. He states "that encephalitis and myelitis following grippé, which occur in a small proportion of cases are distinguished both clinically and in their pathologicoanatomical character from encephalitis lethargica. The latter presents a definite disease picture and the microscopical examination reveals that it is characterized by a neurophagia which is absent in the grippé encephalitis. The pathological changes in encephalitis lethargica are for the most part in the gray substance, while the foci in grippé encephalitis are scattered indifferently throughout the white and gray substance. The encephalitis lethargica further attacks the cortex, the region of the third ventricle and the aqueducts, the foci rarely extending to the fourth ventricle and oblongata. Clinically the appearance of pseudomeningitis and the profound unconsciousness in grippé encephalitis is wholly different from the encephalitis lethargica of which the characteristic is drowsiness or periodical sleeping fits."

In most of the cases recorded and in those observed personally there is a certain uniformity of picture which is quite diagnostic, yet the more cases are seen the wider grows the variability in syndrome. The cardinal features are the ocular palsies, the somnolent, comatose or mildly delirious mental state, a general febrile course, parietic or paralytic syndromes and certain general bodily symptoms.

The early occurrence of the ocular palsies is one of the most striking features of the disorder. These usually precede or are concomitant with the development of the sleepy state. Sometimes the

patient consults the physician for his eye difficulties which may at first appear in an isolated manner, the patient suffering in his general health, perhaps solely from some lassitude. Thus some patients walk into the office, feel sleepy, but are wide awake on questioning and then when undisturbed are drowsy.

The ocular manifestations are most frequently double vision and ptosis, but a great number of variations are observed. Rarely are all of the oculomotor nuclei involved. Parts of the third pair may be implicated or there may be a unilateral or bilateral sixth nerve weakness or palsy. Homonymous diplopia with convergent strabismus or crossed diplopia with divergent strabismus may be encountered (11, 12, 13, 14, 15, 16, 17).

Accommodation defects occur. The pupillary reflexes are also implicated. Loss of light and accommodation reflexes in marked lesions of the third nerve nuclei have been personally seen and they are also frequently recorded in the literature. At times in less severe oculomotor palsies there are marked disproportions in the relative reactivity of the light and accommodation reflexes. In some cases the palsies appear to be migratory rather than progressive. It is still an open question whether a true Argyll Robertson reaction has been observed. Nystagmoid movements are frequently found and in some instances a retinitis may accompany the lethargic state particularly in the more distinctly influenzal types. Concerning the numerous rarer anomalies there is already a voluminous literature (18).

Lethargy.—It is chiefly by reason of this general symptom the disease picture has obtained its name. Like all other natural phenomena it, too, presents wide fluctuations, varying from mild drowsiness, from which the patient may be readily awakened, to severe coma with muttering delirium and loss of control of the bladder and rectum. While certain observers would maintain that the deep comatose states should not be considered as belonging to the syndrome, I believe that this is really not a tenable position. Nevertheless it may be held on the basis of the observations reported that the milder grades of sleepiness are more frequently observed. The chief feature (19), I believe, is to attempt to distinguish a stupor or coma on a toxic basis from one that is determined more by cutting off of sensory impressions by a focal lesion, localized in or about the thalamic sensory stations. Since the mental state itself interferes with those finer sensory testings which are of value in localizing the focus neuropathology is slowly establishing criteria to determine the precise locus of involvement.

As stated, this marked sleepiness is one of the outstanding features of the syndrome. It is likely to be abrupt in its onset, as indicative of the focal nature of an encephalitis, which as already seen in v. Economo's findings, frequently is hemorrhagic. The sleepiness is sometimes accompanied by a headache. The patients just doze. They are usually readily aroused; are not peevish or irritable; are comparatively clear minded on being awakened and rarely have any speech defects. So

long as the external stimulus is strong they remain awake, but promptly doze off as soon as one ceases to examine them, talk with them, or pinch or move the limbs. As a rule they carry out all orders and open their eyes in a drowsy and almost forced sort of way, more forced if there is partial ptosis, look about with a dazed and absent air, and then go to sleep—like a sleepy child.

In milder grades the sleepiness comes on in attacks, lasting a few minutes or a few hours and then the patient with slightly increased effort is able to keep his attention upon the external world of reality. Sometimes a patient will pinch himself or take coffee to keep awake. In the more severe grades this lethargy may last days, even weeks, with periods of restlessness and irritability in shorter or longer periods when awake. In some cases it is very difficult not to feel that there is really an underlying insomnia under the apparent somnolence—a feature to which special attention has been directed by some writers (20).

My own observations point to a fairly definite underlying mental unrest; a sort of psychical excitement, which might have shown itself in mild delirium if there were less blocking in the motor pathway. Thus I have noted a few cases in which there was a transient ocular stage, severe headaches and a strong wish to be on the go to escape the headache, but an inability to do so. The patients either lay still and attempted to doze to forfend the profound discomfort or they languidly walked and walked to obtain relief, being only half awake all the time. And yet the majority of the patients complained of no marked discomfort, concerning which, however, the fragmentary nature of their conversational capacity left one in doubt. Certain confusional, mild hallucinatory deliria may be observed. These attacks, frequently at night, may alternate irregularly with marked drowsiness during the day. It would require a monograph to discuss the psychical variations.

While these two symptom groups are those, which standing alone, or in the foreground, have given rise to the loose but dramatic generalization, lethargic encephalitis, the syndrome of this general neuropathological group is much wider. No attempt will be made to do justice to all of its several features, but attention may be directed to certain other frequently observed symptoms.

Facial palsies of varying degree are not infrequent. They usually develop more slowly than the ocular palsies but at times their onset is brusque. Trismus is sometimes noted, and I have not infrequently observed speech difficulties. These are so often masked or covered up in the sleepy responses, or mildly hallucinatory dreamy delirium, that their precise nature is overlooked or incapable of exact analysis. Anomalies of the muscular movements of the lips, palate, and larynx, resulting in dysarthrias, dysphagias, dysphonias, and other disorders are found in this medley.

In line with the idea of a slight excitement one frequently sees hypertonic states usually involving either the whole body or certain segments. Some of the patients lie like catatonics; others resemble cataleptic states, to be separated from psychogenic

disassociations solely on the etiologic foundations. Similarly when the encephalitis centres about the red nucleus, the cerebellar mechanisms are involved with parkinsonian features, and the whole gamut of midbrain tremor states (21) may be looked for. The facial immobility, to which many authors have called attention, is very suggestive of the parkinsonian facies. Choreic, choreoathetoid, and (22) myoclonic movements and spasms are frequently seen. Acute ataxia is an older name given to certain forms of this type of syndrome. Asynergia is present in this group and various irregular types of incoordination.

More marked hemiplegic states are often seen and when, as rarely happens, the various symptoms develop more slowly, some of the patients are, when seen but once, thought of as suffering from brain tumor. In three instances I have had the comfort of a discomfiture in that patients have recovered from what I had diagnosed as probable brain tumor, which on reviewing a number of facts either not obtainable or overlooked at the time of consultation, have led me to recognize certain rare and anomalous types of mesencephalitis belonging to the larger group.

In this type of case, as in many if not most of the cases, the tendon reflexes are likely to be exaggerated, clonus may at times be observed, Babinski's toe phenomena, and other signs of pyramidal tract involvement. The little signs of hemiplegia are frequently found (23).

Febrile states.—The disorder is nearly always accompanied by mild elevation of temperature. This is likely to persist about a week, but may extend for the period covered by the lethargy. At times it may mount to 104° F. but rarely is it above 102° F. and sometimes not over 100° F. The pulse and fever are likely to be associated. In many influenza types I have observed a marked bradycardia, associated, in my mind, with the pronounced vagotonic action of the influenza organism (18). Loss of appetite, gastric irregularities, marked myasthenia, and frequently rapid emaciation are nearly always present.

Of the laboratory methods that aid in the diagnosis there is not enough uniformity to come to definite generalizations. When there is a trend toward a meningeal onset, which is to be thought of in uncertain cases, there are cytological findings of a positive nature, but since the meningitis is likely to be secondary in the more limited groups under discussion the cytological formula is not so helpful.

Prognosis.—Since the reports are still coming in the situation can only be stated in general terms. Netter speaks of the mortality as high as thirty-five per cent.; the English reports, Wilson et al—about twenty-five per cent. The Austrian cases, which are still being observed (February, 1920) are put as low as five per cent. Inasmuch as the limited problems of Economo's generalization must be read in the light of the larger group of midbrain encephalitis, the prognosis will depend largely on the localization of the process. When the symptoms point to respiratory and cardiac involvements the prognosis is naturally bad—when the symptoms are

clearly and focally localized in the oculomotor, thalamic and red nucleus regions the prognosis as to life is better.

Some of the patients recover entirely. Others have residual and persistent eye palsies, tremors, or mild paretic phenomena. I recall one patient of eighty with marked sleepiness lasting two weeks, some loss of bowel function and marked diplopia, who now, five years later, is perfectly well save for a dizziness chiefly due to a weakened external rectus muscle.

Pathological physiology.—While the interpretation of most of the symptoms is fairly clear in view of the present neuropathological data concerning midbrain functioning, the lethargy is still open to much further research. Much space would be needed to develop the argument. Certain students have suggested the lethargy to be an infundibular phenomenon. The warrant for this is not sufficient. I believe the search will be most (24) profitable as one studies the thalamic involvements or the cutting off of thalamocortical fibre associations by the focus. This requires whole brain section work, as tedious and as time consuming as the analysis of the aphasia problem, hence it will be some time before we can generalize upon this important aspect of this syndrome.

Treatment.—This still remains symptomatic.

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- 64 WEST FIFTY-SIXTH STREET, NEW YORK.

Paralysis of Accommodation Due to Focal Infections.—Clarence A. Veasey (*American Journal of Ophthalmology*, December, 1919) reports three cases in which the accommodation was paralyzed so as to render the patients unable to read. In each case the paralysis was relieved at once by the removal of a focal infection.

A NEUROGENIC STUDY IN THE PRODUCTION OF DYSPNEA.

BY FRANK PORTER MILLER, M. D.,
Los Angeles, Cal.

Heretofore the increased respiratory phase known as dyspnea has been attributed to imperfect aeration of the blood. It is a well known fact that an increase in the amount of carbon dioxide in the blood and its action upon the respiratory centre is conducive to breathlessness; also, a diminution in the alkalinity of the blood will have the same effect. According to Haldane the latter is the condition which occurs when dyspnea is secondary to cardiac distress, and its production is due to the meagre supply of oxygen reaching the tissue, and the rapid formation of lactic acid. (Nonvolatile acids.) The dyspnea which occurs in diabetic coma is probably due to a similar mechanism, but the offending agents are oxybutyric and diacetic acid. These are the theories in vogue at the present time for the explanation of breathlessness and it is only recently that a few observers have intimated that its production might be explainable on the basis of a reflex.

The best evidence we have is some of the physiological acts which have been seen by all of us; and in this paper, I hope to suggest the course of the reflex. Although the physiology of respiration so clearly defines the method by which respiration is regulated, yet there is nothing so perplexing to explain as the influences that operate in producing abnormal respiration. In many cases it is impossible to say whether the causative factor is due to imperfect aeration or reflex stimulation. The physiological process of childbearing is one of the best examples we have, and to make it understandable, it is necessary to delve somewhat into the anatomy of the vegetative nervous system. The perineal supply is derived mainly from perineal branches of the pudic nerve and the third and fourth sacral nerves, the first, second, and third sacral nerves uniting to form the pelvic nerve, which belongs to the parasympathetic system. As the fetal head descends upon the perineum, the respirations become labored and remain so until the head is born. When sufficient pressure is exerted upon the nerve cells in this region, the afferent impulses travel centralward over a sensory neuron to the cell bodies in the cord, and by utilizing the ascending tracts, reach the medulla. In the medulla there is a transference of the stimuli by the association fibres or intercalated neurons to the respiratory centre.

Another phenomena which is quite explanatory is the reflex which occurs during the process of an emission. For fear the reasoning may appear abstruse, I deem it advisable to discuss in a meagre way the sacral outflow. Connector fibres, both motor and sensory, pass from the spinal cord in the anterior roots of the second and third sacral nerves and form a single nerve, the pelvic nerve (*nervus erigens*). This nerve passes into a nerve plexus, the so-called pelvic plexus, which is divisible into the rectal and vesical plexuses, depending upon the location. The function of the pelvic nerve is to

supply the motor cells to the bladder, colon and rectum; inhibitory fibres to the retractor penis and sphincter of the bladder and the vasodilator fibres to the vessels of the penis. The penis is supplied with sympathetic fibres from the lower lumbar segments through the hypogastric plexus and parasympathetic fibres from the second and third sacral segments through the pelvic plexus. During the act the impulses course centralward over the afferent fibres of the pelvic nerve to nerve cells in the sacral segments of the cord; and then by the ascending tracts, course upward until they reach those cells in the upper lumbar and lower thoracic region, from which the sympathetic fibres supplying the prostate and seminal vesicles arise. Here a mediation from a parasympathetic to a sympathetic neuron takes place, the efferent neuron activating the prostate gland and seminal vesicles causing them to express the secretion. By the ascending tracts in the cord, the medulla is reached, and dyspnea occurs. Furthermore, a cerebrospinal reflex is also utilized, as is evidenced by a contraction of the bulbo and ischiocavernosus muscles which aid in the ejaculation of the semen through the urethral canal, and also by the musculature of the back and thigh becoming taut. As associated phenomena, we find mydriasis, hyperidrosis and cardiac palpitation also occurring during the act. This in itself is rather confirmatory that a sympathetic parasympathetic syndrome may occur synchronously. This reflex is peculiarly interesting because of its complexity in that it involves the cerebrospinal system and both divisions of the vegetative nervous system.

Realizing that some of these suggestions may lack physiological verification, we find by close clinical observation and by analysis of symptoms, that it occurs in a number of instances. As we delve farther into the mysteries of this particular branch of medicine, I am convinced that most of the reflexes will be characterized by their complexity.

At this point I wish to discuss more fully the effect produced by stimulation of sensory nerves and introduce also the psychological relationship. According to results of numerous observers, stimulation of any of the sensory nerves of the body may affect the rate or the amplitude of the respiratory movements. In addition, emotional states are likely to be accompanied by noticeable changes in the respiration, and corresponding to this fact, experiment shows that stimulation of certain parts of the cortex and midbrain will manifest its effect upon the respiratory centre. It is assumed then that this centre is in connection with the sensory fibres of perhaps all the cranial and spinal nerves, and is influenced also by intracranial paths passing from the cerebrum to the medulla. It is quite possible that this latter condition may play an important part in the preceding physiological acts, but I feel that dyspnea may be produced by either of the above mentioned routes, and until we are possessed of more data, we can merely speculate. It is rather difficult to feign breathlessness. True breathlessness is accompanied by a tightening of the accessory muscles of respiration and an inability

ity to hold the breath. In event the breath is held, the next few respiratory movements will be exaggerated.

At this point I wish to quote from Lewis (1) and give his classification of breathlessness.

1. "Breathlessness which is due to deficient aeration of the blood is accompanied by cyanosis, slight, moderate or deep, according to the urgency of the dyspnea. The excursion of the chest is greater and also more frequent than normal, it is often irregular in rhythm. When this type occurs, serious structural changes in the heart are to be found and the veins in the neck are swollen and the liver engorged. It is said to be produced by a loss of alveolar space, the capillaries of the lung are engorged and encroach upon the air space. If, therefore, a patient shows conspicuous breathlessness, cyanosis being absent or slight, it is certain that some cause of breathlessness is present other than such a defect in the circulation as would induce deficient blood aeration.

2. "Breathlessness may be present in the complete absence of cyanosis, and the hurried breathing is maintained in sleep. For the most part these show signs of renal deficiency and it is due to the relative acidity of the blood.

3. "Dyspnea which is confined to the waking moments. Its type is rhythmical, shallow and rapid; the rate of respiration may be fifty to sixty a minute. I have seen it reach 200 a minute. In such cases the breathlessness is to be ascribed primarily to the nervous system, and is often a hysterical manifestation.

4. "The commonest type of breathlessness is that seen in the majority of patients in whom no structural lesion is to be discovered. It is not present when the patient is at rest, but appears when he is up and about, and especially when he exercises."

It is the last two types of dyspnea in which we are specially interested. Lewis admits that an indeterminate number of patients are convalescing from pneumonia, pleurisy, dysentery, incipient tuberculosis, and influenza, and in all these diseases by utilizing the afferent branch of the vagus or pelvic nerve, dyspnea could be produced. It is but natural that the nerves supplying the various diseased organs should remain in a hyper-irritable state over a prolonged period, as the resistance in the synapse is lessened and dyspnea may continue long afterwards, even though the disease process is quiescent or healed.

Striking examples of breathlessness are frequently found in early cases of pulmonary tuberculosis and the dyspnea is greatly out of proportion to the amount of pulmonary parenchyma involved. Practically all of these cases show an absence of any mechanical obstruction, such as adhesive pleuritis, to account for the shortness of breath. As further proof of the reflex basis for the explanation of this symptom, let us recall the pneumonia as it occurs in infancy and childhood. The urgency of the dyspnea is a marked factor, and as a result panting occurs. The panting is somewhat exaggerated in small children, as the breathing is practically all diaphragmatic and the accessory muscles of respira-

tion are undeveloped in early life. This condition may be present when you first see the child and at a subsequent visit twenty-four hours later the respiration has practically returned to the normal rate, though there is no appreciable change in the lung findings.

In pulmonary apoplexy the urgency is again the dominant factor, though the pathology represents only a small area of parenchyma involved. In all these conditions referable to the lungs, the afferent sensory neuron courses in the pulmonary vagus through the ganglion nodosum, thence to the nucleus intercalatus of Staderini, which is that portion of the nucleus dorsalis receiving the visceral fibres. The mediation is then made to the respiratory centre and breathlessness is the result.

In corroboration of this hypothesis, the experimentation of Porter and Newburgh (2) is quite conclusive. In their early investigations they discovered that the respiratory mechanism was exhausted during pneumonia. In order to separate the possible action of the bacterial poison upon the bulbar cells from the pneumonic process in the lung, a lethal dose of a culture of the Friedlander bacillus was injected into the vein of a dog. The respiratory reaction was measured at six hours and at one hour before death, which occurred about thirty hours after inoculation. In each instance the respiratory reaction remained normal. These experiments are evidence that the failure of the respiratory centre in pneumonia cannot be due to the bacterial poisons. The blood from pneumonic dogs was then injected into healthy dogs and the respiratory reaction again taken, and again it was found to be normal. They concluded that the bulbar cells are not poisoned by products arising from the pneumonic lung, and the dyspnea must be attributable to other causes.

Owing to the intimacy which exists between the lung, respiratory centre, and vagus nerves, they then focused their attention upon the vagus. Here they found that section of the vagus nerves protects the respiratory mechanism in pneumonia from the impairment always observed when the nerves are intact. The slow respiration which occurred after vagal sectioning was balanced by an increase in depth, and the ventilation remained substantially the same.

In the experiments where the vagi were intact, the respiration of the pneumonic dogs varied from forty to eighty a minute. In similar experiments where the vagi had been sectioned, the respiration remained normal all during the course of the disease.

The dependence of the dyspnea upon vagal impulses may be shown by cocaineizing the vagi while the pneumonia is at its height. The vagi were exposed in the neck and surrounded by a layer of absorbent cotton which was wet with one per cent. solution of cocaine. The respiration would frequently reach eighty a minute and by the foregoing method could be reduced to sixteen.

Anyone who is interested in the study of visceral neurology cannot help feeling an obligation to such physiologists as Langley and Anderson, Gaskell and Sherrington, whose invaluable contributions

have formed the ground work for any advance we may have made; also those clinicians, Mackenzie and Pottinger, whose ingenuity and indefatigable spirit have sought to place this branch of medicine upon a comprehensive clinical basis.

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1100 TITLE INSURANCE BUILDING.

GASTRIC ULCER TREATED BY NERVE BLOCKING.*

Report of Cases.

By E. A. PARKER, M. D.,
Brooklyn, N. Y.

I wish this to be considered a preliminary report of cases of gastric ulcer treated by nerve blocking. It is not intended to supplant other therapeutic measures and there is no intent to urge upon you either the Alvarez avulsion or the nerve blocking method. They are offered for your consideration with hope and belief that they will prove of value. Owing to the war, the shortage of assistants in our institutions rendered it impracticable to secure as thorough records as we desired. This preliminary report, though brief and incomplete, may perhaps open up new avenues of thought in the treatment of gastric ulcer.

In 1897, Dr. Celestino Alvarez, of Oviedo, Spain, removed a lipoma from the back of a woman, aged forty, who at that time was also suffering from gastric ulcer. During the operation the intercostal nerves were damaged. Two days afterward all symptoms of ulcer disappeared and did not recur. The patient died eight years later of pulmonary tuberculosis. Profiting by his observations in this case, Alvarez devised the operation of bilateral avulsion of the fifth, sixth, seventh, eighth and ninth intercostals for the treatment of gastric ulcer. As a result of this procedure, he found that the gastric juice always diminished in quantity and acidity. It is most essential, he says, to destroy the fifth intercostals, but avulsion of all ten is necessary to effect a cure.

Alvarez proceeds as follows: Under chloroform narcosis he makes two parallel incisions about seven cm. in length, one on either side of, and two finger's breadth from, the vertebral column. He clamps both right and left fifth, sixth, seventh, eighth and ninth intercostals, severs these nerves distal to the instruments and, utilizing the attached clamps as grips, by torsion and traction he thoroughly avulses the proximal stumps. The successful results following this operation were the subject of a paper read by Alvarez before the Royal Academy of Medicine in Madrid.

After reading his article it occurred to me that

the well known alcohol nerve blocking technic, as employed in trifacial neuralgia, might be substituted for the Alvarez avulsion method. A preliminary hypodermic of a quarter of a grain of morphine is given fifteen minutes before operation. The patient, sitting in a chair, leans forward over a table with arms fully extended above the head. The operation field is prepared in the usual manner. A long, strong hypodermic needle is inserted between the ribs about one and a half inches from the spine and is pushed forward until the resisting intercostal muscles are reached. Continuing a little beyond this resistance the nerve may easily be located, contact with the needle causing characteristic pain. About one half c.c. of one tenth of one per cent. cocaine solution is injected. After a few minutes the first syringe is removed leaving the needle in place. A second containing five to ten c.c. of sixty per cent. alcohol is attached and the contained solution injected freely into and around the nerve. All ten nerves are similarly treated. Dr. Willy Meyer (1) has described various successful methods of locating the thoracic nerves with the needle.

As the nerves are infiltrated the patients describe their sensations, which vary greatly, the sixth giving in practically all cases their typical ulcer symptoms. A short time after the injection numbness is complained of in the abdominal wall and back. The following day an analysis of the gastric contents shows a reduction in free hydrochloric acid and total acidity. I have selected the following history as typical of a case of gastric ulcer treated in this manner:

CASE.—Mrs. T. C., aged forty-one, suffered for ten years from severe pain in the epigastric region radiating to the right shoulder. This epigastric pain, gnawing in character, was relieved by food. She had frequent attacks of vomiting and occasionally slight hematemesis, with considerable loss of weight. Physical examination showed an emaciated nervous woman, with marked tenderness over the epigastrium. The right kidney was found to be enlarged and displaced downward. On November 18, 1916, analysis of stomach contents showed free hydrochloric acid fifty-three, total acidity seventy-one, occult blood, Einhorn string stained at fifty cm. On December 11, 1916, her fifth, sixth, seventh, eighth and ninth intercostal nerves of both sides were blocked. Injection of these nerves caused symptoms as follows:

Left fifth, pain referred to precordia; right fifth, pain along the course of the nerve; left sixth, choking sensation; right sixth, severe pain in right shoulder and stomach, some blood vomited; left seventh, sensation of pressure in abdomen; left eighth and ninth, pain along those nerves; right seventh, eighth and ninth, pain radiating to region of right kidney.

Patient returned to bed nervous and complaining of numbness in back and epigastric region. Three weeks later examination showed no tenderness. On June 27, 1919, two years and a half after operation, patient remained free from stomach symptoms, had gained twenty-five pounds in weight and felt well except for occasional headaches and hot

*Read before the Medical Association of the Greater City of New York, October 20, 1919.

flashes attributed to menopause. On August 15, 1919, the vomiting had returned. Analysis of gastric contents showed hyperacidity. Patient was advised to have the operation repeated.

Except for the recurrence which had taken place after two and a half years of freedom from symptoms the foregoing history is typical. In three patients neuralgia was complained of in the eleventh nerve. Blocking of this nerve relieved that symptom. Alvarez in his cases noticed neuralgia in the peripheral endings of the nerves until he practised severing before avulsing them. One patient, treated on February 25, 1917, remained well until November, 1918, when an attack of influenza was followed by a relapse. Treated again on July 26, 1919, and has since remained well.

One patient had floating kidney, displaced stomach, and gastric ulcer. Exercises and a supporter relieved the enteroptosis. On February 15, 1917, nerves were blocked. On October 4, 1919, examination showed the enteroptosis to have returned, but there was no evidence of the ulcer. One patient blocked on March 27, 1917, returned in ten days with stomach symptoms still in evidence and tenderness over the sixth intercostals. These two nerves alone were again infiltrated. October 14, 1919, he reported that since the second operation he had had a return of pain lasting about half an hour on four or five occasions after eating exceptionally heavy meals.

Fourteen patients have been treated at St. Mary's Hospital, Brooklyn, by intercostal nerve blocking. One has not been followed up. Seven have been free from gastric symptoms over periods ranging from three months to two and one half years. Three suffer after overeating. One had a nephrectomy performed later and has remained well. One patient died after a colectomy, and one has had a relapse. X ray and fluoroscopic examination of the patients were made by Doctor Williams, röntgenogist to St. Mary's Hospital. Dr. A. A. Rutz, gastroenterologist to the hospital, made the gastric analyses.

In the Alvarez method the operator sees the nerves while attacking them, but a general anesthetic is necessary. In nerve blocking the operator relies on the sensations of the patient to locate the nerves and only local anesthesia is required. It may be claimed for both procedures that there has been and should be no mortality. There are no postoperative adhesions to cause trouble at a later date. There is little time lost from business, especially in the blocking method, which necessitates a hospital stay of only one or two days. In none of the cases has a rigid diet been carried out.

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Vernes's Seroreaction to Syphilis.—Richard Preiswerk (*Schweizerische Medizinische Wochenschrift*, January 15, 1920) maintains that the results obtained from Vernes's test do not differ materially from those obtained by the Wassermann and that the test is not as reliable.

USE OF RELAXATION IN HYPERTENSIVE STATES.

BY EDMUND JACOBSON, A. M., Ph. D., M. D.,
Chicago,

Associate-Attending Physician to Michael Reese Hospital.

In this communication I shall present a method for the treatment of irritability, excitement and insomnia suggested in part by experiments at Harvard and Cornell universities about ten years ago, which are now being continued at the University of Chicago. This method also has been in clinical use for about two years and the results encourage the hope that it will interest others. In principle the method is simple; in practice, however, it rests upon so many observations and details in dealing with each individual patient that the present attempt is to give a condensed introductory sketch rather than a complete report.

The dearth of methods for the treatment of nervousness is often felt in the practice of medicine. It is usually admitted that a few remedies, such as bromides and other sedatives, suggestion, persuasion, hypnosis, the Weir Mitchell rest cure, and the catharsis of Freud are useful in their place; but limitations and objections to each are common, and the gap in therapy is apparent.

In order to lead to this matter from a new angle, experiments were begun on the nervous start—the involuntary movement most often seen after sudden unexpected noise. We found that various factors seemed in many cases to increase the start, such as active attention, or general muscular tenseness. When the subject was directed to remain seated while tensely contracting the muscles of the arms, head, legs and trunk, the start often was very marked, but with relaxation there were in many cases no start and no shock.

In this way it seemed suggested that tense muscles and high tonus of the neurones that innervate them play an important rôle in nervous irritability and excitement. Special drill in relaxation usually had to be given. This was the forerunner of a method of cultivating relaxation. Its influence in forestalling nervous shock suggested that it might be put to clinical use.

A study also was made of mental passivity (1). Several highly skilled observers, being instructed to "abandon all effort of attention and be quite as passive as possible" reported that in order to succeed they had to relax physically. This suggested that mental passivity might be produced for therapeutic purposes by cultivating relaxation. Physical signs were revealed which enabled the physician to estimate the progress of the patient toward mental repose and physical relaxation, as will appear later on. Furthermore, one observer finally did so well in getting rid of effort and activity that he often fell asleep. He described his psychological condition, making clear that this was natural sleep. Evidently this contained a suggestion for the treatment of insomnia.

The method to be described makes use of relaxation—motor treatment of nervousness. A particular form of relaxation is required—a form that is in-

tensive and progressive. This is very different from what has hitherto passed for relaxation. For, as everyone knows, a person may lie on a couch motionless and relaxed for hours in the ordinary sense, yet remain sleepless and nervous indeed. Furthermore, relaxation as heretofore known has not been applied to quieting a person's nerves while he continues at work or play. On the other hand it is often astonishing how excitement which has stubbornly persisted will give way to progressive relaxation leading to sleep if the individual is at rest; or how during the day a spell of excitement, worry or rage may pass off if he relaxes properly while he continues at his activities. A résumé of previous views of relaxation may help to make this difference clear.

Every layman knows the value of relaxation for the relief of nervousness, and so may seek rest, diversion, change of scene or physical culture. Several neurologists have written upon the topic in this sense of diversion or recreation. The term relaxation seldom appears in works on treatment of nervous disorders from Beard and Weir Mitchell to Oppenheim and Dercum. Perhaps this explains why a direct and systematic study of the subject has hitherto been largely neglected. In view of popular appreciation of relaxation this neglect is striking. In art and physical culture the use of relaxation is noteworthy. It is taught in acting, dancing, piano playing and in vocal culture. Evidently muscles not needed for action are relaxed. This may be called relative relaxation.

Furthermore, Delsarte's decomposing exercises have left their mark. Divers schools of physical culture recognize relaxation as contributing to physical and mental poise or repose. One of the best books from this viewpoint seems to be that of Annie Payson Call lately brought to my notice through a quotation by William James. However, she admits that an individual may remain nervous while relaxed in her sense, for she fails to discover that extreme or finely drawn out relaxation which is the essential point of the present method.

Relaxation as hitherto understood is a worthy aid in the treatment of nervousness, but is not the present goal. For it fails to do away with that inward excitement, anxiety, strain, and tenseness which are so familiar to the nervous individual. It fails to do away with starts and fidgets, with restless movements of the eyes or lips or fingers, unnecessary speech, impulsive and emotional action.

The present method may be called progressive or intensive or inhibitory relaxation—or again hyperrelaxation. It consists of voluntary continued lowering of the tonus of muscle groups and of motor or associated portions of the nervous system. By this means, it would seem, not merely bodily unrest but also mental and emotional activities may be quieted. In practice this requires that the individual relax further and further from moment to moment increasing long after he seems to himself and to others thoroughly relaxed.

It is assumed that a detailed history has been taken, thorough physical and laboratory examinations made, and that proper treatment is being given in the way of surgery and drugs or hygienic

measures or psychotherapy. Apparently it is important so far as possible to remove both physical and mental sources of excitement. But since this ideal often cannot be realized, the present method will seek to lower the nervous reaction even while those sources remain unavoidably active.

The patient is first shown general relaxation of his whole body, whether his complaint is nervous excitability or insomnia or both. He lies down quietly in a room free from disturbance and begins with the right arm, which he flexes tensely against resistance made by the physician. He is directed to note the sensations from the flexor muscles of his right arm, the position of which is indicated to him. Then he relaxes his arm until these sensations disappear. For a single attempt at this, five to ten minutes are allowed. Drill is given until he is able to note the dwindling sensations many minutes after he has begun to relax, and until it is clear that he is using these sensations as a guide to relaxing. It is often useful to make clear that at this stage extreme relaxation of a part may require at least fifteen minutes of progressive inactivity.

After he has been fairly successful, he extends the forearm against resistance, noting the sensations, then relaxes both flexors and extensors. Practice is next given with flexion and then with extension of the hand. Finally the patient is instructed to relax the right arm completely, "further and further each minute" until no feeling of tenseness remains.

In this way the patient practises at relaxing one muscle group after another. As he begins to relax a new group he continues at the same time to relax all previous groups, until finally he relaxes the entire body at one time. A certain order in learning is followed, to wit: 1, Flexors of the right forearm; 2, extensors; 3, flexors of right hand; 4, extensors; 5-8, similarly on the left; 9-14, flexors and extensors, respectively, of right foot, leg, thigh; 15-20, similarly on the left; 21, extensors of the back; 22, abdominal muscles; 23, chest muscles (breathing); 24, pectoral muscles (drawing arm forward and inward); 25, rhomboid latissimus dorsi group (drawing shoulder medianward and backward); 26, muscles in neck that shrug shoulders; 27-30, neck muscles (in bending head to right, left, forward and back, respectively); 31, forehead and brow (wrinkling, frowning); 32, muscles about eyes (orbicularis muscles in closing eyes tightly); 33, eye muscles (looking in each direction with eyes closed); 34, face muscles (smiling, showing teeth); 35, lips and tongue (pouting, whistling, protruding and retracting tongue, counting aloud and to self); 36, throat muscles (swallowing).

The physician watches closely for signs of failure or progress, makes occasional tests and gives simple directions in a quiet way. An excited patient may spontaneously quiet down early in the practice, or it may be necessary to discourage him from speaking and have him close his eyes. The physician estimates the degree of relaxation chiefly by the apparent limpness and by the absence even of the slightest movements during a prolonged time; but rarely also by palpating the muscles or

shaking a limb. Unnecessary speech or restless movements of any part whatsoever are signs that a particular part is not being progressively relaxed.

He may test the success of the patient in localizing sensations by having him make some movement such as flexing the leg and stating where he feels the contraction. Several minutes after a movement he may ask a patient whether he still feels sensations from the muscles, since this cultivates perception. He gives such directions as "Relax the arm fully!" or "Let it go further and further every minute! Just do nothing at all with the arm!" or, "Make it perfectly limp until the faintest trace of tenseness disappears!" He adds also, "Make no effort at all to relax—just let everything go entirely! Do not bother about anything!" The patient is warned, and finds upon experience, that any movement retards the relaxation, since the tonus persists for several minutes. Accordingly he avoids movements, yet is not to exert any effort to hold himself still, but simply is to relax progressively until movements spontaneously cease and the inclination to move vanishes. Therefore, the physician is always on the alert in general relaxation for the slightest movement of a finger, the eyes or lips or other part. Whenever such takes place he may say, for example, "Just let your eyes go entirely!" Do not bother to look anywhere!"

Overactive minds may require special drill in relaxing the eyes, tongue, lips, or other muscles of expression. The instruction may be added, "Just let everything go. Do not try to think of anything. Make no effort at all." In this way the patient is gradually directed into a mental state in which thinking is laid aside.

As relaxation becomes general and marked the patient may fall asleep. The physician avoids suggesting to the patient that he will sleep; no suggestions in the technical sense are given and no *rapport* is established. The patient simply relaxes under guidance. He will tend to fall asleep if he is weary and in need of rest; otherwise he will not. Some patients fall asleep during the very first hours of practice; others, slightly disturbed by the presence of the physician, do better when practising alone. The patient is instructed to practise alone at times during the day, and upon retiring; but he may omit contracting the muscle groups and proceed directly with the relaxation. Once formed the habit of relaxing can, of course, be used by the patient unaided to overcome sleeplessness.

Having learned to relax generally at will the patient has at his disposal a means of overcoming a spell of nervousness. But more is needed to do away with his irritability, impulsiveness and excitement. He is shown how to be in a relatively relaxed condition when sitting up or walking. He is to keep only such muscles active as are needed to maintain his position. While seated he follows the method of relaxation previously learned when lying down so far as his position permits. The same is done while standing or walking. As he chats or is otherwise active the physician notes the presence of nervousness or excitement, notes tenseness in particular groups of muscles and instructs the patient to relax these. Great emphasis is placed upon relaxation

of the muscles of facial expression, eyes and speech. It depends upon the state of the patient and his progress how much of the day he shall devote to relaxation. As a rule he is directed to maintain a relatively relaxed attitude throughout the day, even while he entertains callers or attends to business if this is permitted. Besides this it is important that there be several periods of an hour or more of complete relaxation during the day.

If the patient is subject to spells of nervousness or excitement he is instructed to relax when he feels them coming on. At first he may have to lie down and relax generally in order to dispel the danger, but the highly practised individual may note particular regions of tenseness and relax sufficiently to accomplish his end even while continuing at his habitual occupation. In this way he may perhaps dispense with a rest cure.

Rationale.—Apparently the present method rests upon observations rather than upon theories. One question arises of special interest: Although it seems clear how progressive relaxation may do away with motor unrest, how explain its calming effect upon emotional and mental activity? There are perhaps about nine means by which this effect is brought about, some mental, others physiological: 1. The higher centres, as every one knows, are stimulated by the sense organs. Relaxation with closed eyes diminishes kinesthetic and visual sensation and so results in diminished activity of the higher centres. 2. Progressive relaxation of one part seems to bring with it by association a similar condition of another part. It sometimes happens that a beginner striving only to relax one arm becomes generally relaxed, and may even fall asleep. 3. Thought processes, it is well known, are accompanied by movements of expression or by adjustments of sense organs or at least by images of such movements or adjustments. Relaxation when carried far enough does away with just such movements or adjustments or images. Again, it is well known that assuming the manner of expressing an emotion tends to bring on the emotion. It is only the converse of this, that doing away with expression, and indeed with the very inclination toward expression, tends to quiet emotion. 4. The patient has the will to relax, or to put the matter technically, he has what has been known since 1905 as a mental state or determining tendencies (2). The influence of mental state and the physiological processes which it arouses will not be confused with suggestion by those familiar with the literature. 5. Suggestion apparently plays a minor rôle. Of course an element of suggestion enters into almost every natural act; for instance, going to bed at night is suggestive of sleep. But the physician avoids suggestion in a technical sense. 6. In some cases repose seems to be aided by virtue of the attention of the worried individual being diverted to his muscles. 7. Following psychological laws of association, we may expect agitation to breed agitation and repose to breed repose. 8. That reasoning may play a part is suggested by the observation of a patient, "Instead of giving way to excitement you stop to reason if you are relaxed." 9. The importance of habit formation is clear. Irritability

and excitement may be replaced by habitual relaxation.

The following cases will illustrate the results of the method.

CASE I.—Mr. X, single, aged thirty-eight, a merchant with agencies that oblige him to travel in this country and abroad. Physically negative, except occasional slight glycosuria. He complained of fear of travel; restlessness or inward or slight fears of difficulties; and excitability toward his employees. Since 1911, shortly after an automobile accident, he had suffered from inordinate fearfulness.

About ten treatments of progressive relaxation were given. Psychotherapy was added which need not here be discussed. He readily learned to relax generally. Special practice was had at noting activity in the tongue and lips and eyes during mental activity. He became able to relax these parts well, reporting that his mind was a blank. During conversation tense facial expression and restless portions of his body were pointed out to him. He was directed to keep himself relatively relaxed during business hours, particularly during moments of restlessness, fear or excitement.

The consequences have been quite satisfactory. He has made several trips since the treatment six months ago and has lost concern. He is able to avoid or quiet excitement at business by relaxing. Describing the process he says, "Something aggravating is said—you come to the boiling-point, then relax and your emotions fade away." In general his nervous condition apparently has been much improved.

CASE II.—This illustrates the employment of as few as two treatments in certain acute cases. An eminent musician, worn from overwork, was to give an important annual concert on the following day. Nervous and sleepless during the past three weeks of continual practice, he was oppressed with anxiety, and had notified his director that he might not be able to play. He begged to be relieved of nervousness and insomnia with drugs or any other means. He was advised that drugs might depress the *esprit* needed for a successful recital.

An abridged form of the method of progressive relaxation was used. In about thirty minutes the muscle groups of the body were rapidly run over, skipping the less important ones. Symmetrically placed groups were done simultaneously. Finally he lay fairly relaxed all over, save for frequently winking closed eyes. He was instructed to practice upon retiring. A short time was now devoted to relative relaxation while sitting up and standing. He was instructed how to relax upon greeting the audience. Next he was shown how to play the piano with relaxation of muscle groups not needed for playing. That night he slept excellently and was calm the following morning. The concert was an unusual success. He did away with stage fright by relaxing. While playing he relieved tension by trying to relax. A professional observer remarked that to her knowledge he had never before played with such composure.

CASE III.—Miss B., aged fifty-six, a teacher of French, negative family history, rather obese. When first seen, on January 12, 1919, she was in

bed, gasping, fidgeting, and staring wildly. She complained incoherently and with terror of inability to sleep even with the aid of drugs, of a bursting feeling in her head, and of intolerable oppression due to her surroundings. Since 1903 she had had six previous spells and under the direction of an eminent neurologist had each time left the present environment which seemed to bring them on, lately returning from a four year banishment to Sweden.

Treatment was begun with argument and persuasion. Drugs were permitted her for a time. On January 16th practice at progressive relaxation was begun with the left arm. It was noted that her breathing tended to become more regular, and her starts and restlessness to diminish.

As she practised from day to day the distress in her head was relieved and agitation and fear diminished. On January 24th she slept during the day. She was shown how to be relatively relaxed when up and about. On January 30th she had a marked relapse following an evening of Freudian analysis. She was again agitated, hopeless and helpless. She doubted her ability to relax. But her difficulties were met with the aid of suggestion, argument, persuasion and further practice of relaxation. Her improvement was gradual but firm. On March 27th, after about forty treatments, she was discharged, and since then has enjoyed very good health. For the first time she had recovered in her present environment.

CASE IV.—A widow of sixty-eight, with exophthalmic goitre, glycosuria, polyphagia, variable hypertension, albuminuria, former retinal hemorrhage. Another stroke seemed imminent. She was weak and tremulous, melancholic, and extremely hypochondriac. Neurasthenic symptoms and insomnia were marked.

Intensive relaxation and psychotherapy were used with results which were unexpected—even astonishing—to her family, as well as to her several physicians who referred her to me. From beginning treatment in February, 1918, to her death from apoplexy in November a striking change of personality appeared. The lines of anxiety in her face almost disappeared, and the exophthalmos diminished. She slept without bromides and could ward off spells of nervousness and palpitation.

CASE V.—A single woman, aged thirty, an intellectual teacher of music, suffered from marked insomnia following influenza. An unusually brief treatment was given in three sessions in November, 1918. Since then she has been able as never before to sleep restfully whenever she needs, and she has applied the method to relieve irritability or tenseness when at work.

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30 NORTH MICHIGAN AVENUE.

THE TREATMENT OF TUBERCULOSIS IN EXPERIMENTAL ANIMALS*.

BY BENJAMIN S. PASCHALL, M. D.,

New York.

(Concluded from page 309)

Series No. 5 living an average of sixty-four days should have run better than three to four. Had the days been made the same by killing controls so as to check the treated animals they would have very closely approached the usual one to two. Even at that the immunizing effect of mycoleum may have been depreciated to some degree as it was vacuum distilled for unusual purity and such a degree of heat seems to be injurious. It was accordingly repeated in series No. 8. Bleaching by sun or chemicals has been observed to have the same effect; the remarkable accuracy with which the unchanged, untreated or unbleached mycoleum acts on the experimental animal is its specific characteristic.

In Series No. 6 an intercurrent disease interfered with our drawing accurate conclusions. And though it gives a one to two checking, the total number of days lived is so much in favor of the controls that it was accordingly repeated in Series No. 9. It was not infrequent to have many guineapigs destroyed thus during experimentation, usually by pneumonia.

As before stated, Series 7A and 7B were treated with an emulsion of two mixed cultures of comparatively low virulence, similar to the Park culture used in Seattle, (a standard culture used at Otisville for the manufacture of Tuberculin H305). Since it failed to inoculate on .001 mgms., it was accordingly raised in dosage to .05 mgms. and with these strains the average life of the series was slightly over four months. We obtained the counts of one to eighteen and one to thirteen respectively. Unfortunately, we were not able to continue the experiments with these strains after I succeeded in standardizing them, due to the failure on the part of the laboratory to keep these cultures alive. No further comment is necessary on 7A and 7B beyond the statement that with cultures of this character, a guineapig is made to approximate most closely the average chronic human type of tuberculosis and cultures of the H37 variety most closely resemble the human type of acute military tuberculosis unless the inoculating dose is exceedingly small when the days lived by a series tend to become irregular.

Guineapig marked O in all series have died from intercurrent diseases in the hygienic laboratory. A disaster of this kind had already occurred in Series No. 6 which was being repeated in Series No. 9 and on visiting the hygienic laboratory on November 10th, I noticed that the guineapigs of Series No. 8 were beginning to die again in the same manner. Accordingly on November 13th, I removed these last two series to my New York laboratory into fresh cages where they could have an abundance of light and air. I had also noticed on the two previous autopsies the stomach and intestinal con-

tents of killed guineapigs were absolutely empty. In addition to this, it frequently happened that a guineapig dying in the cage was immediately eaten by the surviving animals, something which had never occurred in our own cages. These last two series lived approximately the same number of days (about two and a half months each) and the checking is very close to one to 2.5, which is exactly what it should be, since one to two is the sixty day average and one to three the ninety day average, when virulent strains are used.

In making a summary of the work done in the hygienic laboratory and substituting Series No. 8 and 9 for Series No. 5 and 6 since they were repetitions for greater accuracy, we tabulated as follows:

Series living 35 days treated—untreated 1 to 1 counts.
Series living 47 days treated—untreated 1 to 1.3 counts.
Series living 52 days treated—untreated 1 to 1.8 counts.
Series living 74 days treated—untreated 1 to 2.7 counts.
Series living 80 days treated—untreated 1 to 2.6 counts.
and over ninety days. These last two being tubercle bacilli of low virulence.
Series living 125 days treated—untreated 1 to 18 counts.
Series living 126 days treated—untreated 1 to 13 counts.

I was exceedingly anxious in the work at the hygienic laboratory to work with low virulent cultures only and never with a series which lived under ninety days, but the utter lack of standardization or knowledge of the relative virulence of any cultures there made it absolutely necessary for me to conduct the experiments under serious handicaps. After this exhaustive testing, the government attitude towards the therapeutic value of this substance in the treatment of tuberculosis may be summed up in this paragraph relative to the merits of mycoleum.

"The sufferers from this disease have been so often the victims of unwarranted optimism or of calculating cupidity on the part of those who have originated or furthered methods of treatment for tuberculosis, that this office feels it is only fair to demand that unbiased observers shall be convinced of the value of an agent of this nature before allowing it to become a subject for interstate traffic."

In my next article I shall give a résumé of clinical results, covering twelve years' experience with mycoleum. It will be readily understood that from a pathological viewpoint the rules for treatment and permanent arrest of this disease must be formulated in harmony with the character of the lesions produced by the tubercle bacillus. In common chronic phthisis the ordinary tubercle is very avascular and wax splitting immune bodies do not readily penetrate the caseous mass more or less encapsulated with fibrous tissue. Moreover lipolytic antibodies are only activated by flooding the circulation with substances to be attacked and digested. One must wait then, for these diseased areas to soften or permanently heal, always a matter of years before the final decision can be reached in the case of man.

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*The tables giving the results of the experiments will be found in the author's reprints; for mechanical reasons it was impossible to publish them all in the Journal.

Editorial Notes and Comments

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BOOKS AND THE PHYSICIAN.

It is not at all strange that the medical practitioner often shows an aversion to medical books, and especially textbooks. This is most marked in recent graduates, who on emerging from college are sometimes fascinated by the interest of the clinical material found in their work. The necessity of memorizing the contents of many dry volumes during college days may contribute to this inhibition. This is not an entirely unhealthy sign; it is a much more hopeful condition than that displayed by the less sure footed colleague who has grown dependent on books and who will never commit himself until he finds his data in a textbook. If it is not found in medical literature, it cannot be so! This man cannot reason for himself and the medical profession does not profit by his belonging to it. For him our message will be fruitless.

These are the two extremes, but there is another matter to be considered—the real value of books. All books are not good books. Quantity is not the principal desideratum in reading. A well conceived book often contains the lifework of a conscientious physician. In it we have presented in compact form the best of his findings—often a record of all that has been done in the past in a particular line of endeavor. In comparison with casual articles, often hastily written and unrevised, the textbook is the more valuable. More care has gone into its construction.

In consideration of these points, we have estab-

lished, with this issue of the NEW YORK MEDICAL JOURNAL, a new department for the review of books of interest to the physician. Medical men do not have time to read all of the books that are published, even in their specialty. We feel that in the past too little consideration has been given by medical periodicals to the review of books; the balance of the material presented has not been fair either to the author or to the reader.

In this new department we shall present critical analyses of books which we believe will be of interest to our readers. We shall not limit our discussion to medical books; frequently a psychological interpretation of some well known book is of great value to the medical man. It may help him in establishing a rapport with his patients and give him a better insight into their psychology, and—equally important—it may give him a clearer understanding of himself and some of his conflicts.

We hope our readers will follow this departure with interest and send us any suggestions which they may have to offer. If a book has proved of special value to you, do not hesitate to tell us about it. Your own interpretation may be of interest to other members of the profession.

THE UNFIT IN OPHTHALMOLOGY.

Perhaps ophthalmology is suffering no more than any other specialty from a too large proportion of the unfit among its practitioners. Perhaps the leaders in other specialties are studying how to eliminate these in their own fields for the benefit of all concerned. But the ophthalmologists are the first to come forward with a plan to accomplish this. Whether it will work satisfactorily or not cannot be told until it has been tried, but the more we study it the better convinced we are that it will at least accomplish much good. A very serious difficulty in the way of eliminating the unfit from any branch of practice is that there is no legal impediment to prevent anyone with the degree of M. D. from claiming to be, and practising as, a specialist whether he has devoted any time to special study or not. Another difficulty is that it is hard for anyone not personally familiar with a specialty to judge another person who claims familiarity; gross mistakes have been made in the past, both in condemning the expert and in approving the unfit. The only competent judges are the experts, and the experts in ophthalmology are the ones who have assumed the onerous and thankless duty of trying to find a way in which to rid the community of

those who have not the proper educational equipment for such practice.

Not much more than a generation ago ophthalmologists held the highest position in the medical profession. They were few in number, grouped in the large cities where the best opportunities for study could be found, and they led strenuous lives. Energetic, eager, tireless workers that they were, they realized their physical incapacity to do more than a small portion of the work which needed to be done, so they attempted to impart some of their knowledge and skill to anyone who was receptive. The leaders of all specialties had this altruistic feeling, and to this feeling on the part of their founders postgraduate schools owe their existence. But the results were not altogether what had been hoped.

Some students followed closely in the footsteps of their masters and are now among the leading exponents of their art. Others studied faithfully and are now scattered throughout the land, able and fit practitioners. But still others appeared at the schools; physicians who had failed, or had tired of work, admired and envied the high position their teacher had won. Above all they admired the big fees said to be received by him, and the life of leisure he seemed to lead. No night work. No going out in a storm to earn an uncertain dollar. No bad accounts. Just to sit in the office a few hours a day, go to the hospital for a few hours and boss things, do a few easy operations, and count the cash received. The rest of the time was to be his own. They watched him extract a cataract, perform an iridectomy, operate for strabismus, and said, "How easy; anybody can fit glasses." Try as he would the teacher could not inspire them with his love of work. Work was what they wanted to avoid.

The first suggestion as to how to improve matters was to secure better education in ophthalmology. Something has been done along this line, but without furnishing a solution to the problem. In 1916 committees from the American Ophthalmological Society, the Section in Ophthalmology of the A. M. A., and the American Academy of Ophthalmology and Otolaryngology organized the American Board for Ophthalmic Examinations for the purpose of trying to eliminate the unfit. The functions of this Board are: 1. To establish standards of fitness to practise ophthalmology; 2, to investigate and prepare lists of medical schools, hospitals, and private instructors recognized as competent to give the required instruction in ophthalmology; 3, to arrange, control, and conduct examinations to test the qualifications of those who

desire to practise ophthalmology, and to confer certificates upon those who meet established standards.

The board does not confer any degree, it makes no direct attempt to license or legally regulate practice, and it compels no one to take the examination. It hopes to attain its purpose indirectly through the societies which gave birth to the movement. Two of these societies have announced that after 1920 every applicant for membership must possess either such a certificate, or a degree in ophthalmology conferred by a university competent to prepare students for such a degree. The American College of Surgeons also has appointed a committee, at present identical in personnel with the board, to pass upon the professional qualifications of ophthalmologists who may become fellows.

We have no doubt that these societies will be able to exercise a great deal of pressure in this way, and we believe that they will exercise that pressure to the utmost. True, there are among the unfit those who cannot appreciate the benefits which accrue to them through membership, and so do not wish to join these societies. But medical men as a class are well aware of the benefits which come to the individual through membership in any live, scientific medical society, and, as soon as the information becomes widespread that a specialist must have been judged fit by his fellows in order to gain entrance, and that the unfit are excluded, they will begin to suspect that the ophthalmologist who is not a member is not only ignorant of his own needs, but that he has been rejected as unfit. May success attend this worthy attempt.

VACCINES IN GONORRHEA.

A few years ago vaccines were introduced in the treatment of gonorrhea by Nicolle, Blaizeau, Cruveilhier and others. Recently Baril and Creuze have again taken up the subject but these writers just remark that left to itself, gonorrhea undergoes its evolution like any general disease; there is a period of incubation, of full development and finally of decline, all accompanied by more or less intense general phenomena which are all the more appreciable the less resistant the patient. There is likewise a true convalescence. The principal phenomenon of the period of full development is the discharge, whose changes indicate the progress made in the struggle between the infecting antigen and the resistance of the organism. Left to itself the disease will often subside, especially the first infection, if the soil upon which it develops is sufficiently resistant. On the other hand, the disease will drag on when the patient has not the power to react against the specific organism.

It is in these latter circumstances that complications are prone to arise. When the complications are local they are the result of two factors, namely, direct extension of the process and a sensitized soil from the general viewpoint. When arising outside of the genital system they are usually due to general infection. Some writers only treat the local process by means of injections, irrigations and instillations, others resort to vaccine therapy. It would seem logical to treat the general infection by developing antibodies capable of acting energetically against the antigen. On the other hand, there exists a virulent focus at the site of the local infection which should be dealt with, and it is in this way that Baril and Creuze treat gonorrheal infections.

The vaccines which have been essayed up to the present time having failed to give these writers constant results, they have prepared a new polymicrobic one, containing the greatest possible number of different strains with aerobic and anaerobic bacterial associations. Having treated a number of patients with this polyvalent vaccine, these writers come to the conclusion that in the majority of cases, the changes indicated below will be noted by its use.

After the first or second injection of the vaccine in the gluteal muscle, the urethral discharge increases, and this negative phase may be accompanied by headache, slight rise of temperature and some general malaise. After the fourth or fifth injection the discharge changes decidedly. It becomes more fluid and in aspect more mucous until the day when, in fortunate cases, it ceases completely. If this does not occur, then the whitish mucopurulent discharge continues indefinitely. The evolution of these changes lasts from fifteen to twenty days, and during this lapse of time the process goes through all its phases but they are of shorter duration. At the same time, the gonococci become extracellular progressively, and will be found associated with other bacteria, such as the streptococcus, staphylococcus, and certain types of bacilli. The gonococcus will have disappeared by the twelfth to the twentieth day.

When these data had been obtained by the experiments, Baril and Creuze were led to employ urethral irrigations and they asserted that the action of the latter was certain. They employed permanganate of potassium and oxycyanide of mercury because of the oxidizing power of these agents. They believe that the proper time to commence the irrigations is when the first changes in the discharge appear following the use of the vaccine, namely, from the sixth to the tenth day.

THE CLINICAL ANOMALIES AND BACTERIAL ASSOCIATIONS IN CEREBRO-SPINAL MENINGITIS.

In the present state of our optimism regarding treatment of cerebrospinal meningitis with antimeningococcic serum we should pause to reflect, because it must be admitted that in adults especially, this measure is not infrequently without avail. In a recent and very excellent thesis Doctor Servais points out that perhaps the pneumococcus—whose virulence seems to have been exalted by the recent influenza epidemics—explains the failures in many cases even when polyvalent antimeningococcic serum was used. From the clinical viewpoint, Servais gives as actual dangers the frequency of relapses, which are often serious and difficult to treat, because a return to serum treatment exposes the patient to the accidents of anaphylaxis; the frequency of the septicemic forms, especially the purpuric, which may have a fatal issue even in the absence of venous accidents—*meningococcemia sine meningitis*; the reviving of old, latent encephalic lesions, which is to be particularly feared in numerous individuals who have been subjected to the traumata of the battlefield and especially in those who have been trephined; the possibility of iridocyclitis and serious ocular accidents, possibilities already foreseen by Netter, with or without purpura.

From the point of view of prophylaxis, the danger of a microbic symbiosis imposes the necessity of careful individual isolation of every patient with meningitis. Rigid aseptic precautions are essential on the part of both physicians and nurses, precautions which protect those in attendance from contagion and the patient from any fresh bacterial contamination. Some of the recent unfortunate occurrences in treatment appear to be due in part to the dearth of coal and the difficulties in securing laundry work, so that the gowns and linen could not be changed often enough—at least this condition prevailed in France.

On account of the failures, even when polyvalent antimeningococcic serum was used, it seems essential to produce an antimeningococcic serum possessing a high number of antitoxic unities. Such a serum should also be efficacious in action against all types of meningococci, which may vary even with the season and years. The future will, perhaps, develop a well regulated bacteriotherapy for each disease with its own specific bacterium. The difficulty of introducing the serum into cerebral foci of disease which are tightly walled off, especially the interventricular spaces, explains some of the unsuccessful results. When the cerebrospinal fluid re-

mains constantly purulent in spite of lumbar lavage occlusion of the subarachnoid space must be suspected. In this case serum injections should be given at different levels of the cord. These walled off types are particularly serious both on account of immediate accidents and recurrences.

If encephalic encystment is evident, frontal trepanation followed by puncture of the lateral ventricle at its anterior extremity will give exit to the pus from the interventricular spaces and bring the serum directly *in situ*, with a minimum of operative shock. The present frequency of pneumococcic symbiosis should lead to the general adoption of Netter's practice: to inject at the onset of the symptoms one or two doses of antipneumococcic serum of ten cc. each, into the spinal canal. When employed at the onset the results are striking, as well as the preventive action on future complications. It is useless when a pneumococcic meningitis has become declared, whether a pure or a hybrid type.

THE MEDICAL MOVEMENT IN SPAIN.

Abrupt happenings are recorded in the medical movement of Spain. The *Paris médical* relates the particulars of a strike that occurred among physicians of the province of Cadiz, who grew tired of waiting long months—sometimes even years—for the emoluments belonging to their municipal or provincial function. While continuing to care for their patients, they formally refused to continue in the public service as it was then constituted. During the early days the matter appeared of little importance in itself, but grave consequences, menacing to the public health, were an inevitable result of this new sort of strike. The municipalities talked, and the physicians remained adamant. Soon the strike spread to neighboring provinces, and at one time it seemed as though the entire medical profession would enter into open revolt against the arbitrary actions and bad faith of the public administrators. From a local question the matter became general, and the cause of the doctors of Jerez was that of all Spain. For the first time, in that country where regionalism has been pushed so far, there arose a professional interprovincial solidarity expressed in a general meeting of the *Colegios de medicos* throughout Spain, held in Madrid. The doctors of Jerez won their strike, but the agitation persisted and grew. No one knows just what the outcome will be.

It is recorded by the same writer that the chance physicians met at the international congresses are not representative of the mass of Spanish medical men. Representing an elite, endowed with official functions and high honors, and moving in court circles, they have neither the leisure nor the will to bother about the aspirations of a social class with which they have only the most distant relations. One must study the medical men of Spain in their small market towns and provincial villages to appreciate the justice of their protest against

embittering social conditions. In the provinces the Spanish physician, no matter what his knowledge, activity, and faithfulness, cannot succeed in earning a living. His principal clientele is made up of the poor, for whom he is paid very little when paid at all. The official bulletin of Gerona, under date of September 15th last, announces a vacancy in the position of municipal physician of Armentera, at the annual rate of twenty *pesetas*. In the large provincial centres the physicians in the public service get from 1000 to 2500 *pesetas*, for which sum they are at all times, at any hour of the night, at the disposal of the poor, while for eight hours of presence (not of work) the doorkeepers of the ministry receive from 1500 to 4500 *pesetas*. It is to affirm their own right to existence that the medical men have resolutely entered upon professional unity in the form of syndicates.

MEDICAL SCIENCE: ABSTRACTS AND REVIEWS.

A journal, the scope of which is explained by its title, commenced publication with the October number. It is published by the Medical Research Committee, of England, and editorial superintendence in the subjects named is given by J. D. Rolleston (medicine), W. G. Spencer (surgery), W. Bulloch (pathology and bacteriology), F. M. R. Walshe (neurology), W. S. Lazarus-Barlow and Sidney Russ (radiology). Material published is under two heads: Reviews, which deal with the literature on a given subject such as influenza, lethargic encephalitis, spina bifida, and so on, and abstracts of contemporary medical journals. E. Schuster, assistant secretary of the medical research committee, is in charge of editorial matters.

News Items.

Doctor Kevin Renominated.—Dr. J. Richard Kevin of Brooklyn, has been reappointed Commissioner of the State Board of Charities from the Second Judicial District.

Medicinal Whiskey on Fair Price List.—Word comes from Chicago that whiskey for medicinal purposes will be placed on the Federal fair price list there, along with butter, eggs, flour, and other necessities of life, although the price has not been decided upon.

Doctor Simpson for World Medical Congress.—Dr. F. F. Simpson, of Pittsburgh, recently went to England to discuss the possibility of forming a world congress of physicians and surgeons composed of the various international congresses and associations already existing.

Doctor Cohen Celebrates rooth Anniversary.—Dr. Elizabeth D. A. Cohen, the first woman physician of New Orleans, recently celebrated her rooth birthday. Doctor Cohen studied medicine at the Women's Medical College of Philadelphia and afterwards put in thirty years as a general practitioner in New Orleans.

New York State Civil Service.—The Civil Service Commission of the State of New York announces an examination, to be held April 10th, for bacteriologist-pathologist in the State Department of Health, salary \$2500 to \$3000.

Air Ambulances for Army.—The War Department has ordered four army airplanes converted into airplane hospital ambulances. Each machine will be equipped with two basket litters for patients and accommodations for a pilot.

Hospitals Seek Fund.—The Society of the New York Hospital has announced the opening of a campaign to raise \$712,000, of which about \$100,000 is needed to meet a current deficit. The society operates the New York Hospital, Bloomingdale Hospital, and the Campbell Cottages for Convalescent Children at White Plains.

American Aid to Vienna.—The American Red Cross has established emergency relief stations in Vienna and Budapest for supplying fifty-four Vienna hospitals and children's institutions throughout Austria with sanitary appliances, drugs and clothing. Major Robert Davis has been appointed director of the relief service.

Police Hospital Drive?—A campaign for \$5,000,000 to build a hospital for policemen and their families was carried on for several days in New York and suddenly called off by the police commissioner. It is understood that further canvassing will be done through a committee. The hospital is to be built in Brooklyn.

Quarantine at Camp Upton.—The recruit educational centre at Camp Upton, L. I., has been placed under quarantine owing to outbreaks of measles, scarlet fever, and influenza. Early last month the educational centre was visited by an epidemic of pneumonia; the present outbreak, however, is said not to be as serious. More than 1500 men are affected by the quarantine.

New England Medical Women Meet.—The Medical Women of New England held their annual reunion and banquet January 17th, in Boston. Officers elected were: President, Dr. Agnes C. Vietor (reelected); vice-president, Dr. Margaret L. Noyes Kleinert; secretary, Dr. Alice H. Bigelow; treasurer, Dr. Isabel D. Kerr, all of Boston.

Mount Sinai Hospital Additions Begun.—Ground has been broken for the new buildings which are under construction by Mount Sinai Hospital, New York. A private pavilion with rooms for 137 patients, and a large auditorium to accommodate clinical congresses and public health lectures, as well as for general hospital purposes, are features of the new building program.

Personal.—Dr. Chester Ford Duryea has been appointed associate director of the New York Radium Institute. Doctor Duryea has been associated with Dr. C. Everett Field in laboratory work since 1913 and recently returned from France and England, where he had the opportunity of observing the methods there advocated in radium therapy.

Dr. John L. Todd, associate professor of parasitology at McGill University, Montreal, is taking a party of doctors to Lemberg, Poland, for the purpose of studying the typhus epidemic raging there.

Conference of Red Cross Societies.—The medical section of the congress of the League of Red Cross Societies, which is in session at Geneva, has decided upon a campaign in Europe against malaria along the lines of the Rockefeller Commission in Arkansas and of the Italian Red Cross in Italy. It was also determined to establish a training school for public health nurses in some European city to be selected later.

Dublin Journal of Medical Science.—The *Dublin Journal of Medical Science* has announced that in future it will become the official organ of the Royal Academy of Medicine in Ireland, and it is understood that the journal will replace the annual volume of *Transactions* of the Academy. Sir John Moore, after nearly fifty years' editorial service, has handed over the editorship to Mr. Arnold K. Henry, F. R. C. S. I.

No Glue for Ice Cream.—Because of disclosures that dealers have mixed glue with gelatin used in ice cream, the New York City Board of Health has amended the Sanitary Code so as to define food gelatin and prevent the sale of substitutes or improper mixtures for use in ice cream. Only pure food gelatin will be admitted into New York. It will also be required that the milk and cream in ice cream contain eight per cent. of butter fat, and the amount of gelatin will be limited.

Unusual Lawsuit.—An unusual action involving the question of prenatal influence has just been filed in the Supreme Court of New York by William B. Hogan, of New York, against Borden's Condensed Milk Company. The suit, which is for \$100,000 damages, is based on the contention that the child's mother was bitten by a horse owned by the company and that, although the mother was but slightly injured, the shock caused physical deformities and other abnormalities in the child, which was born a few months later.

Drug Addict Clinic to Close.—Announcement has been made by Dr. Royal S. Copeland, health commissioner of New York, that the Health Department's clinic for drug addicts at 145 Worth Street would be closed on Saturday, March 6th. The number of addicts being treated had dropped from 3000 a day to about 150 a day. Those who have been attending the clinic will be treated at the hospital on North Brother Island. Dr. Copeland has stated that there was plenty of room in the Riverside Hospital and that the city would be able to treat all applicants. Between 6000 and 7000 addicts have been treated at the clinic since its opening in April, 1919.

Typhus in Poland.—A cable message from Colonel Harry L. Gilchrist, Medical Corps, U. S. A., head of the American antityphus expedition, states that Poland is confronted with the worst typhus epidemic in the history of the world and that unless blotted out at once the epidemic will threaten all Europe. The American Jewish relief committee has instructed its representatives in Warsaw to expend \$100,000 for coal to be used in starting disinfecting plants in the typhus zone, as requested by Colonel Gilchrist. It has also been announced that Dr. Harry L. Plotz, of New York, a specialist on typhus, will leave for Poland to take charge of the campaign against the disease.

Association of Tuberculosis Clinics.—At the annual meeting of this association held January 29th in New York, the following officers were elected: President, Dr. James Alexander Miller; vice president, Dr. D. Clifford Martin; secretary, Dr. John S. Billings; members of board of directors: Dr. D. Clifford Martin, Dr. Ambrose A. Scouler, Dr. Henry G. Schweitzer, Dr. Victor Mildenberg.

United States Civil Service.—The United States Civil Service Commission announces examinations for the following positions: Inspector and agent, antinarcotic act, salary, \$1,500 to \$2,000, with maintenance when away from post of duty on official business, examination to be held May 4th. Bacteriologist, Public Health Service; salary, \$90 to \$180 a month; examination to be held June 29th. Junior bacteriologist, Public Health Service; salary, \$76 to \$90 a month, and part time at \$30 to \$50 a month; examination to be held June 29th.

Health of Troops.—Influenza and pneumonia, although continuing to be the chief causes of admissions to sick reports among U. S. troops, are declining in nearly all camps and stations. During the week ending February 20th, Camps Taylor, Upton, Benning, Knox, and Eustis, Raritan Arsenal, and West Point were the only stations reporting more than ten new cases of influenza. Sputum borne diseases were responsible for twenty-eight deaths out of a total of thirty-four from all diseases reported during the week.

London Woman Physician Here.—Dr. Winifred C. Cullis, professor of physiology in the London School of Medicine for Women, has arrived in this country as the guest of the committee on international relations of the Association of Collegiate Alumnae. After passing a month at Vassar College lecturing on physiology, Doctor Cullis will tour other eastern colleges for women. The intention of the committee is to establish an exchange of professors and students between English and American colleges. Under this arrangement Dr. Caroline F. E. Spurgeon, of Oxford, arrived here some time ago, and Mrs. Ida Smedley MacLean, of Cambridge, research chemist, is expected soon.

Labor-Tuberculosis Association Committee.—At a recent conference in New York of the New York Tuberculosis Association and the Labor Sanitary Conference, a joint committee was appointed consisting of five representatives in each organization. The work of the committee will consist in endeavoring to reach labor bodies and trade councils, particularly individual unions representing the greatest health hazard, distribution of literature, arrangement of talks and exhibits, encouragement of shop sanitation committees, health lectures, and in arranging, if possible, for confidential medical examination of employees or members of unions in the workshop or in cooperation with occupational or tuberculosis clinics. The members of the committee are: For the New York Tuberculosis Association; Dr. Louis I. Harris, chairman; Dr. George M. Price, Dr. Edward McSweeney, John Fitch and Paul Kennaday. For the Labor Sanitation Conference: Alfred Boulton, Miss Maud Swartz, Meyer Abramson, Frank Byrne and Frederick Gaa.

Johns Hopkins Hospital Addition.—Construction of the proposed women's clinic of Johns Hopkins Hospital will probably be commenced this spring. An appropriation of \$400,000 by the General Education Board has just been made to Johns Hopkins University, and in addition \$400,000 for the erection of the new building was provided last year by an anonymous donor. The building will be contiguous to the present Johns Hopkins Hospital group and will be situated on the Monument Street side.

Death of Sir Thomas Stuart.—Word has been received from Sydney, New South Wales, of the death on March 3rd of Sir Thomas Anderson Stuart, dean of the faculty of medicine in the University of Sydney. Sir Thomas was born in Scotland in 1856. He was actively identified with many of the medical and scientific societies of Great Britain and organized the expedition of the Royal Society of London to Funafuti, an island in the Ellice group in the Pacific Ocean. The expedition, by boring to a depth of 1,000 feet in coral rock, secured confirmation of the Darwinian theory of reef formation. He was a frequent contributor to scientific journals.

Commemoration of Doctor Welch's Birthday.—In honor of the seventieth birthday of Dr. William H. Welch, which comes on April 8th, a committee of medical men is arranging for an appropriate celebration of the anniversary. The announcement which they have sent out is as follows:

In the coming month of April, Doctor Welch reaches his seventieth birthday. Such an occasion ought not to pass without some new expression of affection and admiration on the part of the medical profession of America to one who has long stood as its leader. To many of his friends it has seemed that an expression worthy the master would be the preservation in suitable form of the chief contributions from his pen. Doctor Welch's writings are scattered through a great variety of publications and are more or less inaccessible. It has accordingly been decided to bring together and to publish in three volumes his papers and addresses which strikingly reveal the great part he has played in the development of medical science and medical education. In order that the project may be assured it has been decided to invite his friends and former pupils to unite in making possible the publication of his work. The volumes will be issued by the Johns Hopkins Press under the editorial supervision of the undersigned committee. Each copy will be numbered, and assigned in the order of subscription. The edition will be restricted to the number subscribed. The committee is composed of: Dr. John J. Abel, Dr. Lewellys F. Barker, Dr. Frank Billings, Dr. Walter C. Burkett, Dr. William T. Councilman, Dr. Harvey Cushing, Dr. John M. T. Finney, Dr. Simon Flexner, Dr. William S. Halsted, Dr. William H. Howell, Dr. John Howland, Dr. Henry M. Hurd, Dr. Henry Barton Jacobs, Dr. William W. Keen, Dr. Howard A. Kelly, Dr. William G. MacCallum, Dr. William J. Mayo, Dr. Ralph B. Seam, Dr. Winford H. Smith, Dr. William S. Thayer, Dr. J. Whitridge Williams, Dr. Hugh H. Young.

Book Reviews

A PSYCHANALYTICAL INTERPRETATION OF A LIFE.

Mary Olivier. *A Life*. By MAY SINCLAIR. New York: The Macmillan Company, 1919. Pp. iii-380.

It is the compressions and the repressions of the past that have made this the age of analysis. Once not so long ago the world was too content to accept things in the mass, or rather it was striving vainly after contentment which should come through some fixed ideal, some accepted creed and system. It held itself, however, too rigidly from its own vital inner nature in so doing. Its striving became fruitless for this reason—its old ways of striving or the disguises under which it had hidden them began to show their barrenness for health and effectiveness. Hence has arisen the need and the demand for so much analysis. It has proved itself necessary to get at the individual facts of desire and need and the effort to satisfy these. Like every reaction this reaches sometimes so far that it overstrains at its function. It may even weary to a certain extent those who would gladly find and make the new method of looking for facts a tool which cuts directly, serviceably, with a certain glad courage into the very elements of any one's mental life in all its variety and depth. May Sinclair's novel, *A Life*, manifests the tendency, the need for analysis of one's own inner aspirations and difficulties, and of the circumstances in which these find themselves and with which they have to battle or to which they may adapt. The circumstances, too, show themselves to be the result of the same aspirations and difficulties or partial successes of other individuals. Yet May Sinclair has fallen, perhaps, into too great a detail of analysis.

A novel after all has two purposes, just as a psychoanalytic clinic has. It must faithfully and honestly set forth in detail the life of the heroine and those who make her environment until the lesson is brought home to another struggling soul that here is the understanding and the self knowledge that it needs. It must also, however, find a synthetic fulfilment which is the constructive gathering of the details of a life, at last understood, into a healthy working whole, whether attained in the heroine's life or only suggested even through failure, into an ideal and an incentive which we can call an artistic creation. Such *Mary Olivier* attains at last to a pretty healthy degree—one possible, through a better understanding, to almost any human struggler. Therefore the possibility, the artistic whole, has not been left out of the reader's view. Still for a book, a work of art, rather too much time has been spent upon the long detail of Mary's learning to know. Because it is an artistic product we must ask of a novel to present the final synthesis a little sooner. It must not be protracted into the more prosaic series of therapeutic sitting. Nevertheless the clinic hour and the necessary clinical pressure which each earnest individual must bring to bear on his or her affairs in the mental life can profit here. In the face of all the possibilities and difficulties from within and with-

out one can learn much from the exhaustive analysis which Mary has spent upon herself and her family environment. The child complex is there in its variable attitude toward a father who aroused illassorted feelings of fear and desire, disgust and a sort of terrorized wonder—see the first dawning childish half dream and the later difficulty with the father's boorish jealousy. There is the difficulty with a mother who rules in unconscious tyranny of sweet helplessness and religious conviction of the narrowest type. And so on the analysis goes, discerning the factors which make life so hard for any child and drive him or her into strange ways of thought and action. So these seem to the blind, to whom their own fixed conceptions are the only possible ones. And all the time the child is the host of desires, powers, abilities the most natural, the most productive of healthful biological, social, intellectual expression. These may easily be turned to fear, to priggishness, to more and more aloofness in the child's own rather odd and different self, and only late and with difficulty and through a more or less unrelated dash for freedom does the child find that deep peace and power which belong to its own work and its own expression.

All this may be followed and better understood through *Mary Olivier* and through this presentation of one such ordinarily human character in ordinarily human surroundings. Our thoughts should be awakened to question how it is in truth with our children—ours, those of individual parents or of society—and what are we presenting them of opportunity and help in understanding and expressing themselves or how and under what guise we are hindering them.

NEW OBSTETRICAL MANUALS.

A Manual of Obstetrics. By JOHN COOKE HIRST, M.D., Associate in Obstetrics, School of Medicine, University of Pennsylvania; Obstetrician and Gynecologist to the Philadelphia General Hospital; Obstetrician to St. Agnes Hospital; Gynecologist to Mt. Sinai Hospital; Gynecologist to the American Hospital for Diseases of the Stomach. Illustrated. Philadelphia: W. B. Saunders Company, 1919. Pp. ix-516.

For many years Doctor Hirst's pupils have been fortunate in having given them a splendid outline of obstetrics and gynecology. Some months ago a small textbook appeared containing the substance of his lectures in gynecology, and this proved of great value to students not fortunate enough to receive instruction directly from Doctor Hirst. Through his continual contact with medical students, he has made a careful study of their needs. This fundamental training is highly important, as the future interest of the student may depend on his first contacts. Many men have had their life work decided for them by the interest stimulated by an attractive presentation of a specialty in medicine. The result of Doctor Hirst's labors has been that more men have devoted their time to the practice of obstetrics and gynecology than would have been the case if the subject had been less clearly and attractively presented. With the publication of this manual, it is to be expected

that more men will be recruited for this generally thankless but humanitarian profession.

Embryology is given a limited description by Doctor Hirst. In treating of the anomalies of the pelvis the old haphazard method is discarded for a new one based on the incidence, a method which seems more logical and systematic. The mechanism of labor, a subject which so frequently puzzles the student, has been simplified and visualized by a series of illustrations of the various steps. Diseases of the newborn child have been included, though rather briefly, inasmuch as they may be encountered by the accoucheur. The subjects of laceration of the birth canal and the aftereffects of childbirth are amply covered. This important phase of obstetrics, which overlaps gynecology, has been frightfully neglected, and it is gratifying to note that more attention is given it here. Obstetrical operations have received the greatest amount of space, and detailed discussion is given to the dangers and advantages of forceps, which the author rightly considers the most dangerous of obstetrical instruments. Hemorrhage as it occurs in general practice, with the remedies required, has received special mention. The student can not find a better guide than this or the busy practitioner a more useful book of reference. It is an extremely helpful book.

Manual of Obstetrics. By EDWARD P. DAVIS, A. M., M. D., F. A. C. S., Professor of Obstetrics in the Jefferson Medical College, Philadelphia. Second Edition, Revised. Philadelphia: W. B. Saunders Company, 1919. Pp. ix-478.

This unassuming little volume was written with a full recognition of the changes that continually take place in the realm of obstetrics. The important subject of obstetrics has been long neglected. From times prehistoric children have been born with little aid or the assistance of some of the older females of the tribe. Children were born, and the casualties incident to labor, the unnecessary sufferings of the parturient woman, the lack of special aftercare, all were accepted as matters of course.

The combination of the acceptance of conditions thought to be satisfactory, or irremediable, together with the shrouding of the birth act in a cloud of mystery on account of its relation to sex, led to this disastrous situation. Men were excluded from the birth chambers.

Every innovation was met with extreme opposition and some of the men who recommended changes were considered heretics even by members of the medical profession. Slowly the light of science has been focused on this all important field, and now that medical science has taken up the subject in earnest changes occur with startling rapidity.

Davis's recognition of this important fact and his warning that it is impossible thoroughly to cover the subject in his small book is not without value. In fact, it gives more value to the text, as the author does not present finalities but merely tries to give a framework, so that the reader may build up his more solid structure from current literature and by frequent reference to other works on the same subject.

One of the most useful chapters is on the medico-legal aspects of obstetrical practice. Most physicians are too engrossed in their tasks to give due consideration to this phase of the work and often difficult situations are inadvertently encountered, not through carelessness so much as through a lack of knowledge of laws which have tended to befuddle honest practitioners who conscientiously strive to protect the welfare of the patient rather than be guided by a musty, heartless, legal mandate. Many difficulties can be avoided by a careful reading of this portion of the book.

A PATHOLOGICAL PLAY.

The Hand of the Potter. By THEODORE DREISER. New York: Boni & Liveright, 1919.

Incest, rape, murder and suicide follow each other with startling rapidity in the pathological drama which Dreiser so realistically portrays in *The Hand of the Potter*. From the literary point of view the work is excellent. The members of the family group and the home life are painted carelessly and yet with an insight akin to that of Dostoevsky—an insight that overlooks no detail. All this makes interesting reading, but in reaching his conclusions the author draws upon old line psychology and failure results. Cause and effect are banded about in a superficial manner and no successful sifting is accomplished.

The chief actor in the drama is a youth distinctly marked with a tic. His downfall is attributed to hormones which make him more sensitive to the appeal of women. He is excited by their filmy waists, their painted mouths, their hair, by the way they walk. . . . These are forces over which he has no control. This is all important enough, but why not get to the bottom of the question? Here is a delicate theme—a series of themes, if you please—carried out in fearless fashion; why not the conclusions?

Most of us have come to realize the workings of the oedipus complex in our dream life, where incest and parricide are the unwelcome visitors which the censor has so carefully suppressed in our conscious minds. Behind all this there is the sex drive pushing us on, suppressed through centuries of civilization, reaching out for the nearest object in our early environment. This is so universal that it can no longer be considered as abnormal, but merely as unfortunate. It may be looked upon as the necessary progression of narcissism, homosexuality, and finally the complete heterosexual development. It is only when the evolutionary process is arrested and a holdover continues for an unusual length of time that the condition must be considered pathological. For the interests of the herd and for the common welfare of the individuals comprising the herd, it is necessary to have either a direct normal sex outlet or a creative, sublimated substitute. Suppression is necessary for selfpreservation. In reaching the higher levels of sex expression and turning from selflove to a complete heterosexual desire, a transference is made from the mother object to another female who answers more fully our sex wants.

In the character Dreiser has portrayed, this evo-

lutionary process is checked. In an infantile manner the boy reaches out for the sex object nearest at hand; his mental status prevents him from adjusting himself to the more elemental demands of society. It is interesting to follow the story of the trial in the courts of law. The clever prosecuting attorney is unable to confuse the loyal family group who try to save the life of the uncaught culprit. Only when the father, urged by his conscience, reveals the plot of the family to save the boy's life by concealment and lies, are they able to fix the guilt upon his son.

Every physician or student of psychology who is interested in psychopathological conditions will find it worth while to study this book, even though some of the conclusions are not as fundamental as they might be.

EDUCATING THE EDUCATOR.

Diseases of the Ear in School Children. An Essay on the Prevention of Deafness. By JAMES KERR LOVE, M. D., F.R.F.P.S.G., Lecturer on Diseases of the Ear, University of Glasgow; Aural Surgeon, Glasgow Royal Infirmary; Aurist to the Glasgow Institution for the Deaf and Dumb, to the Glasgow School Board, to the Dumbartonshire Secondary Education Committee. New York: William Wood & Co., 1919. Pp. viii-94.

Medical inspection of schools has by this time become a well recognized and most important part of the general educational system in practically every civilized community, and if any argument is still needed as to its great value, both as a preventive as well as a curative measure of the various ailments to which the school child is subject, this little book furnishes it abundantly, in its special domain of diseases of the ear. Although it is a short essay on a subject, it is worthy of larger and broader treatment. The hundred pages contain a source of interesting information, both to the trained otologist, especially if his work is among school children, and the general educator. It represents the results of three years' work in a special school ear clinic—a thing either rare or, we fear, nonexistent as yet in our educational system—and, as the author states, it is essentially an essay on the prevention of deafness. The chapters on syphilis and heredity, both in their bearing on ear affections in school children, are of especial interest. The little book should be placed in the hands of every medical school inspector as well as every progressive school teacher, as a concise and accessible *vade mecum* on diseases of the ear in school children.

A NEW PHYSIOLOGY.

An Introduction to General Physiology. By W. M. BAYLISS, M. A., D. Sc., F.R.S., Professor of General Physiology in University College, London. Illustrated. London: Longmans, Green & Co., 1919. Pp. v-238.

The depths of a student's ignorance can often be measured by the height of his teacher's scornful conceit, one who, lazily or wilfully ascribing to his pupils more knowledge than they possess, thinks it puerile to explain or allude to that which "every intelligent student knows." Great men will never ignore Alfred burning the cakes; Raleigh casting his cloak in the mire for a queen's clean treading, or Washington and his new axe; for, if in the class some simple student should be cheered by hearing

of something he does know and, lacking such encouragement, grow despondent, then for him has the lecture failed.

Professor Bayliss seems to recognize this, and with kindly patience explains and illustrates many terms to him so simple, to the average student so obscure. Knowing also that in youth the eye is more accessible than the ear, he gives simple workable laboratory demonstrations. He knows the difficulties and, instead of "We now know—" he says, "This is difficult to understand; let us go back and reread, reconsider." The sections on osmosis, stimulation, adjustment (the nervous system) are specimens of lucid and attractive reading and will beguile anyone to explore even further than the actual class work demands for the time, particularly the chapter on growth and reproduction, the style of which recalls that of Sir Charles Bell.

Reverting once more to the cakes and cloaks and axes, it might be suggested that in the next edition some terms might be humanized and better retained in the mind if a few biographical data were appended. Who were Brown, Helmholtz, Keith, Faraday? The account of their labors is stimulating and the derivation of such weights and measures as ohm, volt, watt, curie, ampere, will open the door to most delightful biography.

New Publications Received.

[We publish lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Injuries to the Head and Neck. By H. LAWSON WHALE, M. D., Camb., F. R. C. S., Eng. Surgeon for the Ear, Throat, and Nose of the London Temperance Hospital. With Preface by COLONEL FREDERICK F. BURGHARD, C. B., M. D., M. S., F. R. C. S. Illustrated. New York: Paul B. Hoeber, 1920. Pp. i-332.

Physical Reconstruction and Orthopedics. By HARRY EATON STEWART, M. D.; Captain, Medical Corps, U. S. Army. Authorized for Publication by the Surgeon General of the U. S. Army. Illustrated. New York: Paul B. Hoeber, 1920. Pp. i-240.

Aphasia and Associated Speech Problems. By MICHAEL OSNATO, M. D.; Associate in Neurology, Columbia University. Preface by FREDERICK TILNEY, M. D., Ph. D.; Professor of Neurology, Columbia University. Illustrated. New York: Paul B. Hoeber, 1920. Pp. i-190.

Education in War and Peace. By STEWART PATON, M. D.; Lecturer in Neurology, Princeton University. Illustrated. New York: Paul B. Hoeber, 1920. Pp. i-106.

Le Contenu Stomacal a Jeun a l'Etat Pathologique et les Catarrhes Gastriques.—L. PRON. Deuxieme édition, modifiée et augmentée. Paris: A. Maloine et Fils, 1920. Pp. vi-65.

Rambling Recollections. An Autobiography. By A. D. ROCKWELL, M. D. Illustrated. New York: Paul B. Hoeber, 1920. Pp. ix-332.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

(Concluded from page 312)

In the prophylaxis of acute rheumatism, already briefly referred to in the preceding instalment, in which Agote's recommendation to administer sodium salicylate systematically during the month before an anticipated seasonal recurrence of rheumatic disturbances was mentioned, much attention has recently been paid to the removal of infective foci from which diffusion of germs causing joint, heart, and other typical manifestations of acute rheumatic disease might occur. In this connection an especial responsibility has been placed upon the tonsils. Norris, 1916, reviewed the literature bearing on the relationship of tonsillitis to acute rheumatism, and emphasized the advantages of tonsillectomy not only as a prophylactic procedure but also as a means of treatment where rheumatic symptoms have already developed. While there has been a general tendency to avoid operating on acutely inflamed tonsils, particularly in the presence of involvement of the joints, Norris seeks to show that this attitude is erroneous, pointing out that where the operation is deferred too long the increased risk of cardiac disturbance owing to the delay more than counterbalances any possible disadvantage attending tonsillectomy while the joints are still in an inflamed state. In accordance with this view, removal of the tonsils as soon as acute inflammation in these organs themselves has subsided is indicated. However completely or incompletely one may subscribe to this recommendation, the fact remains that diseased tonsils are often an important factor in the implantation and development of rheumatism, and that early removal of this harmful influence is one of the chief desiderata in the prophylaxis. To lessen the patient's discomfort where tonsillectomy is to be performed in the presence of joint symptoms, Norris administers large doses of salicylates to allay the articular pains as a preliminary to the operative procedure.

A special vaccine treatment of acute rheumatism has recently been recommended by Lyter, intended particularly for cases in which a primary focus of infection, such as infected tonsils, gallbladder, appendix, or genitourinary tract, or apical dental abscesses, can be shown to exist, or in which the customary general treatment and salicylic medication have failed to bring relief. The purpose in using the vaccine is to introduce a foreign protein into the system and thereby excite a defensive reaction which will tend to overcome the rheumatic infective process. In sixteen patients treated thus by Lyter one mil of typhoid vaccine—employed as a convenient, standardized protein—was injected

intravenously on successive days until cure resulted. The results were sufficiently good to lead the author to recommend this procedure in the classes of cases referred to above.

Somewhat similar, in the sense that it is intended to excite a reaction in affected tissues in cases in which salicylic treatment alone seems ineffective, is the measure advised by Edelmann, 1917. In this treatment free salicylic medication is supplemented by subcutaneous injections of sterile milk, the purpose being to cause additional hyperemia of the structures involved, with exudation in their tissues, and simultaneously a concentration of the salicylate in the circulation. From trial of this method in seventy cases Edelmann was led to conclude that it succeeded where salicylic treatment, used alone, failed. The rheumatic process was brought under control within a few days. Furthermore, the treatment is said to be a preventive of cardiac complications, such as endocarditis and pericarditis; in only two patients among the seventy treated did endocardial lesions develop, and in none, pericarditis. An endocarditis already present is not considered a contraindication to the treatment; in fact, the heart condition is said to be benefited by sterile milk administered intramuscularly in doses of ten mils. The sponsor of this combined procedure of salicylic medication and sterile milk injections seems to feel so certain of its advantageous effects that he describes it as an "abortive" treatment of rheumatic fever. Darier, 1919, it may be added, considers injections of cow's milk one of the most powerful means known of stimulating the defensive processes of the organism.

A more obscure form of treatment, recently recommended, is that of S. L. Brian, 1918, who injects hypodermically once daily 150 mils of a solution of seven grams of sodium chloride and ten grains of sodium sulphate in a litre of water. Brian seldom found it necessary to administer more than three or four such injections in a given case, pronounced betterment soon resulting from the procedure. According to his observations, no other measure yields such rapid benefit in acute rheumatism. No complications occurred in the cases treated by him with these saline injections.

Another procedure, used with asserted success by Zabaleta, 1918, in various types of rheumatism chiefly subacute or chronic, consists in subcutaneous injections of oxygen gas. After employing this treatment for several years and in a large series of cases, Zabaleta became convinced that it was of great service as an auxiliary to the usual therapeutic measures. The gas is injected directly into the painful parts, generally 100 mils being introduced at one time. In some cases all the major articulations are thus injected at one treatment, as much as two to four litres of oxygen being used. Among the cases treated was one in an elderly woman who had had chronic nodular rheumatism

of the hands and knees for two years. After oxygen gas had been introduced in the backs of the hands, it was worked along into the fingers by massage. Eight oxygen injections are asserted to have been sufficient in this case to remove all pain and inflammation in the affected joints. Another illustrative case was that of an old man who had been suffering from rheumatic sciatica for two months. Oxygen was injected at the points where the pain was most severe, viz., in the vicinity of the sciatic foramen and in the malleolar and popliteal tissues. After the initial injection betterment was already very distinct, and when a series of ten injections at intervals of three days had been completed the sciatica was wholly relieved. Similarly, in a number of cases of what the writer terms "deforming rheumatism," pain was allayed by oxygen injections, and beside, progress of the affection was apparently checked. Zabaleta asserts that the oxygen treatment is followed by increased urinary flow and enhanced urea elimination, and that the red cell count and hemoglobin percentage are also augmented. In the first case mentioned above, urea elimination is stated to have doubled as a result of the oxygen injections.

Colloidal sulphur has been lauded by Robin and Maillard, 1913, and other more recent writers, particularly for the purpose of preventing chronic rheumatic disease after acute attacks. Robin and Maillard used a colloid preparation containing 0.2 gram of sulphur in every fifteen mls, and gave it in doses of one teaspoonful, gradually increased to one tablespoonful, before the morning and evening meals. These authors also recommend quinine sulphate in doses of 0.3 gram twice daily to prevent the recurrence of subacute rheumatic attacks.

Massage of the tonsils with the fingers once to three times a day in both acute and chronic rheumatism was advised by Rothlisberger in 1912. The object of the procedure is to squeeze out the contents of the crypts, which thus frequently yield considerable septic matter even where apparently sound on visual examination. Where no secretion is expressed, but the tonsil nevertheless feels hard and is tender, incision is held to be indicated, in order to release the contents of affected follicles.

Needless to state, vaccines have been recommended in rheumatic disorders, as in most other states dependent upon bacterial infection. Among those most impressed with the results from such treatment is Rowlands, 1916, who advises, after a careful examination for and removal of all foci of chronic infection, the preparation of an autogenous vaccine from the microorganisms in such foci—or from the urine, where foci cannot be located. The vaccine is injected at intervals of a week or ten days in ascending doses, so adjusted as to induce a slight reaction in the joints. The injections are to be kept up for a year or more, the intervals being increased as improvement occurs. Various methods of dealing with obstinate cases of rheumatism, in which salicylates as commonly used fail or are badly borne, have been described. Of some interest is that mentioned by Roch, 1913, who reports a case in which salicylates, while effective at first, later lost their influence, pain,

swelling, and fever returning and the first sound becoming muffled. The salicylates were now omitted for two days, during which antipyrin in full doses was given. Upon subsequent resumption of salicylates in massive amount—seventy-five grains daily—the disorder quickly yielded and convalescence set in. Roch notes that interrupted administration of salicylates had already been recommended for obstinate cases, but thinks antipyrin particularly suited for use during the intervals. It would be well to bear in mind, in this connection, that antipyrin in some cases proves unexpectedly depressing to the circulatory system.

Where the stomach rebels against salicylates or an especial rapidity of action is required, unusual methods of administering the drugs, e. g., by the intravenous or rectal routes, have been employed and recommended by a number of observers. Robinson, 1916, gives ten to twenty grains of sodium salicylate in twenty per cent. solution intravenously, two or three times in the twenty-four hours if necessary, but prefers rectal injections of amounts as large as two drams, with fifteen minims of tincture of opium, repeated in twelve hours. Heyn, 1914, recommended a salicylate enema, given immediately after a cleansing soap-suds enema, through a rectal tube introduced for a distance of six to eight inches. The dose advised is one and a half to two and a half drams in four to six ounces of plain or starch water, with sixteen to twenty-four minims of opium tincture. A single daily enema proved sufficient, the dose being increased from thirty to fifty per cent. each day until the limit of tolerance was reached. Lastly, the experience of Conner, 1914, with intravenous salicylic medication may be referred to. He recommends that only a fresh solution, made with chemically pure, crystalline sodium salicylate and with distilled water freshly sterilized by boiling, be used. The drug is to be weighed and handled as aseptically as possible, but the solution, once prepared, is not to be subjected to further sterilization. Conner administered about 130 intravenous salicylate injections in twelve cases of articular rheumatism with good results.

Treatment of Pernicious Anemia.—Leon K. Baldauf. (*Charlotte Medical Journal*, December, 1919) keeps the patient in bed until the temperature is normal. The reasons for his being put to bed are: 1, because of his weakness; 2, because of the temperature; 3, in order to prevent acidosis. The patient is put on strict carbohydrate diet. Fats are at all times prohibited. Chlorides in food are excluded even though there is an absence of free hydrochloric acid in the stomach, and hydrochloric acid is frequently prescribed. A dram of bicarbonate of soda is given twice daily to counteract the acidosis; calcium carbonate is given in fifteen grain doses four times daily; arsenic in the form of Fowler's solution five minims three times daily; sodium cacodylate intravenously every day, at first one and a half grain ampoules being given; later, three, seven and ten grain ampoules; iron in the form of Bland's mass, three to five grains three times daily.

Miscellany from Home and Foreign Journals

Duodenal Stenosis.—E. Cautley (*British Journal of Children's Diseases*, April-June, 1919) reports a case of duodenal stenosis in a male infant of twelve months and reviews the literature on the subject. The child was normal at birth save for an icterus neonatorum lasting two weeks. At ten days he had a convulsion while nursing, with no subsequent attack. He was breast fed for five months and subsequently fed on prepared foods, with a gradual gain in weight from six pounds at birth to eleven pounds eleven ounces at eleven months. All his life he had had feverish attacks and "green sickness", bringing up mucus and passing this by the rectum. There were remissions and exacerbations until the eleventh month, when the child became distinctly worse. The child at this time was wasted and weak, had no teeth, his stomach was dilated and showed marked peristalsis, and a doubtful swelling was felt in the pyloric region. Moderate pyloric stenosis was considered, but the vomiting of bile and the age of the boy pointed away from this. Exploration showed a dilated pylorus, but the condition of the child did not warrant further exploration or gastroenterostomy. There was improvement for a few days but at the end of a week he again vomited green fluid, the temperature rose, and the patient collapsed and died. Postmortem examination showed a dilated and hypertrophied stomach, a dilated pylorus and first part of the duodenum, and a stenosis of the second part for about an inch with central canalization admitting only a probe. The remarkable part of the case was the length of time the child lived.

Normal and Morbid Conditions of the Testes from Birth to Old Age.—F. W. Mott (*British Medical Journal*, December 6, 1919) summarizes his report which is based on the examination of the testes of 100 patients in London asylums and various civil and military hospitals who had died at ages from birth to eighty-six years. In many cases the fluid from the seminal vesicals was examined and in several dementia præcox cases, the thyroid, adrenals, and the pituitary glands. The development of the testes from birth to puberty is detailed. It was found that patients dying before puberty of chronic tuberculosis, congenital syphilis, chronic morbus cordis, etc., showed appearances of complete arrest of the development of the seminiferous tubules. Normal spermatogenesis was studied in cases of death from shock in severe injuries. Active spermatogenesis was seen in all stages and the interstitial cells contained abundant lipid, as did also the spermatogonia and especially the Sertoli cells, both of which were filled with fine lipid granules. Where there are sheaves of spermatozoa, the granules in the Sertoli cells are less abundant. The immature spermatozoa dive into the Sertoli cells and there acquire their tails. Evidence is given to show that the lipid substances described constitute the raw material from which the nucleic acid, necessary for active nuclear proliferation and spermatogenesis, is formed. Reasons are given for supposing that the lipid

granules are derived from the lipid stores in the cortex adrenalis. It is confirmed that the lipid content of the cortex adrenalis is diminished in microbial intoxications, but however much this is diminished, that in the testes is apparently unaffected.

In sixty-six successive cases of general paralysis, spirochetes were found in emulsions of the brain by dark field illumination, while in fifty cases in which emulsions of the testes were examined the spirochete was not found once. Examination of the testes in a large number of cases of general paralysis failed to show any in which there was complete arrest of spermatogenesis. Some showed very active spermatogenesis, while a considerable number showed islands or strands of atrophied tubules, probably due to local obstruction of vasa efferentia by gonorrhea or syphilitic inflammation. The testes in twenty-two cases of dementia præcox showed atrophy varying from a change in the biochemical reaction of the head of the spermatozoa to a complete regressive atrophy of the seminiferous tubules.

The Cholera Carrier Problem.—J. A. Johnston (*Philippine Journal of Science*, May, 1919) states that the cholera carrier should be regarded with concern by health officials, for having no symptoms he is not considered a menace and may go about infecting privies, food, drink, and those who come in contact with him. In 1914 some 30,000 specimens of feces from prisoners in Bilibid, not cholera suspects, were examined and 1.75 per cent. found positive. The fact that an individual is a cholera carrier does not give him immunity. The author refers to three patients who became ill of frank cholera after being carriers continuously for a period of from sixteen to eighteen days; one of these patients died. His observations are to the effect that the vibrios isolated from a carrier, either while living or after death, behave in exactly the same manner as do those from a frank cholera case. Apparently the cholera carrier state may be of indefinite duration. In several instances the feces were alternately negative and positive for from one to three years. In testing organisms isolated from feces for agglutination, an immune serum of one to 4000 titre was used in a dilution of one to 500. Some vibrios correspond with the true organism in every way except agglutination; there may or may not be true cholera vibrios. It is accepted, however, that any vibrio which does not agglutinate promptly with a one to 500 dilution of high titre serum is not a true cholera vibrio. The nonagglutinating vibrios nevertheless seem to bear some relation to cholera. Of thirty nonagglutinating strains from cases, carriers, or contacts transferred repeatedly through animals or bile, eight gave prompt agglutination after forty such transfers, and of these, five held the agglutinating property for three months. Administration of 0.65 mil of ox bile three times a day for two days, repeated after an interval of five days, seemed to be helpful in the detection of chronic carriers.

Familial and Inherited Graves's Disease in the Child.—P. Harvier (*Paris médical*, December 6, 1919) reports an instance of familial exophthalmic goitre in which the patient, nineteen years old, when brought under observation, had already shown tremor of the limbs at the age of three years. Familial exophthalmic goitre is generally transmitted through the female sex. In a few recorded cases, however, the father alone had suffered from the disease. In the author's case, Graves's heredity was present from both the paternal and maternal sides. Inherited exophthalmic goitre may be apparent without evident cause or, like primary goitre, after an infectious disease or trauma. The onset is variable, being marked either by altered disposition, tremor, or thyroid enlargement. In some cases reported, the clinical picture has been complete; in others, exophthalmos and tachycardia were more or less inconspicuous, or the tremor was lacking or ceased after being present for a time. Some observers have noticed an unusually rapid rate of growth, but this feature is by no means constant. The disease is generally well borne and finally comes to a standstill. The manner in which inheritance occurs in Graves's disease remains obscure. According to Sougues, thyroid heredity better accounts for it than a mere neuropathic heredity. Whether simple goitre or Graves's disease exists in the parents, thyroid defect exists in all cases and the child inherits this predisposition, which renders the thyroid more accessible to infections or intoxications. Similarly, venous heredity accounts for the frequency of familial phlebitis. Exophthalmic goitre heredity constitutes but one of the modalities of thyroid inheritance.

The Anatomy of Snapping Hip.—F. Wood Jones (*Journal of Orthopedic Surgery*, January, 1920) from an observation of the living anatomy in two cases in which he observed found that x rays and an examination under anesthesia revealed nothing. The snap was produced by the man standing and rotating the affected leg while it was supporting weight. The snap could be produced by movement from extreme internal rotation to extreme external rotation, and *vice versa*. The patients were treated by manipulation, contrast baths, and gymnasium methods without improvement. On the operating table it was impossible by manipulation of the leg to reproduce the snap made during life, nor was any structure capable of causing the condition obvious from examination. The gluteus maximus was electrically stimulated, and while it was in a state of active contraction, the leg was again manipulated. The snap was elicited every time the great trochanter was rotated backward or forward between the gluteus maximus. Upon dividing the fascial insertion of the muscle and reflecting it toward the midline, it was apparent that the structure which infringed on the trochanter and caused the snap was the tendon developed on the deep surface of the muscle. This tendon constitutes the insertion of the gluteus maximus to the gluteal ridge of the femur, and in these two cases the tendon was in an abnormal state of development. The examination of the cadaver showed this tendon

to be an extremely valuable structure. The gluteus maximus may have a small insertion in the femur effected by short musculotendinous fibres, or it may have an extremely well developed sickle shaped tendon springing from its deep surface and passing a very considerable distance down the shaft of the femur. In the cases of snapping hip this large sickle shaped tendon was of unusual development.

With the relaxation of the muscles present during operation, the real cause of the condition cannot be detected, and the surgeon may blame some unrelaxed ligamentous structure. The tendon is of interest from the phylogenetic viewpoint, since this large insertion of muscle to the femur is a distinctive primitive feature and one which has been wanting in man. The stitching down of the tendon to the whole length of the trochanter put a stop to the production of the snap.

Occasional Manifestations of Malaria.—D. W. Carmalt Jones (*Lancet*, December 20, 1919) reports a small number of the rarer manifestations of malaria seen in the army hospitals of Egypt. Most of the symptoms are referable to the involvement of the blood vessels of various organs. Circulatory system—disordered action of the heart, myocardial involvement, valvular lesions, and dilatation. Respiratory system—bronchopneumonia and bronchitis simulating the complications of influenza. Excretory system—albuminuria and casts with other symptoms of nephritis. Alimentary system—anorexia, vomiting, diarrhea. Vascular lesions—hemorrhage from the lungs, hematemesis, hemorrhage from the bowel, subhyaloid hemorrhage in fundus of the eye, thrombosis of the popliteal vein. Cerebral malaria—irrationality, violence, hemiplegia, and other symptoms which are not exactly typical of hemorrhage or of thrombosis with more or less complete recovery under quinine. Cases are cited to illustrate all these manifestations and in most of the reports the conditions responded fairly well to therapy. The relative value of intramuscular and intravenous administration of quinine is discussed and the author states that he prefers the intravenous method in urgent cases.

A Plea for the Better Teaching of Otorhinolaryngology.—H. Tilley (*Lancet*, December 6, 1919) declares that the average graduate of a medical college at the present time knows little or nothing about the examination, diagnosis, or treatment of conditions of the ear and upper respiratory tract. He points out the importance of such knowledge to the general practitioner as a means of making clear frequent complications of disease of this region. The lymphatic tissue in these organs is a common focus of infection for chronic general diseases, or a portal of entry for various infections. New growths or ulcerations here often pass undiagnosed because of the inability of the practitioner to make a satisfactory examination. It is common for purulent otitis or even meningitis to escape diagnosis for the same reason. It is urged that the teachers of these subjects put more stress upon the importance of their field and that better opportunities be given the students in college and in postgraduate courses.

Proceedings of National and Local Societies

AMERICAN PROCTOLOGICAL SOCIETY.

Twentieth Annual Meeting, Held in Atlantic City, N. J., June 7-9, 1919.

The President, Dr. JEROME M. LYNCH, of New York, in the Chair.

Presidential Address.—Dr. JEROME M. LYNCH, of New York, said that it was two years since the society last met and in that time great changes had taken place. Many of the members had been in the service of the country, either here or overseas. During this period there had been little opportunity for original work in proctology, but now that the war was over and peace assured, it behooved them to make up for lost time and make every endeavor to bring about a better understanding of diseases of the alimentary canal.

It was necessary to educate the public, and this could be done only if the physician himself was master of his subject. Specialization was important, but it was essential that one have a comprehensive sight, since the man of narrow calibre was a dangerous man.

It was impossible to study the alimentary canal segmentally, since all its parts were so closely related and correlated that one was likely to misinterpret symptoms by confining his interest to one segment. There was no more important problem in connection with the subject of disease than the proper interpretation of symptoms; and it was of the first importance that one should know embryology, anatomy, physiology, and the other fundamentals for such interpretation.

Since embryologically the alimentary canal was divided into a fore and hind gut and the hind gut included about thirty inches of the ileum, which was capable of taking on the function of the colon, it was selfevident that this whole segment should be included in their special work.

They must be not only good proctologists but trained abdominal surgeons as well. Otherwise, how would it be possible for them to perform the most difficult operation in surgery—that for cancer of the rectum? This disease came much more frequently under the observation of the proctologist than under that of the general surgeon. How could one justify his reputation as a specialist unless he was equal to the task? In the past men of very slight surgical knowledge took up proctological work, but now the time had arrived when only men of proper training could hope for success as specialists in their line.

Pruritus Ani.—Dr. E. H. TERRELL, of Richmond, Va., stated that during the past seven months he had examined forty-four patients with pruritus ani. In thirty-nine of these small infected sinuses were found at or just beneath the anorectal line, and from these a small probe, bent at an acute angle, was found to pass downward under the skin of the affected parts. A careful and painstaking inspection of every part of the anal canal was necessary in locating these sinuses, and Doctor Terrell had found the physiological anal speculum,

devised by Dr. F. P. Nourse, of Lewiston, Idaho, the best instrument for this purpose. In severe cases of pruritus from three to four sinuses were found, but in the milder localized cases not infrequently only one sinus was found. It was Doctor Terrell's opinion that the irritation from one sinus involved not more than one fourth of the circumference of the anus. The treatment consisted in opening the sinuses from above downward, under local anesthesia, using a bent probe as a guide. Twenty-five patients had been operated upon by Doctor Terrell after this manner, with complete relief when the parts had healed.

The Use of Apothesine in Rectal Surgery.—Dr. WILLIAM M. BEACH, of Pittsburgh, Pa., said that modern surgery included in its demands for finesse, freedom from terror, pain and postoperative complications, speedy recovery, and careful technic. Local anesthesia enabled one to meet these requirements and he had found apothesine satisfactory. It was a synthetic chemical relatively low in toxicity, nonirritating, and did not interfere with primary wound healing. It was free from bad aftereffects, could be sterilized by boiling, combined well with adrenalin, was soluble in water, and stable in solution. He used it in the spinal canal, for nerve trunk blocking and for local infiltration. The solution was usually from one half down to one tenth and never over one. It was equal in power to any other local anesthetic, but more slowly absorbed, and two to ten minutes should be allowed after introduction before beginning the operation. Doctor Beach had used apothesine in thirty cases of anorectal surgery in the past two years with no untoward effects except in three cases, which he cited, and in all of which the same effects might have happened under any method of anesthesia. Any patient must have a normal resistance against bacterial invasion to avoid complication; and local anesthesia, especially if the solution used was weak, was probably safer than general anesthesia. He described his technic in the use of the drug about the anus. He had found it satisfactory even in complicated fistula operations, and had also used it in colostomies and other abdominal operations. He had practically abandoned the use of morphine and scopolamine prior to operations, and the former was seldom required afterward. It was absolutely nonhabitforming and was easily obtained.

Coccygodynia: Further Experience with Injections of Alcohol.—Dr. FRANK C. YEOMANS, of New York, said that theories advanced for the causation of the leading symptom, pain in the region of the coccyx, are: 1, Neuralgic; 2, neuritic; 3, injury, and 4, sympathetic. The first three were based on traumatism and comprised the major number of cases. The traumatism was within the pelvis, as in labor, or external, as from a fall. As a rule the periosteum of the coccyx only was injured and the soft parts adjacent to the bone. Injury of these structures initiated an inflammatory reaction with proliferation and later contraction of

the newly formed fibrous tissue and compression of the nerves which traversed it, causing neuralgia or neuritis. Fracture or dislocation of the coccyx might cause pressure pain.

The characteristic pain was spasmodic and aching, aggravated by sitting or rising, but not affected by urination or defecation. The diagnosis was made by a bidigital examination—the index finger in the rectum, the thumb making counter-pressure outside—thus palpating the coccyx and compressing the soft parts adjacent to it, to determine the portion of the coccygeal plexus of nerves involved. There must be excluded diseases of the spine and of the nervous system, as tabes, and local lesions of the anal canal and rectum simulating coccygodynia, as anal fissure, cryptitis, papillitis, blind internal fistulæ, thrombosed hemorrhoidal veins, proctitis and foreign bodies in the rectum; also, in women, disease of the external and internal genitals and in men, of the urogenital organs. The prognosis in general was good on the ground that the pain resided in the coccygeal plexus of nerves and not in the bone as was formerly supposed.

The treatment was an application of the principle of injecting sensory nerves with eighty per cent. alcohol, thereby causing their degeneration, as suggested by Schlosser in 1907, and practised with marked success in trifacial neuralgia. The injections were made aseptically, without anesthesia, at the office. A sterile syringe was filled with eighty per cent. alcohol and armed with a two inch needle of fine gauge. The point of maximum tenderness was determined bidigitally, then, maintaining the index finger in the rectum as a guide, the needle was carried through the skin of the midline to the tender spot and ten to twenty minims were injected slowly. The interval between injections was five to seven days.

Doctor Yeomans had treated twenty-four patients, twenty females and four males. External trauma was responsible for the condition in fifteen cases; difficult labor in three, two followed local operations and in four the cause could not be determined. The duration of the pain before operation was from three weeks to fifteen years, averaging twenty-two months. The number of injections varied from one to ten, average four. The results of treatment showed thirteen clinically cured; seven relieved, and in one case the treatment was a failure. The time which elapsed since treatment began varied from three months to nine years. The only case of failure was in an otherwise healthy, robust girl, aged ten years. As no benefit followed ten injections, the writer excised the coccyx in October, 1915, with immediate relief of pain and no recurrence.

Observations in Army Proctology.—Dr. LOUIS J. HIRSCHMAN, of Detroit, Mich., said that the practice of proctology in the American Expeditionary Forces did not differ greatly from that in civil life. The environment was different, the patients were all males, and wounds of the bowels and bacillary dysentery were much more common. True pruritus ani was entirely absent, which was difficult to explain even among such supposedly picked

men, for hemorrhoids, fissure, abscess, fistula, and colitis, were common. Many men suffering from chronic rectal conditions, particularly hemorrhoids and fistula, most of them antedating the war, had to be sent to the hospital. This was a serious commentary on the inadequacy of the enlistment examinations, for the conditions were aggravated by camp and trench life, and such patients filled many beds, depriving battle casualties of the hospitalization to which they were entitled. Much of the tax on military facilities, and much loss of military effectiveness might have been spared if the examination had been thorough on this side. The base hospital organization made possible specialization in surgery, more effective care, and quicker convalescence and return to the ranks. Local anesthesia was employed whenever possible; the Carrel-Dain irrigation and sometimes secondary suture were used in wounds, abscesses and fistulæ; and all helped to the same result. The proctologist combining his work with abdominal and hernial surgery, whether at the base hospital or at the front, was able to render the most valuable aid. Doctor Hirschman concludes that "the proctologist brought infinitively more to the service than he could hope to get from it professionally."

Increasing Prevalence of *Cercomonas Intestinalis* *Hominis* Infections.—Dr. JOHN L. JELKS, of Memphis, Tenn., said he had observed the frequent association of flagellate infection with that of amebic ulceration of the rectum and colon, when he began the microscopic study of ameba and other causative agents in diarrhea. That was in 1900, and very soon thereafter he concluded that even when he had a known amebic ulceration of the gut, the flagellate played an individual rôle in the establishment of a more superficial pathology. Particularly during the last five years he had observed the pure *cercomonas* infections, and it appeared to him that each succeeding year he saw more cases and greater virulence and severity of symptoms; and some of the patients seen during the last two years were most pitiable objects of human physical depravity.

In severe cases, there were from ten to thirty stools a day. These are not the amber colored, or the sanguinomucopurulent and very offensive stools seen in amebic cases, but were like those seen in typhoid fever and in the acute diarrhea of pellagra. The pathology is similar to that of pellagra. The rapid loss of weight, the neuroses anemia, and melancholia, while not constant, are in some cases profound, and are conditions common to both *cercomonas* infections and pellagra.

The increase in prevalence and virulence of *cercomonas* infections had been so noticeable in the vicinity of Memphis, that the situation had been viewed with some degree of alarm, and Doctor Jelks was of the opinion that some steps should be taken to find the source from which they originated. Unless concerted effort was made to control them *cercomonas* infections might not be restricted to the South, as at present appeared to be the case, but would be widespread, and an epidemic outbreak would be appalling, among infants and children at least.

Doctor Jelks outlined the following treatment: All carbohydrates to be eliminated and the diet restricted as nearly as possible to albumens, milk, meat juices, fowl, and gluten bread. The intestinal tract should be emptied preferably with salts or castor oil, and then bismuth subnitrate given, two to four drams every four to six hours, followed by phenomethyl formate, ten to fifteen grains in salol-coated capsules, or hexamethylenamine, ten grains. This should be continued a week, then the bowel flushed out with salts or oil again and the treatment resumed the theory being that liquefying the intestinal content would permit the bismuth to incorporate the infecting organisms, and that adding formaldehyde and methylene would supply a bismuth methyl formate, a powerful parasiticide. It was impossible to rid a patient of this infection in a few days by any treatment, and most patients would dismiss themselves from your care when they felt well and had regained their weight and strength, though you knew that many of them were not well and therefore would become disseminators of the infection.

Dakin's Solution and Dichloramine-T in Proctology.—Dr. J. COLES BRICK, of Philadelphia, said that Dakin's solution presented many difficulties in its manufacture, was unstable when made, tended to become caustic, and would not keep. Chloramine-T gave up its chlorine less rapidly, had greater antiseptic value and was less irritating. Dichloramine-T solutions were unstable, and, when prolonged germicidal action was required, it was preferably used in an oily solution, the preparation of which he described. Chlorcosane was preferred by some as a solvent and was used in the U. S. Army and Navy.

He reported the case of a patient, greatly debilitated by a persistent mucopurulent diarrhea from a hemorrhagic catarrhal proctitis, sigmoiditis and colitis, the etiology of which was not demonstrable. Treatment by colonic irrigations with antiseptic and astringent solutions, first by rectum and then by means of an appendicostomy, were of no avail till finally Dakin's solution was used up to ten per cent. strength with immediate improvement and final cure. Doctor Brick was led then to use these agents through the sigmoidoscope as adjuvants in the treatment of cases of amebic dysentery, and concluded that they would prove valuable parasitides in rectocolonic infections.

Multiple Adenomata and Esthiomene Malignans.—Dr. COLLIER F. MARTIN, of Philadelphia, reported first a case of multiple adenomata. The patient, a woman, complained of considerable abdominal pain and constant desire for stool. Bowels had to be moved as soon as she had eaten, considerable blood and mucus being passed at the time. The entire lower bowel was found filled with adenomatous tissue, a portion of which protruded through the anus at the time of stool. Under ether anesthesia, as much of the growth as could be prolapsed through the anal canal was ligated and removed. She had a rapid recurrence of her symptoms, and six weeks later had a left inguinal colostomy performed by Dr. William A. Steel. At

the site of the operation the bowel appeared normal. About six weeks later, the colon began to evert and prolapse through the abdominal wall; and the mucous membrane became studded with small adenomatous tumors. A colectomy was advised, but the patient did not consent. She improved in general health and had gained considerable weight, but the outlook was bad.

Doctor Martin then reported a case of esthiomene malignans, referring to the clinical appearance and not to the pathology. The patient, a man, presented himself for examination in April, 1919. After driving an ammunition truck in France for several months, he was sent to the hospital because of disability. While there he was treated for enterocolitis. Finally he was sent home and discharged from the service. The entire anal aperture was obliterated by a hard indurated mass of new tissue. The skin was greatly thickened and slightly reddened. The induration extended well over to the tuberosities of the ischia. It was almost impossible for him to have a stool except after great effort. He had a constant burning pain when sitting, so intolerable that he rarely assumed that position. The abdomen was somewhat distended and tympanitic. The appearance of the skin about the anus resembled those cases which have been classified as esthiomene, due to syphilis and tuberculosis. A colostomy was performed, and a piece of tissue removed from the posterior margin of the anus. The entire pelvis was filled with a solid mass of new tissue, with many nodules scattered over the colon and in the mesentery. A report from the pathologist showed the tumor to be a myxosarcoma. The operation was performed on May 9th, and since then the abdominal tumors have apparently increased in size and number. There was some swelling of the feet, and the patient was beginning to show irritation of the bladder. He had been receiving Coley's serum, but was rapidly growing worse.

Vaccine Treatment of Pruritus Ani: Possible Reasons for Failures with Stock Vaccine.—Dr. DWIGHT H. MURRAY, of Syracuse, N. Y., said that pruritus ani was always a disease most stubbornly resistant to all kinds of treatment and that it was now nine years since he had established to his own satisfaction that the etiological cause was the streptococcus fecalis and that since then he had found practically 100 per cent. of the cases were the result of this infection. His theory was at first refuted by the usual body of unbelievers, but since then many had acknowledged its correctness.

He used autogenous vaccines with marked success in lessening the intensity and frequency of the itching and had used stock vaccines with less success. Complicating infections, such as Staphylococcus aureus and Bacillus coli, might require mixed vaccines for complete relief. The extreme difficulty of having bacteriological work done in most places made a stock vaccine most desirable. Four years ago one commercial house put out such a vaccine for experimental purposes, but the reports on its use did not show sufficient successes to warrant marketing the product. Yet some

reports received by Doctor Murray from men who had experimented with this firm's vaccine, were distinctly favorable.

Doctor Murray's conclusion as to the comparative value of autogenous vaccines were as follows:

1. Stock *Streptococcus faecalis* vaccine was not quite as efficacious as autogenous vaccine.

2. Failure to get relief was possibly the fault of the operator, or because of a complicating infection, and should have further bacteriological investigation.

3. Large doses were innocuous so far as by-effects are concerned.

4. It was a mistake to fill the mind of the patient with doubt as to the efficacy of the treatment or the ability of the physician in charge even though he had had little or no experience.

5. Correction by operation of local pathological conditions present with pruritus ani would not relieve the itching, when an infection of the skin was present.

6. The presence of local pathology with pruritus ani was coincident.

7. Stock vaccine should be made and supplied to the profession with the understanding that relief was not promised in any sense, but was expected.

8. Investigation and failure were good things and stimulated our earnest and careful efforts to find the truth.

9. Neither an investigator nor his work could be considered the last word, and for this reason we should all work together without bias to the end that the best results of treatment might be found for these unfortunate sufferers.

Reflections on the Evolution of Disease.—W.

A. Lane (*Lancet*, December 20, 1919) discusses very fully, intestinal stasis in its varied aspects. Concerning causes, he shows that in many cases the duodenum ends vertically, so that any pull upon it by the jejunum tends to angulate the junction. This produces a slight obstruction which in turn causes a dilatation of the duodenum. Spasm of the pylorus results and this produces dilatation of the stomach with resulting cardiospasm and also beginning prolapse of the stomach and other abdominal viscera. The transverse colon sags in the middle, while at the splenic and hepatic flexures a thickening of the normal supporting peritoneal bands produces bands which tend very strongly to obstruct the lumen of the gut. Later these membranes extend around the gut and tend to rotate it, thus still further obstructing it. Similar bands are formed at the termination of the iliac colon and also at the lesser omentum passing from the liver and gallbladder to the transverse colon. Stagnation causes the distention of the cecum, which tends to prolapse into the pelvis, with serious results. Bands form on the outer and inner sides of the cecum and the prolapse angulates the ileum at its valve. If the valve is incompetent this may result in regurgitation of cecal contents into the ileum, in addition to causing obstruction. The appendix is very likely to be included in the

band on one side or the other and this frequently results in obstruction of its lumen, with consequent inflammatory reaction of greater or less degree in the appendix. The mechanical effects of these obstructing bands may be distention and elongation of the gut, as at the iliac colon, with a likelihood of the development of volvulus. Far more important, however, is the erosion which the hard fecal matter produces at these obstructed portions of the intestine. This may result in any degree of reaction from congestion or ulceration even to cancerous developments.

The author discusses at length the changes in the various organs due to the intoxication from the products absorbed from the infected chyme in a case of intestinal stasis. Of particular interest is the association between diabetes, goitre, and cystic degeneration of the breast with advanced states of stasis. Then there are the neurasthenia and the tremendous loss of fat, with resulting visceroptoses, postural faults, etc., which accompany the condition. In fact, it is believed that a great number of diseases are due either directly or indirectly, through lowered resistance, to the intestinal stasis of obstruction. The author feels confident that in a great number of cases there is a marked predisposition to cancer results from this condition. Treatment should be surgical where indicated, but the tendency should be to supplant the surgical methods with medical methods as our understanding of the condition increases.

Births, Marriages, and Deaths.

Died.

BLESSIN.—In Galesburg, Ill., on Thursday, January 29th, Dr. Otto James Blessin, aged forty-one years.

COLE.—In Pasadena, Cal., on Monday, March 1st, Dr. Charles Knox Cole, aged sixty-eight years.

HALL.—In Meriden, Conn., on Thursday, February 19th, Dr. Edward Dormanio Hall, aged sixty-nine years.

KEIM.—In Philadelphia, Pa., on Tuesday, February 24th, Dr. Milton Keim, aged seventy-five years.

KNAPP.—In Boston, Mass., on Monday, February 23d, Dr. Philip Coombes Knapp, aged sixty-two years.

KNOWLTON.—In Boston, Mass., on Friday, February 6th, Dr. Wallace Miles Knowlton, of Newton.

LOWNDES.—In Easton, Md., on Tuesday, February 24th, Dr. Charles Lowndes, M. C., U. S. N., aged eighty-seven years.

MCMANUS.—In Philadelphia, Pa., on Wednesday, February 18th, Dr. Nathan G. McManus, aged forty-two years.

PINCKARD.—In Chicago, Ill., on Saturday, January 17th, Dr. Charles Philip Pinckard, aged fifty-five years.

REINHOLD.—In Williamsport, Pa., on Wednesday, February 11th, Dr. Hannah C. Reinhold, aged sixty-five years.

ROSS.—In Pasadena, Calif., on Monday, February 9th, Dr. John Walton Ross, aged seventy-seven years.

RUTLEDGE.—In San Francisco, Calif., on Sunday, February 1st, Dr. James A. Rutledge, of Woodmen, Colo., aged fifty-nine years.

WEED.—In New York, N. Y., on Thursday, February 26th, Dr. Ver Nooy Wayland Weed, aged forty-two years.

WINSTON.—In Farmville, Va., on Friday, January 30th, Dr. Peter Winston, aged eighty-four years.

ZELLER.—In New York, N. Y., on Friday, February 27th, Dr. Moses Zeller, of Mt. Vernon, aged twenty-seven years.

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Original Communications

PRACTICAL APPLICATION OF METHODS OF STANDARDIZATION TO THE HOSPITAL.*

By GEORGE GRAY WARD, Jr., M. D., F. A. C. S.,
New York,

Chief Surgeon, Woman's Hospital in the State of New York, and
Professor of Gynecology, Cornell University Medical College.

It is a healthy sign that there has recently been an awakening of the medical profession and of those interested in hospital economics to the fact that in general our hospitals have not been properly fulfilling their functions in so far as efficiency and conservation of energy are concerned. One of the most important pieces of constructive work that has yet been undertaken by the American College of Surgeons, perhaps its most important work, has been its systematic effort to improve the existing conditions in our hospitals. For lack of a better name this work has been called hospital standardization. In 1913 the regents of the American College of Surgeons first announced their purpose of taking measures to bring about hospital standardization, and in October, 1917, the first conference of the International and State Committees on Standards was held in Chicago for the purpose of organizing the movement. At that conference the chief points brought out were:

That the proper care of the patient was held as the test of efficiency in the standardization program; that the hospital is primarily for the patient, for his convalescence and complete recovery from illness; that there was a great need of closer cooperation between hospital staffs and hospital trustees, and that it was necessary to establish a strong administrative authority in order to accomplish results. They appointed a committee to make a survey of the hospitals of the country and to establish a minimum standard of efficiency as a basis for standardization. At the recent meeting of the college in New York city, one day of the program was devoted to this subject, and the results of this survey and the progress made were presented. The interest displayed and the appreciation of the work accomplished were most gratifying to those concerned, and the meeting will undoubtedly act as a stimulus to the profession to improve hospital efficiency.

The program of hospital standardization of the

American College of Surgeons is a broad one. According to their bulletin it advocates no hospital pattern as the perfect pattern. It assumes no authority to gauge perfection. It assembles facts and endeavors to relate these facts to the character of service received by patients in hospitals. It aims to set free the processes of growth and to facilitate them; to bring actual hospital conditions as they exist today before trustees as well as the medical profession and all who have to do with hospitals, in order that they may appreciate the great need for improvement. It is the duty of the profession to educate the trustees as to their responsibilities, and when we can show them that efficiency in the hospital, just as efficiency in the factory, is an economic problem they will become interested. The statement that every cured and satisfied patient leaving the hospital is an asset, and every unimproved or dissatisfied patient a liability is just as true in the medical world as its counterpart is in the business world.

All hospitals in a broad sense are public institutions and as such are accountable to the public for the character of the work they do. Hospital trustees stand in the same relation to a hospital as trustees do to a trust fund, and the men who accept positions on the governing board of a hospital should realize that they accept a public trust and they should demand and see that they get efficient results for the money they expend. Hospital governors, as a rule, do not give the same intensive study to their hospital problems that they do to their individual business. They are interested principally in the balance sheet and do not concern themselves as to whether the results of the treatment the patients receive are what they should be. They presume that they are, but they do not know the actual facts.

The trustees are primarily responsible for the kind of care and treatment that the patient receives, and they should not lose sight of the fact that the hospital which most successfully fulfills its function is the one which is conducted with the primary ideal of procuring for the patient the best professional care and not from the business viewpoint of financial surplus. It should not be forgotten that the character of the medical staff determines the product of the hospital and that the trustees determine the type of the staff.

There are three cardinal functions of the hospital. The first and foremost is the care and the

*Read by invitation before the Baltimore City Medical Society, December 5th, 1919.

cure of the patient. The second is educational, teaching nurses, students, interns, and the medical profession. The third is contribution to knowledge by scientific research. In order to produce a maximum of efficiency in the functions of the hospital, it is necessary for us to study the methods of systematization and standardization as employed by the efficiency engineer in the business and industrial world. The fundamental idea in efficiency is avoidance of waste. A hospital should perform its functions with a minimum waste of time, material, money, and opportunity. The basic principle in the organization of any large plant, whether industrial or a hospital, is its unification with a central control in order that there may be a complete coordination of all departments with proper team work of the staff. This necessitates a permanent directing head with the necessary powers to insure a proper development of system and standardization. Only in this way can questions of authority and prerogative be eliminated.

It is obvious that in order to promote efficiency, the actual results accomplished by each surgeon or physician in the care and treatment of the cases placed in his charge must be made public and available for study, thus the absolute necessity of a production sheet for the hospital as for the industrial plant. This necessitates that there shall be a staff organization with stated meetings at which a careful study and analysis of the work accomplished by each department shall be made, and that reports should be presented to the trustees in order that they may know what sort of product their hospital is producing, and whether they are getting an adequate return for the funds which they are expending in the interest of its benefactors and the public. The time is not far distant when the trustees of a hospital will not be able to ask for public support without giving assurance to the people of the community that the product of that hospital is what it should be.

In order to establish such a basis of knowledge of the hospital product, the College of Surgeons has established a minimum standard so that the trustees may be in the position to say that their hospital is complying with the requirements considered necessary by the College of Surgeons, and that they have the facts, not surmises, as to the clinical successes and failures in the hospital on which they rest their claim for support. It is as follows:

1. That physicians and surgeons privileged to practice in the hospital be organized as a definite group or staff. Such organization has nothing to do with the question as to whether the hospital is open or closed; nor need it affect the various existing types of staff organization.

2. That membership upon the staff be restricted to physicians and surgeons who are: a, competent in their respective fields, and, b, worthy in character and in matters of professional ethics; that in this latter connection the practice of the division of fees, under any guise whatever, be prohibited.

3. That the staff initiate and, with the approval of the governing board of the hospital, adopt rules, regulations, and policies governing the professional

work of the hospital; that these rules specifically provide: a, That staff meetings be held at least once each month (in large hospitals the departments may choose to meet separately); b, that the staff review and analyze at regular intervals the clinical experience of the staff in the various departments of the hospital, such as medicine, surgery, and obstetrics; the clinical records of patients (free and pay), to be the basis for such review and analysis.

4. That accurate and complete case records be written for all patients and filed in an accessible manner in the hospital, a complete case record being one, except in an emergency, which includes the personal history; the clinical examination with clinical, pathological and x ray findings when indicated; the working diagnosis, the treatment, medical and surgical; the medical progress; the condition on discharge, with final diagnosis, and in case of death, the autopsy findings when they are available.

5. That clinical laboratory facilities be available for study, diagnosis, and treatment of patients, these facilities to include at least chemical, bacteriological, serological, histological, radiographic, and fluoroscopic service in charge of trained technicians.

This minimum standard is beyond all question essential to high class service to the sick and injured in our hospitals. And I may add that I believe that this standard should also require that the staff of the hospital shall recognize as a duty their obligation to contribute to knowledge by scientific research in order that their institution may fulfill its important educational function with resultant benefit to the community. Every hospital, whether connected with a medical school or not, has this duty to perform, as it is a mine containing hidden treasures of scientific fact awaiting discovery by the patient investigator. The obligation to humanity is obvious.

The problems of hospital standardization for the large or the small hospital, for the general or the special hospital are the same, although the details of application must necessarily be different. In the small or special hospital the details should be more simple and less complicated than in the large general hospital. In large hospitals the various departments may choose to meet separately. In most general hospitals it would appear wise that there should be a separate director or chief for the surgical and medical divisions of the service and possibly also of the special departments. My experience in this problem of standardization has been confined to a special hospital.

With your indulgence I shall give you some of the details of my work of reorganization, as I feel that by so doing I can best show you how I have attempted to apply the principles of hospital standardization in the Woman's Hospital.

In January, 1918, the Board of Governors of the Woman's Hospital, in the State of New York, appreciating the importance of this movement of hospital standardization, provided for a reorganization of the service. To accomplish this end, they declared for a system of unification with a chief

surgeon with ample powers, in order that there should be a standardization and simplification of procedure throughout the hospital in all departments with a centralization of responsibility. In February, 1918, the speaker took charge as chief surgeon and immediately undertook the reorganization which is now in effect. The hospital has over 250 beds, one fourth of which are reserved for obstetrical cases. The former organization was a multiple one, there being five gynecological services and one obstetrical, and at one time there were as many as six gynecological services, the head of each being practically independent and having the power of nominating his assistants in the hospital and outpatient department. Naturally, the staff was much too large for the size of the service, every member of which had his own ideas in the preoperative and postoperative care of his patients, and the nurses were attempting the impossible in endeavoring to carry out without error the many different sets of standing orders on file in the wards.

The administrative control of the service rested with the surgical board, which consisted of ten members, each with one vote. No organized teaching was done in the hospital. An analysis of the old order of organization showed that the hospital could not carry out its functions with a maximum of efficiency and a minimum waste on account of a divided authority, too large a staff, a multiplicity of independent services, failure properly to study end results, and lack of the stimulus of teaching. The reorganization has been planned to endeavor to fulfill the three cardinal functions of the hospital previously mentioned.

The present organization consists of but one service which is continuous and under the control of the chief surgeon. This service is subdivided into the gynecological, obstetrical, and outpatient departments, and the special departments of pathology, urology, gastroenterology and radiotherapy. An historical department under an historian who has charge of the records, and the followup and social service systems completes the organization. The attending staff now consists of the chief and four attending surgeons on duty, one of whom is the obstetric surgeon, and five junior attending surgeons. Each of the special departments has a head with the necessary assistants. The entire staff is subordinate to the chief surgeon who has the power of making all nominations in all departments. He has the assignment of all clinical material as he thinks best and he may use the same for teaching purposes.

The gynecological department has 106 ward beds and is divided into four divisions, each under the care of the chief and three attending surgeons. A junior attending surgeon is detailed for work in each division. All gynecological patients who enter the wards of the hospital from the outpatient department, or by reference, are assigned to the divisions in rotation for diagnostic study, and a report of the provisional diagnosis must be sent to the chief's office as soon as possible and not later than forty-eight hours. The cases are then reassigned to the staff for operation or treatment

in accordance with their particular interest if deemed advisable.

The obstetrical department has twenty-five ward beds and is under the care of the obstetrical member of the staff with a junior attending surgeon to assist. The outpatient department is under the supervision of one of the junior attending surgeons, who is responsible to the chief for the proper conduct of the department. There are six clinics, each having two sessions a week, so that there is a morning and afternoon clinic each day. The chiefs of each clinic, who have the title of adjunct assistant surgeon, have the necessary assistants. During the summer months when the junior attending staff act as attending surgeons, these adjunct assistants come into the hospital as acting junior attendings, and thus have an opportunity to develop and show their worth in the operating rooms and in the wards. The special departments of urology, gastroenterology, and radiotherapy, each hold two clinics a week, during which they make the necessary studies of the cases referred from the wards or the outpatient department.

The house staff has been reorganized to conform to the new conditions and to provide a well balanced service, insuring each intern work in every department. There is a paid resident gynecologist who is in charge of the entire intern staff and who is held responsible for their discipline and work. He is in charge of all private patients and assists with these cases. The obstetrical service is also in care of a paid resident. The service of the paid residents is indeterminate and may continue as long as their work is satisfactory. The intern staff proper comprises two divisions, each consisting of a house surgeon with a senior and junior assistant. Their service is for one year and they serve in each position for four months. Each junior assistant serves two months in the obstetrical department, as we believe a man will be better prepared for gynecological work if he has special obstetrical training. The two divisions exchange services every two months so that each intern is given the opportunity to work with all the attending staff.

One of the requirements that has been instituted is that a thorough, careful, and complete preoperative study must be made of every patient. In order to allow this, the average stay of a patient in the wards before operation is from three to four days. In addition to the history and complete physical examination, a blood examination (including a Wassermann test), blood pressure, smears, and urine analysis must be made and recorded, and if indicated, the patient must be referred to the special clinics for further study. Consultations must be held when necessary, and the consulting staff is expected to be an active and not an honorary one.

The attending surgeons have two operative clinics each during the week and they have two operating rooms at their disposal. Each attending surgeon has a followup clinic every week, which he must attend in person. Codman's end result card is used and a stenographer is in attendance.

Uniform rules for the revisits and for the duration of observation of the various types of cases are in force.

A staff conference is held once a week throughout nine months of the year, at which the entire hospital staff is expected to attend. These conferences last about one hour and the medical public is welcome. The order of procedure is as follows:

Presentation by the pathologists of the pathological material of interest which has been obtained during the week; the gross and microscopical specimens are demonstrated and brief talks on the pathology are given.

The casualties of the service are next called for. Each attending surgeon must report any deaths, infections, or complications occurring during the week in patients under his care, and an endeavor is made to locate the cause. The details as shown by the case histories, and the testimony of those concerned are carefully analyzed in order that it may be determined as far as possible, whether the fault lay with the doctor, the patient, the disease, or the hospital organization or equipment.

A report on the analysis of the followup clinic of one of the attending surgeons is next made. Each of the four attendings have such a clinic once a week which they must attend in person, and once in four weeks they are required to make an analysis of the results of the cases they have seen since their previous report. This analysis must show the total number of cases seen in the clinic and the number of those which have been previously reported. The remainder which are to be reported are classified according to the results as successful, partially successful, and failures. The acid test for the determination of the results is whether the patient has been relieved of the symptom for which she sought relief, and not whether the operative result is satisfactory to the surgeon. The successful cases are disregarded, while partially successful cases and failures must be analyzed in detail and the reason given for the classification. A free discussion is encouraged in order that the operating surgeon may have every opportunity to defend his position. Cases that may have been previously reported as successful which may later become partially successful or failures, must be subsequently reported again with their revised classification.

Next a report of some case of special interest is made by one of the attending surgeons in turn; thus an opportunity is given to present case histories or to show patients which have had successful results. Frequently a case presenting difficulties in diagnosis or treatment is shown and the advice of the conference is sought. Once each month the junior attending surgeons are required in turn to give a brief summary of the recent gynecological and obstetrical literature, or to give a report on any hospital or operative clinic they may visit. Problems relating to technic, operating rooms, sterilizing rooms, wards, and other hospital matters are brought forward for general discussion when necessary, in order that the various points of view may be obtained. A stenographer

is present during the conference who makes a complete stenographic report of the proceedings, which are kept on file in the office of the chief surgeon for further study.

During the last six months' period the data taken from the clinical records of the gynecological department and brought before the staff for review as disclosed in the monthly followup analyses which are required of each attending, showed that a total of 1,166 cases were reported. Five hundred and thirty-two of these had been previously presented to the conference and classified. Of the remaining 634 cases, four were nonoperative, and twenty-four were patients treated by radium for malignancy and undetermined as to the result, leaving 606 operative cases. Four hundred and eighty-seven of these were classified as successful in relieving the patients of symptoms for which relief was sought, ninety-seven as partially successful, and twenty-two as failures. Therefore, the percentage in our operative cases were as follows: Successful, eighty and one third per cent.; partially successful, sixteen per cent.; failures, three and two thirds per cent.

In a period of nine months, in 1,388 operations in both clean and pus cases, sixty-three had infections in the operative wounds. In other words, we obtained ninety-five and a half per cent. of primary union in the healing of wounds in all cases. The mortality for all cases in 1918 was one and nine tenths per cent., and in 1919 the same. As an example of the effect of the reorganization on the followup clinic the percentage of returns has increased over 100 per cent.

I think I may say that it is the unanimous opinion of the staff that these conferences are of inestimable value and profit to all concerned and there can be no question that they have produced a marked effect in improving the preoperative and postoperative study of our patients, with the inevitable benefit to them. No man on the staff can afford to have careless work shown up in the strong light of the publicity and criticism of such conferences, and no man can object to a system which applies with equal force to every operator in the hospital. The interest in the meetings by the staff is very great.

I wish to call attention to a wrong impression that I fear prevails in some quarters, judging from remarks I have heard, as to the real meaning and object of these staff conferences. I am quite sure that some of our confreres have the idea that they are but still another form of the usual medical society meeting for the purpose of promoting good fellowship and of having a pleasurable discussion of medical problems. Instead, it is a duty that is an essential part of the service of the hospital and a serious accounting of one's responsibilities, and is very often much more like the confessional than a social gathering. This does not mean that the social side and the promotion of good fellowship should be ignored, but that the conferences are just as vital a part of the hospital duties as is the auditing of the treasurer's accounts.

All the staff, both seniors and juniors in every

department, are expected to make some study as a contribution to the literature during the year. If any particular type of case is desired by any of the staff for the purpose of clinical research, all that is necessary is for him to state his desire and object and such cases will be assigned to him in quantity sufficient for his purpose, but he must present his results for publication in the *Annual Surgical Report of the Hospital* which is made up of these scientific contributions. To facilitate this important work we have established a library in the hospital with the latest editions of the standard textbooks and the periodicals on gynecology and obstetrics, through the generosity of the Board of Governors, and they have also provided the services of a medical artist.

The surgical report for 1918, recently published, contains twenty monographs contributed by the staff, and three theses by undergraduate fourth year students of the Cornell University Medical College as part of their work at the hospital. Among the clinical research problems studied during the year from the hospital records published in this report, are studies on uterine curettage, ectopic gestation, uterine fibroids, salpingectomy, postoperative urinary retention, the relation of appendicitis to annexal disease, and postoperative vomiting.

One of the most difficult problems of the nursing department of a hospital with a large attending staff, is the proper carrying out of the numerous and varied preoperative and postoperative standing orders. These orders, which are kept on file, in the wards, are usually compiled without any thought as to whether they conflict with the meal hours or other essential scheduled routine ward work. Their multiplicity and variance are so confusing as to greatly increase the chance of error, and with the constant rotation of pupil nurses can never be satisfactorily enforced. The ideal plan is to have but one set of standardized orders which are as simple as is consistent with common sense, and which are adjusted to the time schedule of the ward routine. One set of orders means a saving of time and energy for the nurses and interns and reduces the chance of error to a minimum, with resulting benefit to the patients and economy to the hospital. They also greatly facilitate teaching. We have compiled and put in practice in the gynecological wards such a set of standardized orders, and after a thorough trial they have proved most satisfactory. We have also prepared a set of orders for use in the recovery ward. Simplicity and clearness were the objects aimed at in their compilation, and the judgment of the head nurses in charge of the wards was the guide as to their practicability in the endeavor to make them as fool proof as possible. The technic of the operating rooms has also been standardized.

While the work of reorganization has been an arduous and difficult one, I appreciate that my task has been made possible by the fact that I have been given full administrative control. I do not believe that it would have been possible otherwise. Therein lies the reason why the problem is simpler for the special or small hospital. The

large general hospital, on account of the numerous departments and the consequently large staff, has a more difficult task in working out the details. Whatever the class of hospital I consider a directing head with ample authority is a *sine qua non*, at least for each department.

In my opinion, the trustees, if they are satisfied with their staff, should ask them to select one of their number who shall have such authority for a sufficient period of time to accomplish results, and if they cannot agree, or their selection does not prove satisfactory, the trustees themselves should make the selection of a directing head from among the staff, or elsewhere, in order that they may fulfill their obligations.

We know that the successful effort of the Carnegie Foundation to raise the standard of medical education in our schools and colleges was by means of publicity. Publicity is necessary to accomplish equally successful results in hospital standardization.

As soon as the trustees of our hospitals and the public at large appreciate that at present they have no accurate knowledge of the character of the work being done, and that they cannot have such knowledge unless a systematic study of end results is carried out on the lines followed in large industrial plants where the production sheet shows facts, not suppositions, they will demand such a public accounting, and if it falls short of what they have a right to expect of the hospital and its staff, they will insist upon the necessary reorganization to make that institution efficient.

71 WEST FIFTIETH STREET.

ACUTE ABDOMINAL CONDITIONS.

BY JOHN B. DEAVER, M. D.,
Philadelphia.

At the head of the list of acute abdominal conditions stands, of course, appendicitis. In spite of the fact that by this time the symptoms of this common disorder should be familiar to everyone in the profession, how often it remains unrecognized. If I rehearse its outstanding features before a body of practitioners, it is with the hope that what I may say may be passed on to those not within the reach of my voice or of my direct influence.

Pain is the initial symptom in acute appendicitis and as a rule is at first referred to the epigastrium or the umbilicus and in about twenty-four hours localizes in the right iliac fossa, the exception being when the pain at first starts in the region of the location of the appendix, which is usually at McBurney's point. It must not be lost sight of that the appendix may be located in one of several locations other than the right iliac fossa; for example, behind the cecum and ascending colon pointing upward and outward. In suppurative appendicitis, where the appendix holds the latter position, the collection may be mistaken for a perinephritic abscess and opened for this condition. I have seen cases of fecal fistula in the loin caused by this location of appendiceal abscess.

When the appendix is located in either the false or true pelvis the pain is as likely to be left as right sided, if not more often referred to the left side. Abscess in a pelvic appendicitis will give signs of fluctuation upon digital examination of the rectum and vagina. When the appendix lies beneath the terminal mesentery of the ileum and points to the left and upward the pain will be referred to the upper left abdomen.

Pain in the upper right abdomen, in an acute abdominal condition is not always caused by the gallbladder, duodenum or pylorus, but may be due to appendicitis, as will be understood from what I have said. Nausea and vomiting follow the onset of pain. Where vomiting precedes the pain in an acute abdominal condition the disease is not appendicitis.

The temperature rises during the first twenty-four hours, its excursions depending upon the type of appendicitis. Early leucocytosis is always present. The physical examination reveals superficial tenderness at or near McBurney's point, but more important is the deep tenderness elicited by pressure on the inflamed appendix, which, however, is not always at McBurney's point, but, as has been mentioned, is often found behind the ascending colon, on the right side of the pelvis, or else in the hollow of the sacrum out of reach of the finger in the rectum or in the vagina. Often, too, the appendix lies just internal to the anterior superior spine or near Poupart's ligament, and sometimes it may even be close to the duodenum or the gallbladder. So that it becomes important to make a thorough examination and to locate the appendix at one or the other of these points before deciding that deep local tenderness is absent. The location of the pain depends upon the position of the appendix. There is also rigidity of the abdominal wall, particularly of the right rectus and the right oblique muscles, that is, rigidity of the muscles overlying the appendix.

Rigidity of the overlying abdominal wall, it must be remembered, is present in many intra-abdominal conditions when seen early, also in some forms of renal colic and ureteral colic, in inflammation of the peritoneum at the site of the internal abdominal ring consequent upon an ascending infection of the spermatic duct, in a spreading infection beneath the sheath of the psoas magnus muscle and in many other conditions.

Frequently in appendicitis the constipation, which is nearly always present, is accompanied by much abdominal discomfort from gaseous distention of the bowel; in such instances the question of intestinal obstruction may arise. It is well to remember that in intestinal obstruction the onset of pain is gradual, increasing in severity, and is paroxysmal, while appendicitis is marked by sudden severe and constant pain. It must, however, be borne in mind that in a proportion of cases of acute appendicitis diarrhea is present. Some of the most vicious cases of acute appendicitis I have seen have commenced with pain and diarrhea. The character of the vomiting is also significant. In intestinal obstruction the vomitus is at once alimentary, then bilious and later on perhaps fecal, while in appendicitis it is generally bilious. Temperature also varies; in ileus it is nor-

mal or subnormal, at first, while in appendicitis it begins to rise with the beginning of the attack. The pulse in appendicitis becomes rapid, the rapidity depending upon the severity of the attack, while in intestinal obstruction the pulse, until the onset of peritonitis, is slow and full. Abdominal palpation is also more painful in appendicitis.

Peristalsis in obstruction is at first excessive, hyperperistalsis, gradually growing less until inhibited. In appendicitis it is normally present except in the immediate neighborhood of the appendix and within the area involved in the peritoneal inflammation, where it is either absent or markedly diminished. In intestinal obstruction, notwithstanding the presence of peristalsis, excessive or otherwise, there is inability to pass flatus.

The prominence of gastric symptoms as part of the picture of acute appendicitis and the frequent combination of appendicitis and peptic ulcer often enhance the difficulties of diagnosis, especially in the presence of threatening or actual perforation of one or the other. In peptic ulcer the history of the case is of great importance since there are few cases of perforating peptic ulcer that do not give a history of previous digestive trouble of more or less severity.

The pain of perforating peptic ulcer is intense, sudden, severe and generally referred at first to the epigastrium. But it may also be left sided if the ulcer is gastric and situated some little distance from the cardiac side of the pylorus. Gravitation to the right of the ascending colon and cecum of the fluid which has escaped from the opening in the stomach and of the peritoneal fluid, the result of the peritoneal irritation, together with the tenderness and rigidity of the lower right abdominal quadrant, often leads to a mistaken diagnosis of appendicitis. The differentiation between perforated duodenal or gastric ulcer and acute perforative appendicitis, when the perforation is located at the base of the appendix, in the absence of a clear history, may be impossible. I have opened the abdomen on more than one occasion to make the differentiation. A good sized perforation at the base of the appendix is practically a perforation of the cecum, therefore a perforated viscus. The history is that of a patient apparently perfectly well suddenly seized with acute agonizing abdominal pain immediately followed by rigidity, which can be as pathognomonic as that of ulcer. This physical condition makes the diagnosis practically impossible except by incision or delay; the latter is always very dangerous, the patient having been seen early.

In perforating peptic ulcer the signs of peritonitis usually appear within about twelve hours with, to a great degree, disappearance of the characteristic muscular rigidity. In addition to these signs the pulse rate is accelerated, abdominal tenderness becomes general and the temperature rises. The rigidity of the abdominal wall as the result of perforated ulcer occurs immediately with the onset of pain, which is most intense, the rigidity being so pronounced as to warrant speaking of it as pathognomonic. Vomiting and distention appear later, but it is unfortunate if the condition has

not been diagnosed and the patient operated upon before they set in. The acute onset, most intense pain and boardlike rigidity of the abdominal walls, are the usual characteristics of perforated ulcer.

Acute cholecystitis is perhaps the second in frequency of the acute abdominal diseases. In the typical case the pain is localized in the gallbladder region, although it sometimes extends to the umbilicus or to the appendix, according to the degree of infection; it may be generalized, depending upon the degree of infection. Very often it is referred to the right shoulder—a point in differentiation. The pain varies with the virulence of the invading organism, as do also the fever and the nausea and vomiting which mark the onset of the disorder. The pain may be dull and aching, severe and continuous with acute exacerbations, or paroxysmal as in gallstone colic. When nausea and vomiting are persistent we can be reasonably sure that the inflammation has gone beyond the gallbladder region with pericholecystitis or peritonitis as the result.

Muscular rigidity is always present and sometimes may resemble a tumor, but careful palpation will reveal the true gallbladder lying beneath the rigid muscles. Tenderness, more or less diffuse, becomes marked especially in the presence of a cholecystitis. The gallbladder enlarges usually in the direction of the umbilicus. Jaundice is not present unless either the common duct or the hepatic duct is involved. It is practically impossible to differentiate between noncalculous and calculous cholecystitis, nor is it essential to do so, since both these conditions, if not fulminating, may subside, and if they happen to be fulminating both require surgical interference. The most common source of confusion of a cholecyctic inflammation is with appendicitis, since in the appendiceal disease the pain may be in the gallbladder region and the pain of cholecystitis may localize in the right iliac fossa. But generally, as we have seen, the pain is limited to the epigastrium and the right hypochondrium and is referred, which is not common in appendicitis. The presence of a tumor moving with respiration will also suggest cholecystitis, while of great importance in differentiation in cholecystitis is the development of pain by lateral compression of the ribs.

Not the least of the dangers of recurring attacks of cholecystitis is the perforation of the gallbladder, a catastrophe that is more common than is generally supposed and one which carries with it a very high mortality. Cholecystitis arising during an attack of typhoid fever or during convalescence is not uncommon and should be recognized early in order to forestall perforation, which, serious at all times, becomes much more so in these circumstances. The symptoms are those of cholecystitis much exaggerated and of a spreading peritonitis.

A condition that more closely resembles a perforating hollow viscus is acute pancreatitis, and the experienced diagnostician of today will not fail to think of the pancreas in connection with the acute abdomen. The pain in acute pancreatitis is perhaps more severe than in any of the conditions

we have mentioned, with the exception of perforated ulcer and rupture of the gallbladder; in fact, it is often so overwhelming as to cause early collapse and syncope. Indeed it is the collapse and the extreme pallor upon which diagnosis in this condition is often made. The pain may be either constant or paroxysmal with a tendency to localize in the epigastrium, but it may radiate to the left. Rigidity is not extreme, but tenderness in either the epigastrium or left costovertebral angle depends upon whether the body or the tail is the site of the pancreatic lesion and is an important finding. Vomiting is persistent, and constipation often so obstinate as to suggest intestinal obstruction, a diagnosis that is not infrequently made. I have observed, however, that sometimes constipation is not complete and that flatus as well as stool can be obtained by means of an enema. Distention is a marked symptom, at first appearing in the upper abdomen, but later becoming generalized. In fact the small intestine has sometimes been found collapsed. The pulse is characteristically small and weak. The temperature is not very significant, although in very acute cases it may be subnormal, while in the subacute it may rise to 103° or 104° F. Glycosuria sets in later as tissue destruction advances.

The fact that the symptoms of acute pancreatitis are preeminently those of peritonitis makes diagnosis difficult. But whether the peritonitis is a so-called chemical one, as is sometimes asserted, or whether it is infectious, as I believe it to be, the important thing is to bear the pancreas in mind when confronted with the symptoms herein set forth and to act promptly. Laboratory tests are of little avail in any of these acute conditions and especially not in so desperate a one as acute pancreatitis. The supreme test that gives the patient the best chance is early recognition of the inherent possibilities of the disorder and prompt surgical interference.

While a correct preoperative diagnosis is important and desirable in order to allow of the best preoperative preparation and the most advantageous incision, and also from the viewpoint of prognosis, to say nothing of personal satisfaction to the diagnostician, failure to hit upon the right cause of the acute abdomen is not serious compared with the seriousness of missing the most auspicious moment for intervention. This represents one of the greatest dangers in acute abdominal conditions.

1634 WALNUT STREET.

Gas Cysts of the Intestine and Peritoneum.—

Maurice Letulle (*Bulletin de l'Académie de médecine*, November 18, 1919) presents a detailed study of the pathology and pathogenesis of this condition, based on four cases. Statements as to the causation of these cysts should be made guardedly in the present state of our knowledge. It may be considered established, however, that the gas cyst appears as a complication of chronic obliterating lymphangitis. It constitutes a chronic, lasting lesion which may possibly be recovered from through spontaneous absorption of the gas formed. The source of the gas remains to be determined.

KILLIAN OPERATION ON FRONTAL SINUS AND ETHMOIDS.*

BY LEWIS A. COFFIN, M. D.,
New York.

CASE.—The patient, a young man twenty-one years of age, came to my office three years ago suffering from acute and agonizing pain on account of an acute infection of the left frontal sinus and ethmoids. The anterior end of his middle turbinate was removed and he was sent into the ward of the hospital, where under sprays, douches, inhalations, and other treatment he was relieved and discharged after about ten days. About twice a year he has returned suffering from exacerbations which were always relieved after about a week's treatment. In the meantime his ethmoids have been exenterated and his sphenoid opened intranasally.

He returned yesterday suffering from another relapse. I was able easily to pass a large bulbous pointed probe into his frontal sinus, showing that there was good drainage, at least so far as the bony passage was concerned. This condition must mean that his frontal sinus, which is large and deep, is filled with polyps which, falling over the opening from the sinus to the nose, obstruct it. An interesting point is that the young man has often been in the wards of the hospital, and has seen the results of many radical frontal operations, both as to cure and deformity, yet he comes now asking that a radical operation be done.

Operation.—An incision was made along the upper edge of the eyebrow curving around its nasal end onto the side of the nose and carried along the side of the nose to just below the lower border of the frontal process of the superior maxillary bone. The incision was carried to the bone except over the supraorbital ridge which was left as the Killian bridge. The soft parts at this point, extending down to the periosteum were dissected back to a point under the supraorbital notch. The incision through the periosteum was now made under the orbital ridge and parallel with that ridge beginning at a point below the supraorbital notch and connecting with the incision along the side of the nose. The soft tissues, including the periosteum, were raised over the entire area of the frontal sinus, the side of the nose, and the orbital side of the orbital plate of the frontal bone. The entire anterior wall of the frontal sinus was removed and edges bevelled to the posterior wall.

The ethmoids were exposed by the removal of a rectangular piece of bone at the expense of the nasal bone, the frontal process of the superior maxillary bone and the lacrimal bone, and this opening was enlarged by the removal of the orbital plate of the frontal bone.

The frontal sinus was filled with polypoid tissue and polyps. Through the opening in the side of the nose the ethmoidal tract was cleaned up better than could have been done intranasally and the sphenoidal sinus was curetted out. The incision was closed with horse hair sutures—no packing having been placed in the field of operation.

Note.—Stitches were removed in forty-eight hours. The soft parts over the frontal sinus were kept in contact with the posterior wall of the sinus by a compress held by an adhesive strip for two weeks. Since this time the young man has been well and working as a chauffeur.

616 MADISON AVENUE.

THE SCOPE OF SELFREPARATIVE MEASURES.

Remarks on So-called Physical Therapeutics with Special Reference to Expert Guidance or Regulation of Function and Structure.

BY J. MADISON TAYLOR, A. B., M. D.,
Philadelphia,

Professor of Physical Therapeutics and Director, Medical Department of Temple University.

Man in his struggle toward perfection is coming to appreciate increasingly his chief asset, which is a selfcontrollable organism, one ready to do his will at all times and under all circumstances. Among these circumstances are states of injury or disease and the effects, direct or indirect, of disease or injury. The prime condition of productivity is intelligent selfdirection in the economics of body and mind functioning. This capability of selfadjustment is to be esteemed on a full parity with any or all conditions created by the demands of communal life or the industries.

Medicine assumes the responsibility of acting as the first line of defence in maintaining the coefficient of efficiency at par. A better term than efficiency would be consciousness of environment, and its meaning, also the ability of man to interpret its meanings and to adapt himself to the environment and to what it can supply for his needs. This consciousness is not only mental or cerebral consciousness but also cellular or reflex consciousness. The chief need of man is the ability to control his consciousness, his structure and his selfhood.

It is by this control of consciousness that the animal cell acquires by personal effort certain capabilities for directing, activating and controlling cellular stimuli and responses. The process is one of infinitely slow development in each, having required millions of years to reach its present status. The brain needs outside help in developing its own consciousness; it depends on environmental stimulation through training, not only preliminary but continuous and specialized.

The basis of the acquirement of new characters (those which are transmitted) is improved responsiveness of the organism through disciplinary education and functional effort. To acquire is to obtain through one's own exertions. (1.)

Present methods pursued by physicians demand constant modification and improvement in order to keep in advance of any suggestions which may arise through demands due to sophistication and industrial stress. The principles of action or conduct governing successful industries, the laws of good business, hence of the pursuit of happiness, seem to be outrunning advances in many contributory enterprises. Of these welfare agencies the science and art of medicine may be reckoned as the chief.

*Presented at the Clinical Congress of the American College of Surgeons, October 24, 1919, Manhattan Eye, Ear, and Throat Hospital, New York.

The integrity of the human unit will come to be established as the most important of enterprises so soon as civilized consciousness shall have advanced to a state of stable equilibrium.

In the coming readjustments of the problems of labor, unskilled and skilled, those who become directors must retain their maximum of efficiency otherwise productivity will suffer. We are now entering upon a state of protracted, perhaps endless, warfare or competition in striving toward stabilization, wherein each and all parties interested have need of their fullest resources of personal hygiene or self-betterment.

For convenience we may group the procedures of personal hygiene, or the raising of the coefficient of efficiency or of acquirement of conscious control, cerebral, reflex, and cellular, thus: a, Preventive personal hygiene, in which there is assumed the amplification and elaboration of the instinct of self-preservation; b, conservative; c, constructive; d, reconstructive; e, vigilant personal hygiene or the cultivation of serene, comprehensive, judicious watchfulness which is plainly the price of self-determination and of foresightedness.

The domain of systematic betterment of the individual through improving conditions of environment (euthenics) includes judicious, often radical revisions of conduct or behavior far in excess of the demands of military exigencies. In war not only must a selected group be provided with the benefits of expert direction and control of conduct but each and every individual is equally concerned. The first element of good business is a thorough preparedness which includes attention to all primary sources of supply (potentialities of productivity), and to the unit of economics—the citizen, the worker and the home maker. It is bad business to omit or to delay attention to the mechanism or organization till retarding exigencies arise, parts become impaired or give way, or breaks occur in the lines of continuity, which could have been foreseen and prevented.

Moreover, in the progress of a going concern, whenever there is reason to believe that a part, an individual, or a group of factors show deterioration or are not up to par, no delay can be permitted in applying suitable remedies or repairs or replacements. This includes not only isolated things but also the organism as a whole. The same procedure should obtain in the case of the human body as well as for the insentient mechanism.

The difference between a living and a nonliving mechanism is the element of vitality, capability of self-repair or automatic adjustment, and upon this force, or energy content, much reliance can be placed. It is fully established, however, that Nature's ways are always slow, often inadequate, and only to be relied on in limited directions and degrees. When, however, Nature's urge is intelligently guided, controlled, judiciously fortified, and encouraged, the limits of repair or restitution have as yet only begun to be realized. They never can be exhausted, however positive man, in his arrogance, may be that the end of inherent potentialities is reached.

THERAPEUTIC RESOURCES.

Ideal therapeutics should include the making well or relief from the effects of disease, either general or local, which occur during the original disturbance, acute or protracted, or persist after it has come under control. These often prove so puzzling that they are left for nature's slow and uncertain forces to restore to equilibrium. These new or collateral phenomena, or residua, deserve attention for their own sake as well as for the influence they may exert upon associated structures or upon the primary morbid process.

The organism as a whole may be affected, or merely isolated parts or areas. The phenomena may be due to either the original causes or be such as are likely to arise in the course of, or follow almost any disease. Some of these phenomena are obscure, some stand outside the range of knowledge as ordinarily imparted in courses of teaching. Some become so distressing as to overshadow the primary or earlier effects; others do not manifest themselves through sensory awareness or, when they do occur, may sink below the threshold of consciousness fading into obscuring backgrounds, yet are competent to act as deterrents to normal energizing. Some are chiefly somatogenetic and others psychogenic; many are blends of both but remain to vex or hold the victim down to lowered planes of activity or vigor. The enterprise thereupon becomes largely one of expert regulation of conduct and of behavior; hence the need is for teaching self-regulation; for the readjustment of the creature to environment, for expert regulation, and for self-regulation of disordered structures or parts.

We may term procedures or instrumentalities accessory or supplemental therapeutics since they serve to reinforce or complete whatever other measures may have been employed but which may still leave something to be desired to round out the rehabilitation or restitution. Many of these measures prove sufficient to meet all requirements; indeed a short experience in their use will demonstrate that some are better qualified to meet the average demand of daily practice than medication.

The phase of the subject here presented is that of the selection or grouping or application of the almost limitless resources of physical remedies capable of being applied at almost any time or place through expert direction and with no artificial equipment, or only the simplest which can be obtained in any ordinary household.

The objective is the balancing of body forces, through the placing of disordered parts in positions of advantage to act in accord with design, or of releasing parts from positions of disadvantage. Likewise the mental element of personal betterment must always receive attention through investigation, explanation, suggestion, encouragement, selfmastery, and similar psychodynamic measures, so that the whole organism shall come again to work harmoniously.

Included are well tried and efficient means of regaining functional poise by bringing into the field of action unused or misused mechanisms through various adaptations of motion. Hence some form of controlled motor energizing is required (bio-

kinetics); expert guidance, manipulation or adjustment of parts through the utilization of the coarser reflex responsiveness; also active and passive stimuli, as of movement and rest, of support and of release, of heat and cold, of light, of simple forms of electricity, and similar stimuli capable of systematic application.

In short, the proposition is one of supplementing any other (pharmacodynamic) agency which, while it can do so much, often cannot do all that is needed in a clinical exigency by supplying a regulative psychodynamic or a physico-dynamic agency. This constitutes evidence of the power for repair or cure capable of being exerted by agencies which act from without, and of producing effects capable of reinforcing the powers within the man who has got the disease, as contrasted with the plan of studying, combatting, or controlling the disease or hurtful agencies which have got the man. Both are often demanded, but to omit needed adjustments, balancings, or harmonizings, is to fail of our plain duty as restorers of health. It should be borne in mind that particularized forms of diagnosis of abnormal conditions, as well as of treatment, are thus supplied.

The conclusions and recommendations offered include practical points learned from personal experience in solving problems and treating conditions by other means than by drugs. These are epitomized from the course of lectures delivered at the Medical Department of Temple University.²

It is convenient to visualize all life as a process of adjustments of the individual to meet whatever forces may be exerted upon it from without in such a way as to afford the most advantageous conditions for selfadaptation in accord with the forces acting from within. Hence in this hierarchy the laws governing the stabilizing of energies arising in, or exerted upon, a living organism (i. e., of biophysics) are fully as important as the laws of biochemistry. The whole must be considered as a collective unity. Just¹ as good nursing and good diet are essential in acute disease, so are judicious adjustments of disturbed parts and of the individual as a whole to his environment. The work of the nurse, her manifold helpful doings, fixings, adjustments and suggestions, serve as a graphic illustration of how much good results from intelligent and suitable adjustments of the creature to conditions as they fluctuate.

While biokinetic instrumentalities are especially useful when used for the purpose of relieving the more protracted, complex, or obscure disorders, distresses and the varied effects of disease, they are in many instances of equal efficacy in the relief of acute disease. The main reliance in regaining and retaining health is upon expert direction of conduct in the adaptation of correlated parts with the other and thus to the organism as a whole.

Moreover in daily experience instances are constantly arising where every other promising or indicated remedy has been employed except this one of regulation, adjustment, biokinetic stabilization, and no relief has been obtained. When finally

the right kind of regulation, reconstruction, or adaptation is made, the disturbed mechanisms return to normal poise, and not before. The whole enterprise of health getting and retaining being one of equilibration, therefore, there is always needed regulation of behavior and of disturbed bodily mechanisms until they come to act as a harmonious unity.

The best method of presenting the topics to a class is, in my experience, to set forth leading points and then invite questions; in short to deal with the subject seminar fashion, with the purpose of then and there demonstrating a few of the more reliable, useful and readily adopted methods of relieving bodily and mental distresses and their effects, also the reconciling of whatever disharmonies exist between creature and stresses of environment.

Some form of motion and its regulation is necessarily involved, hence the term biokinetics is a good one. It is much used in France to include the manifestation of motion in some form, active or passive, in its bearing on repair. The presentations also should include descriptions and hints from various promising methods, measures, or instrumentalities available or now popular (regular or irregular), a harmonizing of the principles involved, and a setting forth of their physiological working bases. The objective is that the physician shall come to possess enough knowledge of them to be able to make judicious choice or determination should he have occasion to employ them. In particular it is desirable for him to be able to decide whether a nonmedical expert who is to be entrusted with the work, possesses or can acquire the needed attributes or deftness to render service. It is desirable, almost necessary, to be sufficiently familiar with the practices and methods to make intelligent comments on their work or to appraise the effects or possibilities of their contributions.

Each normal human being should possess ample inherent energies to serve all needs till the final ending or biological limit (about 150 years), provided these energies are saved, made and kept available, and made use of to their utmost advantage.

The natural history and manifestations of these "energies of men" are considered in later descriptions, an attempt being made to briefly appraise and formulate them. In short, the theme is that of the coefficients of survival and of repair, also of such modifications of those conditions (voluntary or under direction) as shall make for ultimate destiny; i. e., shall produce the best results.

We may term this enterprise the straightening out of those disorders exhibited by disturbances in the more gross reflex mechanisms. This has been called orthobiotics. The elements of behavior (the sum of the actions of a living organism under the control of a personality), are most significant in this connection. The immediate objective is to make use of eutenics, or raising the index of efficiency in an individual through supplying and regulating the best obtainable conditions of environment. The feelings and emotions as determinants of conduct must receive full attention.

¹An outline of special demonstrations and conferences would also be helpful and this I propose to publish later.

The human organism is visualized as a bio-mechanism and problems are approached from the angle of biophysics in a vitalized, sentient mechanism, a thing of mass, of motion, of ponderability, of stress and strain, of hydraulics, pneumatics, photics, electroenergetics, and the like, rather than a mere composite of cells, enzymes and other biochemical elements.

The basis of health, and the regaining of health, is adjustment of the creature to changes in environment, to the meeting of new, strange, often puzzling and sometimes perilous or damaging situations. Behavior is always implicated; it is the evocation and the regulation of man's developmental powers in so far as he is capable of applying his personality to the task. Be environment what it may, the effects are in accord with the degree and kind of selfmastery exerted. Selfcontrol should become an automatic adjustability, a poise of body and mind as a whole. In this enterprise the emotions, the feelings, are dominant factors; the so-called affective functions. The most serious point of departure is through manifestations of the instinct of fear and its correlate anxiety, worry, suspense, selfpity, depression, hence psychopathy. Fear in some form, and of sufficient degree, is capable of producing serious disturbances, not only functional but organic. (2).

When control becomes conscious, through awareness of voluntary powers and how to use them, as well as of appreciation of the nature and character of the situations to be met, a much more complete mastery results and a more reliable protection is furnished against adverse conditions. Conscious control, therefore, deserves to be taught and practised at any age, but is most important in childhood, during the formative periods.

Imperfections in conscious control may arise through pressure of circumstances, but seldom unless there is some error or defect in the plane of volition, some uncertainties, timidities, or exaggerations of caution. Hence the prevention and cure of so-called nervousness is right training in the nursery stage to eliminate fear and this is one of the most important of parental responsibilities.

Selfconfidence may arise from ignorance of perils, from omissions in considering the instinctive experiences, of necessary contrasts, warning backgrounds, of perspective; it may also arise from stupidity, from inability to make right use of percepts and from defects in sense organs. Thus a review of the main factors in sensory mechanisms should help much in selfpreservation as well as in selfregulation.

It will thus be plain that the affective faculties or functions, the feelings and emotions, are of the utmost importance in functional and structural disorders. The fusion point of afferent nerve impulses is general sensation, cenesthesia, the sum total of sense perceptions whereby we are aware of things going on within us in addition to the straight sense avenues of vision, hearing, touch, taste and smell. No one sense organ works alone, under primary and natural conditions. Individuals vary widely as to their sensitiveness—their sensory responsiveness or equilibrium. Sensitiveness be-

comes heightened, exaggerated, even morbid, under pressure or stress of circumstances and by reason of inadequate effort to maintain sensory equilibration. Hence we do well to emphasize the domain of selfregulation as the chief means of rehabilitation of functional soundness. We need to comprehend and constantly make use of the equation between impulse to do—action (actuation) and not doing—restraint (inhibition). By a nicety of poise between these two primitives is the totality of those situations to be interpreted which constitute the elements of health, functional balance, vital economies, in short, comfortable and efficient life.

During acute disturbances, in those presumably of heretofore structural and functional normality, the coming to rest after overuse (stress) to the point of disease (strain), is more readily achieved. Not so in those conditions wherein protracted or chronic disturbances, disorder or their effects, have long prevailed and hence cellular integrity becomes more gravely jeopardized or impaired.

The first department of behavior we shall discuss is personal hygiene, the betterment of the individual through improving conditions of environment (euthenics) and conduct (conscious control). As stated before, it may be divided into five parts, of which we shall describe only three, preventive, conservative, constructive, reconstructive and vigilant.

Conservative personal hygiene.—The adoption and intelligent use of those rational or common sense measures which any sane and fairly careful individual would instinctively employ. Since in so few can common sense be safely assumed, these measures should be carefully outlined, emphasized and fixed in mind. We may here include those common sense measures, fairly well known and of recognized efficacy, which contribute to the maintenance of fitness by improving environment, in the physical, mental, and moral domains, thus encouraging all inherent energies. Environment influences the tangible body and also the psychism. Everyone requires a constant revision of conduct and the exercise of a ceaseless vigilance and industry. Difficulties are constantly to be overcome. No full development can be achieved except by struggle, competition, and unremitting effort. Latent memories are called forth, association processes stimulated by external agencies. Among the forces of environmental stimuli producing reactions upon the consciousness are chemical and physical forces such as light, darkness, heat, cold, work, rest, dryness, moisture, food, hunger, attention, sleep, etc., and always the mysterious force of electricity. The main objects of life are to secure, appropriate, and eliminate adequate amounts of oxygen, nitrogen, carbon, minerals, and protective substances, vitamins, to meet the requirements of metabolism.

Along with favorable opportunity, there must also be intelligent guidance from within or without. Through experiences are formed habits of selection and rejection. The individual cannot be wholly receptive or passive, although to pursue conservative measures no large amount of effort is required. While it is desirable to accept with philosophy whatever state of life in which one is placed, the

exigencies of everyday call for some modification of existing conditions, making for improvements, in temperature, ventilation, clothing, food, effort, attention, and the like.

To secure what is plainly desirable, one must guard against deleterious agencies, between which we are steadily learning to differentiate. Among these are good and bad water or food; the infective agencies conveyed by mosquitoes and flies; hurtful degrees of light, heat, cold, moisture, dryness, exertion, fatigue, inaction, and the like. The subject involves the whole range of sanitation, federal, local and personal, in which the individual is first negative and next receptive, rather than active.

The element of fatigue, a peculiarly harmful agency, must always be reckoned with. Fatigue, leading to worry, to confusion, apathy, and exhaustion, is capable not only of impairing function and retarding growth, but also of damaging structure, devitalizing organs, and opening the door to any or all sorts and kinds of morbid agents, infective or metabolic. Excessive and continued fatigue is capable of defeating the best agencies for conservation. The main defense reaction of most fatigue effects in *equisanimitas*, which Sir William Osler brilliantly extols.

Constructive personal hygiene.—The factors in constructive personal hygiene are, first, an individual who is not impaired by disease, but not up to the relative norm, whose deficiencies or defects are capable of demonstration or relievable by constructive measures and modifications of environment, capable of amplifying latent powers and leading toward the degree of development of which the individual is capable.

Here we have at command all the powers grouped under conservative personal hygiene and many more. The task is to determine exact conditions, the nature of the concrete problem, its possibilities and its needs, and to make wise, active, and expert use of our resources consistently and persistently.

Reconstructive personal hygiene.—The factors with which we reckon are: 1. An individual of any age or condition in life whose constitutional vigor or health has been so depressed by disorder or disease in the physical or mental domain as to place him or her below the plane of customary efficiency. 2. The objective is the eliciting of all those forces for repair or whatsoever causes or phenomena of disability exist, which can be brought to action. 3. Raising the index of efficiency by bringing into the field of action hitherto unrecognized capabilities, rendering them available, till a higher plane of power is reached than the individual has ever enjoyed before.

This can be done in more instances than is ordinarily regarded possible, and to a degree oftentimes far beyond expectation. Among the reasons why this is not done as often as it can and should be are: The individual, or those who exert or should exert authority over him, too often will not cooperate frankly, faithfully, and consistently with the adviser. Again, medical advisers are too often content to act merely as repairers of recognizable disabilities, and to lose sight of their higher duty

as conservators of latent powers of both health and efficiency. Nowhere in the domain of medical art does there lie larger opportunity for gratifying results than in this realm of reconstructive personal hygiene.

Let me conclude with a brief mention of what is to me a most important, absorbing, but as yet curiously neglected topic of self regulation—systematic muscle reeducation or retraining. This has occupied my interest for forty years, though to my regret I have written little on the subject, and to Doctor Robert W. Lovett belongs the credit of having elaborated it brilliantly. I taught this at the Orthopedic Hospital under S. Weir Mitchell in 1880. Results are to be had by muscle training in the effects of poliomyelitis incomparably superior to any former degree of electricity. So of other forms of muscle improvement. To Doctor W. J. M. A. Maloney belongs the credit of original and brilliant work, especially in tabes. He has recently published a complete book on the subject. I believe the best book on the action of muscles was written by Doctor William Colin MacKenzie (3).

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1504 PINE STREET.

THE RECONSTRUCTION OF THE WORKMAN AFTER INJURY.*

BY PRESCOTT LE BRETON, A. B., M. D., F. A. C. S.,
Buffalo, N. Y.

All medical men are familiar with the literature in our journals which tells of the wonderful results obtained in the reconstruction of the disabled soldier. Lessons learned from the war may well be applied at home, and this paper is written with such an object in view. Since the State compensation laws went into effect, it has been my experience to receive an increasing number of workmen referred by the various plants and insurance companies for examination and sometimes for treatment. These men had been injured while at work, treated at various hospitals, and finally discharged with some degree of permanent disability. The request from the insurance company or from the plant is for an examination and a written opinion as to the percentage of disability and also as to whether surgical treatment of any kind would lessen this average.

As one grows familiar with such cases and has the opportunity of watching some of them over a period of months or years, certain facts stand out clearly. In the first place, the law provides far too little financial return for the injured man. For a man say forty years old, with wife and family, crippled so that he cannot return to the only kind

*Read at a meeting of the Buffalo Academy of Medicine, December 3, 1919.

of work he knows how to do, several hundred dollars, or even two thousand dollars, is not sufficient compensation. In the majority of cases the following occurs: He looks for a job, and as he has no training for an occupation which involves sitting at desk or bench, he soon finds that there are few positions for a man unable to be on his feet all day. He may find a place as night watchman at small pay, but is more likely to continue looking about or idly waiting in the hope that his infirmity will disappear. The money he receives keeps dwindling, and after six months to a year, he is content to stay at home, smoking his pipe, and looking after the children. The wife goes out to do washing, and the charity organization is called on for a weekly stipend. The family suffers, especially the children. The man lapses into a mental state, wherein he loses all energy and backbone, and is satisfied to be classed as a chronic invalid.

Three things are needed in the city to provide for this large class of defectives, and in my opinion, these should be under supervision of the city and under the department of public welfare. They are as follows:

1. An employment bureau for the partially disabled, where such men can apply and leave their names, and where employers can find men as they need them.

2. A Zander treatment room in connection with some large hospital or dispensary, where the work for the man can be directed by surgeons. In this room, which should be in charge of a Swedish masseur, there should be a sufficient number of simple exercising machines, such as were used during the war. By means of massage, and voluntary motions, many cases can be materially improved. This end treatment is so often neglected in practice, but is effective in many cases in relieving poor circulation, strengthening muscles, loosening stiff joints, and overcoming pain and soreness.

3. The most important item is the opportunity of learning some simple trade whereby in a few months such men can earn enough to support their families. The most practical place for this is in one of the technical schools where industrial trades are taught. The most practical work for men without education is shoe repairing and chair repairing. By having these subjects introduced in one of our schools, the chief problem would be solved; i. e., a place to go to learn how to do something which does not require standing, walking and lifting. According to the experience of those who have supervised the work of such cripples in other cities, shoe repairing is the best. In certain cases, other kinds of work could be undertaken.

In conclusion, I would say that some workers on this problem have shown a spirit of hearty cooperation. The program for this work is rapidly assuming a tangible form. Mr. McLellan, in charge of the Employment Bureau, at the Bureau of Public Welfare, will take care of the first branch. Doctor Goodale, of the City Hospital, promises a Zander room in the new wing of that growing institution; and Commissioner Bagley will try to have the industrial part instituted.

RESULTS OF OPERATION IN PELVIC DISEASE.*

Report of Six Hundred Consecutive Cases.

By G. PAUL LA ROQUE, M. D., F. A. C. S.,
Richmond, Va.

To doctors who advise people to be operated upon, to trustees of hospitals in which we work, detailed reports of the results, good and bad, of our personal work are not only a part of ordinary politeness, but our plain honest duty; and in this way we may each take our part in the serious and rapidly progressing standardization of surgeons and of surgery.

Previous reports of my personal work have been made and others are now in preparation. The present report is solely of results of operation in consecutive cases of pelvic disease; none have been omitted. In no case have we declined to operate on account of the desperate condition of the patient and in no case in which surgery was necessary has operation been postponed more than a short period of from one day to two weeks for preparatory treatment and the opportune time. No patient has died while waiting for operation nor without operation from any cause save extensive and inoperable cancer. The case records are kept in uniform fashion, easily accessible, and have been studied in detail.

Six hundred patients were operated upon as follows: Eighty per cent. required abdominal incision for pathological conditions in the uterus, tubes, and ovaries; twenty per cent. were operated upon for abdominal disease only; seventy-five per cent. required operation upon the cervix, vagina, and vulva; twenty per cent. to twenty-five per cent. required operation for disease of the cervix, vagina, and vulva only; and sixty per cent. to sixty-five per cent. for pathological conditions in both abdomen and vagina. Eight to ten per cent. required operation also upon the rectum and anus and of women coming for operation upon the rectum and anus, over fifty per cent. needed operation also for disease of the pelvic organs.

Sixty per cent. of women with disease of the pelvic organs also have appendicitis, and over fifty per cent. of women coming to operation for appendicitis between the ages of puberty and the menopause also need operation upon the pelvic organs. Approximately five per cent. of women operated upon for pelvic disease also require operation for pathological conditions of the urinary organs; it is impossible to estimate the number of women with symptoms and disease of the urinary apparatus who need operation for pathological conditions of the pelvic organs. More than five per cent. of the women in this series have needed operation for gallbladder disease with or without stones and over fifty per cent. of women with gallbladder disease also need operation for disease of the pelvic organs. More than five per cent. of women operated upon for pelvic disease have also required operation for inguinal, femoral, or umbilical hernia; and eighty per cent. of women

*Read before the Medical Society of Virginia, Richmond, Va., October 29, 1919.

operated upon for hernia have also needed operation for pelvic disease at the same time.

Obesity as a surgical complication has been recorded only in those cases in which, on account of excessive fat in the abdominal wall, it has seemed wise to remove by lipectomy a sufficiently large piece to render the intraabdominal disease more easily accessible and operation safer. This has been done in approximately two per cent. of the cases. Abdominal ptosis is recorded only in cases in which it seemed wise to overlap fascia, about one per cent. of the cases.

The present series of six hundred cases does not include operations on account of eclampsia, placenta previa, contracted pelvis, or other obstetrical indications, nor on account of such systemic conditions as tuberculosis and pernicious vomiting. These will be reported at another time as a separate series.

Women of child bearing age and married constituted more than half of the total number of women in the present series, and in approximately ten per cent. of these their previously existing pelvic disease was complicated by pregnancy. Such complications are notoriously dangerous to the woman, usually fatal to the child, and frequently entail operations of magnitude and great urgency upon the woman under circumstances less favorable to her best interests.

In the present series there were one hysterectomy and two myomectomies for fibroids of the uterus upon women bleeding furiously in labor; two hysterectomies on account of incarceration and suppuration of the uterus and tubes during pregnancy; one removal of a large ovarian cyst during pregnancy; one hysterotomy for incomplete miscarriage from one side of a double uterus; twelve cases of removal of ruptured tubal pregnancy, one of an almost full term fetus, the others of two to five months; one suture of ruptured uterus during labor at term; and many cases of removal of retained material following miscarriage from displaced and inflamed uteri and in the presence of tube inflammation, ovarian cysts, and fibroids of the uterus.

The puerperium and lactation have in my experience never complicated the situation in any way in the mother; but my practice has been on account of the child to advise postponement of operation in all but the more urgent cases and in these to place the entire care of the baby upon the attending physician or a competent pediatricist.

Approximately three per cent. of patients in this series suffered from anemia of less than fifty per cent. hemoglobin. There have been recorded a considerable number of heart, lung, and kidney lesions, malaria, lactation, hookworm disease, menopause and other psychoses, neurasthenia, hysteria, old age, and other nonsurgical diseases. Heart and kidney lesions have produced an amount of real and imaginary fear of operations totally unjustified by results. I have known of only one death which, by any stretch of the imagination, could be attributed to these diseases and this was a case of dilatation of the heart secondary to acute dilatation of the stomach in a woman

three days after hysterectomy for fibroids. Hyperthyroidism adds some risk, as shown by one death in this series from hyperthyroidism, following a simple easy operation for pelvic disease. Milder forms of hyperthyroidism are present in a large number of women with pathological pelvic conditions and are commonly benefited by operation for the cure of pelvic disease. Two or three patients with true diabetes have been held under treatment for this disease for an appropriate time with perfect satisfaction in the relief without complications of their pelvic disease and without bad effect upon diabetes. One case of pellagra was in this series with no effect of the disease upon operation or wound healing. Eighty per cent. of nervous women and women with neurasthenia have pelvic disease. Long standing pelvic disease treated by "office gynecology" and various medicines are not to be camouflaged by calling them nervous troubles nor covered by a barrage of high sounding endocrinological terms. Earlier and more complete surgery will cure these patients.

Dilatation and curettage of the uterus was done in eighty per cent., or in 480 of the 600 women, as follows: For inflammation, in approximately 300 women or sixty per cent.; for removal of cervical tumors in two cases; for demonstrable organic stenosis in one case; and dilatation was routinely employed in eighty per cent. of the cases. The curette is used mainly to test the dilatation and for exploration.

Additional operations upon the pelvic organs were performed at the same time as dilatation and curettage as follows: Repair, amputation and cautery of cervix in 200 women or forty per cent.; repair of perineum in 180 women or thirty-seven per cent.; ligament suture of displaced uterus in 325 women or sixty-seven and five tenths per cent.; removal of tubes in ninety-six women or two per cent.; and removal of ovaries or cysts in 175 women or three and five tenths per cent.

The lesson to be gained from these figures is that the uses of dilatation and curettage of the uterus for pelvic disease (not pregnancy and miscarriage, these are not included in the present report) is useful as a preliminary operation to that for the correction or removal of some other disease; and as the sole operation is not efficient in more than one per cent. of the cases.

Operations upon the cervix consisting of simple repair, amputation and destructive cauterization was done in thirty-three and one third per cent. or 200 out of 600 women for laceration, inflammation, suspicious cancer, fibroid, polyp and papilloma.

Additional operations upon pelvic organs were performed at same time as operation upon cervix in seventy-five per cent. of 200 women as follows: Dilatation and curettage in all cervix cases; repair of perineum in 170 women or eighty-five per cent.; ligament suture of displaced uterus in 140 women of seventy per cent.; removal of tubes in forty women or twenty per cent.; removal of ovary or cyst in thirty women or fifteen per cent.; and removal of uterus in thirty women or fifteen per cent. Women who require an operation upon the cervix also need additional operative measures for diseases

of other structures and in seventy-five per cent. of the cases upon the abdominal organs. The clinical evidence is conclusive that there is much opportunity of service by early repair of lacerated cervix, as both curative of cervical lesions and not only preventive of cancer but also of inflammatory disease of the uterus, tubes and peritoneum.

Operations upon the perineum and vagina were performed in thirty per cent. or in 180 out of 600 women. They were divided as follows: Simple repair in 108 women or sixty per cent.; repair of perineum and sphincter ani in six women; repair of perineum and rectovaginal fistula in five women; repair of perineum and vesicovaginal fistula in one woman; and repair of cystocele in sixty women, or thirty-three and one third per cent. of the cases of laceration.

Additional operations upon the pelvic organs were performed at the same time as operations upon the vagina in ninety per cent. of 180 women, according to the following figures: Repair, amputation and cauterization of cervix in 126 women or seventy per cent.; removal of uterus or tumor in eighteen women or ten per cent.; removal of tubes in fifteen women or eight per cent.; removal of ovaries and cysts in fifteen women or eight per cent.; ligament suture of displaced uterus in 108 women or sixty per cent.; vaginal hysterectomy and interposition suture of broad ligaments under bladder for cure of cystocele in three women. From these figures it is seen that at least seventy per cent. of the women needing perineorrhaphy also need operations for disease of the cervix, uterus, tubes and ovaries.

Ligament suture of the uterus to correct displacement was done in fifty-four per cent. or in 325 out of 600 women. Additional operations upon pelvic organs were performed at the same time as the correction of the displacement in eighty per cent. of 325 women. Dilatation and curettage was done in nearly all cases: Repair, amputation or cauterization of the cervix in 120 women or thirty-seven per cent.; repair of perineum in ninety-seven women or thirty per cent.; repair of cystocele in fifty-four women or sixteen per cent.; removal of tubes in fifty women or fifteen per cent.; removal of ovary or cyst in ninety-seven women or thirty per cent.; and suspension of prolapsed ovary in twelve women or three and five tenths per cent.

These figures are instructive especially in conjunction with the clinical history. Certainly the displacement is not caused by laceration of the perineum. It is equally prevalent in women who have never had children as in those who have had children. Is displacement a disease *per se* or does the malposition invite inflammation or antagonize its cure? Cases of displacement really needing correction are those in which there is an inflammation of the uterus or tubes or lacerated cervix or cystocele or ovarian cyst.

The uterus was removed in eighteen per cent. or in 120 out of 600 women as follows: Abdominal (with removal of both tubes) 117 women; subtotal or supravaginal 108 women or ninety per cent.; for fibroids ninety women or seventy-five per cent.; for suppurative and adhesions of uterus and both

tubes eighteen women or one and five-tenths per cent.; complete, including cervix, tubes, ovaries and ligaments seven women or six per cent.; for suspicious and precancerous diseases five women; and for obvious cancer two women.

Vaginal (complete): For total prolapse of uterus and bladder in old women (with plastic repair of cystocele and rectocele) three cases. Removal of fibroids, polyp and papilloma twenty women or seventeen per cent. of the tumor cases.

Additional operations upon pelvic organs were performed at the same time as hysterectomy or myomectomy in eighty per cent. of 120 women.

The ovaries and cysts were removed in 100 women. Double removal fifty per cent.; single removal fifty per cent.; all cases of removal of both ovaries were a part of a panhysterectomy for malignant disease and done in women beyond the menopause with fibroids or for complete destruction by suppuration; operations upon cervix and perineum ten per cent. or twelve cases; and removal of living child at term two cases.

Removal of tubes (independent of hysterectomy) sixteen per cent. or ninety-six out of 600 women as follows: Double removal twenty-two and one half per cent. or twenty-two cases; single removal seventy-seven and one half per cent. or seventy-four cases; for inflammation over ninety per cent. or eighty-eight cases; and for tuberculosis of tubes three cases (double).

Additional operations upon pelvic organs performed at same time as removal of tubes, were done in 100 per cent. of ninety-six women divided as follows: Removal of ovaries or cysts in fifty-six women or fifty-eight per cent. of the cases; ligament suture displaced uterus in seventy-six women or eighty per cent. of the cases; repair, amputation or cauterization of cervix in sixteen women or sixteen per cent. of the cases; and dilatation and curettage in fifty to sixty women, repair of perineum in thirty women or thirty per cent. of the cases.

The lesson here is quite plain. All women who require the removal of their tubes for inflammation also have such surgical pathological conditions as lacerated cervix, displaced uterus, fibroids, ovarian cysts, and a few suppurative appendices as an antedating lesion, inviting tube infection or preventing its spontaneous cure. This is a large field for preventive surgery of salpingitis and pelvic peritonitis.

One hundred and fifteen ovaries and sixty cysts were removed from twenty-nine per cent. or 175 out of 600 women as follows: Cysts, all but four of the total 175; simple, nonsuppurative sixty per cent. or 104 cases; suppurative thirty-four per cent. or sixty cases; for solid tumor; malignant two, hematoma two. As a part of panhysterectomy in women beyond the menopause or the victim of cancer of the uterus seven women or in four per cent. of the total the ovaries were removed. In all but about twenty-five of the total 175 women, including those beyond the menopause, I have succeeded in saving at least a portion of one ovary and only a small number have required a second operation.

Additional operations upon pelvic organs were performed at the same time as the operations upon the ovaries in ninety per cent of 175 women as follows: Removal of tubes in fifty-two women or thirty per cent. of the cases; removal of uterus in sixty-two women or thirty-five per cent. of the cases; for tumor in forty-four women or twenty-five per cent. of the cases; for inflammation in eighteen women or ten per cent. of the cases; ligament suture, displaced uterus in 105 women or sixty per cent. of the cases; repair, amputation or cautery, cervix in forty-four women or twenty-five per cent. of the cases; repair of perineum in thirty-five women or twenty per cent. of the cases; suture of ulcerated bowel holes in ten women or five per cent. of the cases.

These figures and clinical histories are more than suggestive. Women with pathological condition of the ovaries have diseases of other pelvic organs. To cure the women and preserve the ovaries earlier operation is called for. To prevent the necessity for such operations of magnitude as removal of suppurating cysts, tubes and the uterus, adherent to each other and to the bowels and bladder, perform the easy and safe operation earlier.

Operations for pelvic abscess were performed on sixty women or in ten per cent. of 600 cases as follows: Removal of one or both ovarian cysts and tubes in all but one case; simple palliative puncture and drainage in one case; removal of uterus in fifteen cases; ligament suture of displaced uterus in approximately forty cases; removal of suppurative appendix as source of infection in six or eight cases; repair or cautery lacerated cervix in about twelve cases; drainage was employed in twenty-four cases or forty per cent. of the abscesses. Wounds were closed without drainage in thirty-six cases or sixty per cent of the abscesses.

The conclusion drawn is that pelvic abscess occurs in all cases of ovarian cysts and tube suppuration; also in some fibroids and displaced uterus; in a few, appendix suppuration. Early simple operation for antedating pelvic pathological conditions in comparatively healthy women is preventive surgery against operations of magnitude and mutilation in women desperately sick with long standing disease. Incomplete removal of all pathological conditions is inefficient surgery and correspondingly dangerous.

There were five gross errors in diagnosis in relation to pelvic surgery. By this I mean an operation was necessarily performed. One was in a woman, three months pregnant. We thought before operation that the patient had an ovarian cyst. Her convalescence and pregnancy were normal and a healthy child was born at term.

In another woman four months pregnant and suffering great pain believed to be due to a tumor, the condition was found to be due to gallstones and a normal pregnancy. This woman had had seven or eight children and did not think she was pregnant. If she could not tell I would not be too sure though I was suspicious. The x ray examination was negative for fetal bones. The operation upon the gall-

bladder cured her symptoms and the exploratory incision over the tumor did no harm.

One patient with large ascites due to cirrhosis of the liver was operated upon in the belief that the swelling was due to an ovarian cyst. Her recovery from the operation was perfect. One large tumor of the uterus proved to be inoperable sarcoma and another malignant papilloma of the ovary with extensive involvement of the peritoneum. In both of these convalescence from the operation was prompt and uncomplicated. If I had classed as inoperable instead of attempting to remove in two other cases of cancer of the uterus, I could have recorded them as errors of diagnosis instead of deaths.

A case of tuberculous kidney, present and unrecognized at the time the woman was operated upon for a pathological pelvic condition, should also be charged to error of diagnosis.

Seven accidents occurred in the total operations upon the 600 women of this series.

The cervix was torn once while performing dilatation and curettage preliminary to repair of a lacerated cervix. The tear was recognized by insertion of the curette. Immediate abdominal operation revealed the tear at the site of pressure by an intraligamentary ovarian cyst.

One accidental abortion was produced by dilatation and curettage preliminary to repair of the cervix. The woman knew she was two or three weeks pregnant and had deliberately deceived me.

The bowel was torn once while freeing dense adhesions of the sigmoid to an ovarian cyst. The operation was unusually difficult, the accident was due to insufficient skill; the woman died. The bowel was accidentally cut once, a small hole, immediately sutured, and no harm done. Convalescence was perfect. The third bowel injury occurred while suturing a uterus ruptured during labor at term. The woman was desperately sick, and anemic, and we were working at top speed. The bowel at a point of adhesion was caught by two or three sutures to the uterus. The accident was immediately recognized, the sutures released and the time we were trying to save was lost in correcting the result of speed. The woman suffered colicky pains four or five days but otherwise her convalescence was normal and she has never been sick since she left the hospital.

In one patient two hours after the abdominal wound had been sutured the nurse informed me that an abdominal gauze sheet was missing. The wound was immediately reopened (before the woman had completely recovered consciousness) and the sheet removed. Convalescence was perfect. In one woman one small gauze sponge placed in the vagina was pushed up by a douche nozzle the second day. Upon examination two weeks later to determine the cause of foul discharge, the sponge was removed and the discharge promptly ceased.

COMPLICATIONS AND RESULTS.

Three of the 600 women (0.5 per cent.) suffered from severe shock from the operation; the operations were prolonged (one and three quarter hours) with considerable bleeding; one was panhysterectomy for cancer of the uterus in a fat woman;

another following a difficult operation for ancient inflammatory adhesions and ovarian cyst infection from adherent sigmoid; the third for a complex pelvic pathological condition complicated by recent miscarriage at the third month and large hemorrhage. The first two cases proved fatal, the third patient recovered. One woman, moribund with septicemia and abscess due to suppurating ovarian cyst, died a few hours after a simple puncture of the abscess. The death was charged to shock and septicemia. One woman died from exhaustion following severe diarrhea ten days after panhysterectomy for cancer involving dissection of disease from the rectum. One patient had a cardiac embolism. The woman died within five minutes after the initial precordial pain on the twelfth day. This occurred while sitting up in bed talking to friends about going home the next day. One patient had a genuine acute dilatation of the heart secondary to acute dilatation of the stomach; this occurred on the third day after operation and was fatal.

Acute dilatation of the stomach lacks standardization of its diagnostic signs. When in doubt we treat the patient accordingly. In the earlier cases we were less able to recognize mild grades of stomach dilatation. In about the middle third of the present series of cases it occurred in approximately three per cent. of the patients and in the last third in about one per cent. of abdominal cases. The complication is much less frequently seen after operations upon the pelvic than upon the upper abdominal and digestive organs.

Intestinal paresis before the third day is highly desirable; later than the third day it is called a complication. This is almost conquered by the avoidance of purgative drugs, gentleness in operative technic and by the avoidance of food and the pacification of peristalsis by morphine for three days following operation. It will occasionally follow operation for suppurative disease and large tumors for which operation has been so long postponed as to permit the formation of dense adhesions as to require an extensive operation. The diagnosis of excessive intestinal paresis is not standardized and its recognition is largely dependent upon the point of view. It seldom worries me.

Postoperative peritonitis did not occur. Mechanical intestinal obstruction with complete blocking of bowel lumen and death occurred in two of the 480 abdominal cases in the present series; one, two weeks after operation apparently due to fecal impaction (no autopsy), the other the fourth day after operation, the cause remaining unknown. Partial obstruction by adhesions present before operation in women in whom adhesions have formed while they were being treated medically without operation is not uncommon and should be recognized and prevented and cured by starvation, morphine, the stomach tube, the avoidance of enemas and purgatives and the use of saline very slowly administered by bowel until all pain has subsided. I have recorded at least three rather severe cases following the last 200 abdominal operations. There were doubtless

others of less severe type. All recovered without operation or extension of time in the hospital.

Postoperative pneumonia was fatal in one of the 600 women of this series. The pneumonia developed after I left town the third or fourth day following an operation of moderate gravity, when she seemed out of danger. She died on the seventh day (no autopsy). There have doubtless been other unrecognized cases of pneumonia of a mild type. Bronchitis of annoying severity is rare. Mucus often accumulates in the throat as a result of restraint of cough. Good nurses can teach a patient how to remove the mucus by gently coughing while lying on the side or abdomen with the head hanging over the side of the bed; and the throat after operation, as in whooping cough, is cleared by vomiting.

Pleural effusions sometimes result from suppurative disease of the abdominal organs before the operation. We have noted a few cases of pleurisy after operation upon such patients. They promptly disappear after operation and have not seriously complicated convalescence.

Acute partial kidney break down appeared to be the cause of one convulsion in a woman with long standing kidney disease following a long operation for hemorrhoids, pelvic disease, appendicitis and gallstones. Her restoration to health was prompt and her kidney condition improved. Many women of this series were the victims of Bright's disease and in none was the kidney condition harmed by operation. In one patient of this series a tuberculous kidney was present and unrecognized at the time of the operation upon the pelvic organs. Nearly three years later I removed the kidney.

Acute insanity is recorded in two women following operation. One was a genuine psychosis of the menopause from which the woman recovered completely in three months and is well and happy now; the other an attempt at suicide in a woman heavily depressed by domestic infelicity who was apparently improved when she left the hospital but of whom I have not heard since. A great many women with pelvic disease in this series have suffered heavily with mental depression apparently the result of domestic and marital infelicity directly resulting from pelvic disease. The radical changes in the physical mental and domestic happiness noted in these women and their families following operation is convincing of the utility of preventive surgery in this direction.

Acute exacerbation of hyperthyroidism after operations are recorded in two of the 600 women. In these the thyroid disease was present before operation and they were handled with utmost respect of the thyroid. One died within eight hours following operation, the other patient had a normal convalescence. Mild cases of postoperative hyperthyroidism are frequently seen. They cause only tachycardia and nervousness and the thyroid disease is usually benefitted by the pelvic operation. Typical paroxysmal bronchial asthma has occurred after operation in one case. No trouble resulted and the paroxysms were easily controlled. Pulmonary tuberculosis was present in many patients before operation. It did not complicate convales-

cence and did not to our knowledge become intensified by the operation. Moderate care and common sense precautions only have been exercised on account of the lung disease.

Two cases of retention of urine with overflow were recorded. Both were relieved by one or two catheterizations and hexamethylenamine. All cases of postoperative cystitis have existed before operation, they are antiooperative cystitis.

Pyelitis complicating convalescence was recorded in six cases or one per cent. of the series of 600 women. In each case it was apparently of the right side and in each case the disease existed before operation. The exacerbation following operation caused pain and fever but subsided promptly without local treatment. Pyelitis caused by inflammatory pelvic organ disease is common enough and is benefited by operation upon the pelvic organs.

Phlebitis has occurred in three women (five tenths per cent.) of this series of 600. Two were in the left femoral or saphenous and one in the right popliteal. All recovered in from five to ten days. One case of hemiplegia occurred three weeks after operation. The condition has improved slowly though is not yet well. There has been one bed sore. The woman was greatly emaciated and desperately sick with advanced tuberculosis of the lungs and a large pelvic abscess. One woman was burned on the foot by a hot water bottle. Healing was prompt.

One woman two weeks after operation suffered from a foul vaginal discharge due to irritation from a small sponge placed in the vagina at operation and pushed up by a douche nozzle. Immediate relief followed its removal. Postoperative hemorrhage from the cervix after trachelorrhaphy occurred in three women of 200 upon whom the cervix operations were performed. In each case bleeding occurred on the tenth day and was caused by too early disappearance of a stitch from the upper angle of the line of suture. No intraabdominal hemorrhages occurred. Three of 480 women upon whom dilatation and curettage were done discharged blood clots from the uterus the third to the fifth day following operation. Previous to this they had uterine pain and fever. Hematoma in perineorrhaphy wounds occurred in three of the 180 women upon whom the operation was performed. They caused pain, a few days' delay in convalescence, and one was followed by recurrence of cystocele; the other two did not affect the efficiency of the repair.

Abdominal wound trouble has occurred in approximately five per cent. of the 456 cases closed completely without drainage. Careful personal observation of all the wounds and of the details of aseptic technic has convinced me that wound infection from bacterial contamination from external sources has not occurred; and that with modern cleanliness troubles with the wound are the result essentially of accumulation, degeneration and in rare cases contamination of blood beneath the skin and fascia. In none of the cases in this series have wound troubles been dangerous to life and in only two per cent. was the fever above 100 degrees, nor delay in convalescence of more than a few days was caused. There was no case of

wound suppuration nor hematoma formation in any of the twenty-four cases of abscess requiring drainage.

In two of 456 cases tightly closed and complicated by wound trouble, rupture subsequently developed. There may have been one or two others of which I was not informed. Every case of abscess in which drainage is provided (twenty-four of this series) is regarded as ruptured at the site of drainage. I have reoperated in three of these for rupture at the side of drainage and in one for ventral hernia three inches to the right of the original midline incision. Doubtless rupture developed in other patients. There have been twelve deaths (two per cent.) in the series of 600 women. All deaths from any cause occurring before complete recovery from the operation whether in the hospital or elsewhere are recorded as due to the operation. Eight deaths occurred from the first 300. Four deaths occurred from the last 300. Five hundred and eighty-eight of the 600 women have recovered from the operation.

The duration of their stay in bed following operation has been fourteen to twenty-one days in approximately five per cent. of the cases; twelve to fourteen days in approximately ninety per cent. of the cases; and three to seven days in approximately five per cent. of the cases.

All patients were propped up in bed whenever they wished usually after five to seven days and as soon as they felt equal to the trip after getting up out of bed, they were sent home. There are many real advantages, other than economic, in the patient getting up and out of the hospital early after operation and we are shortening this time steadily and with great satisfaction.

The final or ultimate results are better judged by the patient's doctor at home. When all surgeons report the immediate results, good and bad, in all cases treated; and when all physicians report the ultimate results, good and bad, all cases in which operation was performed by different surgeons and make open and public comparisons, surgery may be scientifically standardized and the results of surgery improved.

603 EAST GRACE STREET.

Treatment of Amebic Dysentery.—Randolph Lyons (*Southern Medical Journal*, January, 1920) says that in summing up briefly the various methods of treatment advocated at the present time one can safely state that ipecac and its alkaloids are still the sheet anchor in the treatment of amebic disease. The tendency of the times is to administer a combination form of treatment—that is to say, emetine hydrochloride is given hypodermically in conjunction with the oral administration of either emetine hydrochloride, powdered ipecac, or emetine bismuth iodide. Occasionally some other drug may be administered by mouth, as Chaparro or bismuth. There is reason to believe that this form of treatment is a distinct advance in the therapy of amebic dysentery and that by its use relapses will be markedly diminished. It has met with notable success in the treatment of carriers.

TREATMENT OF INFLUENZA.

BY JACOB MUNTER LOBSENZ, M. D.,
New York.

The treatment of influenza, as outlined below, was rigidly followed in over three hundred consecutive cases in private practice in all of which the patients recovered. As experienced by others, the ages encountered were between sixteen and forty years. Pregnant women received the same treatment regardless of the period of gestation, with no ill effects on mothers or fetus, all being delivered normally at term. Children received medication in proportion. No attempt was made to find the causative germ. No vaccines were used.

The cases referred to were definite cases of influenza, not merely "a touch of the grippe," or "a slight cold." All presented a temperature of 102° F., or above, usually preceded by a chill, prostration, severe headache, pains all over the body, and respiratory irritation with troublesome cough.

METHOD OF TREATMENT.

The patient is immediately put to bed, isolated as much as possible, and a member of the family designated to act as nurse. A trained nurse seldom had to be employed. General precautionary measures, such as those observed in any contagious disease, were followed.

Six powders, each containing the following drugs of reputable standard manufacture, were prescribed as an adult dose.

Acetylsalicylic acid, }
Phenylchloromine acid, }ãã gr. viiss
M : Ft. pulv.

If the patient is seen in the daytime, one powder is administered, and another at about nine p. m., at least four hours intervening between powders. If the patient is not seen until late, only one powder, the evening dose, is given. In all circumstances, the evening powder is followed by a tumbler of very hot tea with lemon. The windows are shut during the night, the patient is well covered, and a profuse perspiration is induced.

On the following morning, about six or seven o'clock, a brisk saline, such as a bottle of magnesia or one ounce of magnesium sulphate, is given. Wet bed clothes should now be changed. A powder is given at nine a. m., at two p. m., and again at nine p. m. The hot drink is not necessary on the second night. Windows are kept wide open day and night during entire illness, the air not striking the patient directly. Patient may go to the bathroom if the condition permits, windows first being closed; bath robe and slippers are donned. If facilities exist, the bedpan is preferred and recommended.

As most patients presented a bronchitis, the following cough mixture was used every four hours during the day, at eight a. m., ten a. m., four p. m., and eight p. m.

Ammonium carb., ... gr. v }
Codein sulph., ... gr. ¼ } as a single dose
With syrup and water, and taken in water.

Within twenty-four hours of beginning the treatment the patient's temperature was normal and the distressing symptoms had disappeared.

On the third day the temperature in most cases

remained flat, a powder was given at two p. m., and again at nine p. m. If the temperature had not remained normal, or if pain persisted, a morning powder was added. In only a few cases was it found necessary to resort to this morning powder. As a rule, one powder was given the first day, three the second day, and two on the third day, making six powders in all. Enough cough mixture was prescribed to last five days. Bowels were kept open by saline or enema, if necessary. Diet was fluid during the afebrile period (usually twenty-four hours), soft thereafter till the fifth day, when full diet was allowed.

Period of confinement.—The patient was kept in bed until the temperature remained normal three days; was out of bed on the fifth day, and in the street on the seventh or eighth day.

COURSE OF ILLNESS.

In all cases the patient gratefully reported the absence of headache, body pains, sensation of heat, in a very short time after the first powder. A common expression used was, "that powder seemed to knock it right out of me." A profuse perspiration had taken place the first night. Temperature on the second day was found normal in the majority of cases; patient was very comfortable but somewhat weak. The temperature, pulse and respiration were usually normal from the second day on. In a few instances the temperature and aching persisted for forty-eight hours. In fact, the change for the better was so marked that many of the patients doubted that they had had influenza. Each powder produced some perspiration but not as marked as during the first night. Patients were generally discharged from observation on the third or fourth day, if no complications intervened.

COMPLICATIONS.

Pneumonia developed in only three cases. In one case the patient was a hysterical woman who persisted in continually uncovering herself before the open window, and in the other two the patients were a man and his wife in a badly ventilated room. All three recovered.

In a child of ten months a double otitis developed with spontaneous rupture of the ear drums, followed by recovery.

In a man of fifty-six years there developed later what was diagnosed by neurologists as an acute Parkinson's disease, also as encephalitis lethargica. He is living but still shows some nervous symptoms.

Pregnant women, estimated as ten in number, presented no complications whatever.

MEDICATION.

As described previously, no further medication was found necessary. Digitalis preparations were not indicated. Whiskey was occasionally used. No sponging whatever was allowed except for cleansing purposes. A tonic of iron, quinine, and strychnine was prescribed to be taken for about a month after recovery.

INFLUENZAL PNEUMONIA.

In addition to the three cases of pneumonia mentioned before, six others were seen, making a total of nine. Two of these patients had already been

treated by other physicians and the remaining four had an existing pneumonia when first seen by the author.

The same powders were given four times a day for two days. The temperature dropped and rose again, but not to as high a level as before the powders, resolution taking place before the fifth day, with complete recovery. The two patients previously under treatment were getting digitalis. This was stopped as no indication was found for its use. All patients received some expectorant, such as ammonium carbonate with codeine, or liquor ammonium anisatis. Whiskey was given every four hours in half ounce doses alternating with three grains of camphor, hypodermically, every four hours. No digitalis was used. There did not seem to be any cardiac depression from the use of the powder, and the patients were less distressed after its administration. The picture presented by these pneumonia cases, which presumably were of influenzal origin, gave the impression that the duration of the disease was much shortened and of less intensity.

CONCLUSIONS.

The results of this method of treatment have been uniform, the medication acting much like a specific. The dangers of complications were almost removed. Acetylsalicylic acid or phenylcinchoninic acid, when used separately, did not give the same results as when used in combination. If the treatment as outlined in this paper is used on a large scale, and proves as satisfactory, it may open the way to the experimental use of acetylsalicylic acid with phenylcinchoninic acid in the prevention of influenza in those exposed to the disease. The combination of acetylsalicylic acid and phenylcinchoninic acid may prove to be as specific for influenza as quinine is for malaria, mercury for syphilis, and the salicylates for rheumatism.

233 WEST 122ND STREET.

A NEW METHOD FOR BLOOD TRANSFUSION.

BY GEORGE I. MILLER, M. D.,
Brooklyn.

A valuable therapeutic measure has been made possible by the simplification of apparatus, devised in the past five years, for use in blood transfusion. On December 21, 1914, I transfused a patient at the Jewish Hospital, Brooklyn, N. Y., with a new instrument described by me as a valve (1). This valve connects with two cannulæ, one of which is introduced into the median basilic or cephalic vein of the patient and the other into the median basilic or cephalic vein of the donor, and by means of a twenty c.c. Ricord syringe, blood is drawn from the donor and transferred to the patient with simplicity and accuracy. The intake and exit of the valve is controlled by a lever which shuts off the current of blood, so that when the blood is drawn from the donor the lever closes a canal which leads to the arm of the patient, and when the blood is injected, the lever closes the canal

which leads to the donor. On December 2, 1915, I presented before the Surgical Society of Brooklyn, N. Y., an entirely new instrument for blood transfusion which may be called a shuttle, because one piece of metal rests on the other and slides back and forth without a lever.

THE INSTRUMENT.

The instrument consists of two plates of brass. The upper plate, two inches long and one inch wide, has from the centre of each outer third a hollow metal pipe one and one quarter inches long going in opposite directions. To these pipes, rubber tubing, not paraffined, is connected. To the distal end of the rubber tubing, curved hollow metal tips an inch long are inserted. These hollow tips fit into the cannulæ which are introduced into vein of donor and recipient. The lower plate is three inches long and five eighths of an inch wide and slides in a grooved bevelled part of the upper plate. From the centre of the lower plate, a hollow stem five eighths of an inch long leads downward. This stem connects with the tip of any Ricord syringe: ten, twenty, or fifty c.c. Two small metal plates are fastened across the bevelled part of the upper plate by means of fine screws. These prevent the lower plate from sliding out. When the stem is stopped by one of the cross plates, the interior forms a continuous canal with the arm above, at one or the other end of the shuttle. When one arm is open and continuous, the other arm is shut either at the entrance or exit of the instrument. When the stem is at the midpoint of the upper plate, both arms are closed.

TECHNIC OF THE OPERATION.

Sterilize two sets of cannulæ and the valve or shuttle by boiling the same as other instruments.

Submerge twenty c.c. Ricord syringe in alcohol for thirty minutes.

Apply tourniquets to patient's and to donor's arms. Insert into the recipient's median basilic or cephalic vein a cannula in direction towards axilla and connect it with a tip of the shuttle. Remove the tourniquet.

Insert another cannula into the vein of the donor in direction towards wrist and connect it with the other end of the shuttle. Keep the tourniquet on the donor during the entire time of the transfusion. His pulse must be faintly perceptible. Before connecting the tips expel the air from the arms of the instrument by forcing saline through them.

Fill the syringe with blood and slide the lower plate of the shuttle, with the tip of the syringe, to the canal leading to the patient and empty the syringe. Move the lower plate back to the donor and refill the syringe. By sliding back and forth, filling and emptying the syringe, the desired quantity of whole blood is transferred with ease and accuracy. No coagulation takes place owing to the rapid filling and emptying of the syringe, usually three to five times in a minute. The blood remains pure and is not modified.

I have used both the valve and shuttle for blood transfusions 231 times, for a number of medical colleges, in Manhattan and Brooklyn Hospitals and in patients' homes. In several cases, I have

transferred 500 c.c., 600 c.c. and 800 c.c. with one syringe, filling and emptying the barrel of the syringe twenty-five to forty times without using salt solution to rinse out the syringe. In cases where I transferred 1000 c.c. to 1200 c.c. at one time, I found it easier to draw the piston of the syringe when I disconnected and washed it a few times in saline or used a second syringe. In addition to the use of the valve or shuttle for blood transfusion either can be used in place of the Potain syringe in paracentesis, and in similar conditions.

REFERENCES.

MILLER, GEORGE I.: *Medical Record*, September 11, 1915.
700 ST. MARKS AVENUE.

THE PROBLEMS OF EUGENICS IN CONNECTION WITH THE MANIC DEPRESSIVE TEMPERAMENT.*

By B. ONUF, M. D.,

Rutherford, N. J.,

Attending Neurologist, Barnert Hospital, Paterson, N. J.

(Concluded from page 412)

Strohmeyer goes on to say that they may never manifest anything beyond their manic depressive predisposition or taint, which may incline toward the manic or toward the depressive side or show an irritable quality, or alternate in excitation and depression.

We now return to the first question, namely, may it be beneficial to mankind to propagate the manic depressive temperament? We are justified in answering it affirmatively in view of what was said with regard to the vocations particularly adapted to this temperament and to certain advantages inherent in mild hypomanic states. But the question following the first one, namely, can this propagation be accomplished safely without bringing actual psychosis in the trail, we must answer with great deliberation and caution. To state offhand that it can be safely done, with our present knowledge of hereditary data in this field, would certainly be a risky statement. Nevertheless if study of manic depressive heredity along the lines followed by Strohmeyer, with special attention to the manic depressive temperament in its various types and degrees, be continued, we may gain definite data and guides which ultimately may enable us to answer the question in the affirmative, in spite of the fact that Strohmeyer himself can only see the bad side of the constitutional inferiority of the manic depressive, in contradistinction to Stransky, whose remarks on the redeeming features of mildly hypomanic states are much in conformity with the views promulgated by the writer.

It would not be proper to close without allusion to the extremely valuable investigations of Charles Davenport (3) on the inheritance of temperament which were not brought up here for discussion before as they did not come to my full attention until through Doctor Davenport's kindness I secured a copy of his publication. These investigations of Doctor Davenport are more germane to the subject

under discussion than any other publication that has come to my notice. They acquire particular value in that direction because:

1. Although introducing the new terms of hyperkinetic and hypokinetic temperament, they revive and illuminate from a new angle the old nomenclature of temperaments, subdividing the hyperkinetic temperament into a lesser grade, called nervous or sanguine, and a more developed grade, called choleric, whereas the hypokinetic temperament is subdivided into a lesser grade, called phlegmatic, and a more pronounced grade, called melancholic.

2. Doctor Davenport created experimental conditions of great eugenic value by making subdivisions and investigating the issue of matings between the two grades of hyperkinetic temperament among themselves, and of matings between one and the other grade of the hyperkinetic temperament on one side and the normal or the hypokinetic temperament in its mild and then again in its more pronounced degree on the other side; by investigating, likewise, the issue of matings between the two grades of the hypokinetic temperament among themselves and of matings between the one and the other of these two grades on one side and the normal temperament on the other.

3. Davenport's investigations bring the temperament above mentioned in relation with the manic depressive psychoses, recognizing like other authors, a special makeup for those who become affected with psychoses of the manic depressive order, the hyperkinetic temperament corresponding in the main to the manic temperament, the hypokinetic to the depressive temperament.

4. They bring the subject on a practical eugenic

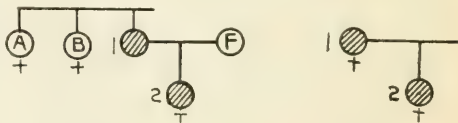


FIG. 7.

FIG. 7.—(Family Vogel-Macusel) 1. At age of thirty-five mania, ten eleven months' duration. Since recovery occasional mild recurrences. 2. Born six months before onset of mother's psychosis. At age of puberty transient melancholia, at twenty mania. At age of twenty-one during pregnancy, beginning of this cycle: Depression (during pregnancy); maniacal excitement, two months' duration, beginning five days after delivery; apathy, four to five months' duration; remission, three to four months' duration; mania, four months' duration; depression, seven months' duration. Recovery, allegedly permanent. A and B, Sisters of 1, allegedly, similarly diseased as 1, but not observed by Sioli and no record taken of. F, Father of 2, had melancholia, but evidently not personally observed by Sioli, and no record taken of.

FIG. 8.—(Family Liebezzeit-Freund) 1. At age of twenty-nine melancholia (seven months), followed by mania (nine months). Permanent recovery. 2. Born three months after recovery of mother's psychosis. At age of one mania (four and a half months), followed by state of fatigue with clouding of consciousness (five months).

basis by applying Mendelian principles and methods to its study. Thus the application of the concepts dominant and recessive leads Davenport to interesting conclusions which may reconcile the contradic-

*Read before the Eugenics Research Association, June 20, 1919.

very results of Rosanoff and Orr (17) on one hand and of Ruedin (18) on the other, in the matter of inheritance of manic depressive psychoses and of dementia præcox.

Davenport (3) concludes that hyperkinetic is dominant to normal, that normal is recessive to hyperkinetic, and that hypokinetic is therefore recessive to normal as well as to hyperkinetic, "So," he says, "we may expect hypokinesis to appear in the children when it is not shown by either parent. Under such circumstances it should affect only a small fraction of the children; but, on the other hand, evidence of the hypokinetic tendency should appear in the close relatives on both sides of the house, as, indeed it usually does. It appears probable that the reason for this contrast between

data presented by Rosanoff and Orr (1911) speak for the recessive nature of the psychoses that they deal with (largely dementia præcox and depressions), yet some families show the dominant inheritances of hyperkinesis."

It is not within the province of this paper to enter more fully upon the deductions and conclusions of Davenport's fascinating study, in which he has handled difficult problems in an ingenious and able way. Suffice it to say that his investigations bring us a considerable step nearer to the affirmative solution of the question whether propagation of the manic depressive temperament may be accomplished to the benefit of mankind, and safely, without bringing actual psychoses in its trail.

TABLE I.
FAMILIES WITH MANIC DEPRESSIVE INSANITY OF THE ASCENDANT, A SIMILAR HEREDITARY TRANSMISSION.

Number and family name.	Family relationship.	Sex.	Heredit.	Age at the beginning of the disease.	Phases and number of the attacks.	First descendant born before or after the onset of the disease of the ascendant.	Did the disease of the descendants run a similar or even more serious course than the forms in the ascendancy?
No. 1 Family.	Ascendant. 1. Descendant. 2. Descendant.	Female. Female. Male.	Mother insane.	Eighteen. Twenty-two.	Numerous depressive; furthermore, manic and mixed states. Numerous manic attacks; one state of depression.	After	More grave.
No. 2 Family.	Ascendant. Descendant.	Female. Male.	None.	Nineteen. Twenty-nine.	Numerous manic attacks. Numerous manic attacks.	After.	More grave.
No. 3 Family.	Ascendant. Descendant.	Female. Male.	Mother's brother insane.	Nineteen. Twenty-five.	Predominantly states of depression; additionally hypomanic states. Predominantly manic states; additionally of depression.	After	More grave.
No. 4 Family. E.	Ascendant. Descendant.	Female. Male.	Maternal grandmother insane.	Thirty-four. Twenty-two.	Two states of depression. One state of depression.	After	Questionable.
No. 5 Family. C.	Ascendant. Descendant.	Female. Male.	Mother insane.	Before the twenty-sixth year. Thirty-six.	Numerous states of depression. One state of depression, followed by a hypomania.	After	Questionable.
No. 6 Family. H.	Ascendant. Descendant.	Male. Female.	None.	Thirty-eight. Nineteen.	Three manias. One state of depression, with stupor.	After	Questionable.
No. 7 Family. F.	Ascendant. Descendant.	Male. Female.	Two first cousins insane.	Twenty-eight. Forty-two. (No. 6 dissimilar hereditary transmission.)	Numerous depressive and mixed states. One mixed state.	After	Lighter.
No. 8 Family. Nae.	Ascendant. Descendant.	Female. Male.	Maternal grandfather insane.	Seventeen. Ten; after a traumatism.	Numerous manic and depressive states. Epilepsy.	After	
No. 9 Family. Ro.	Ascendant. Descendant.	Female. Male.	Mother a criminal.	Twenty-two. Congenital.	Periodic insanity. Moral idiocy.	After	

From Vorster's paper, Ueber die Vererbung endogener, Psychosen, etc., *Monatschrift für Psychiatrie, and Neurologie*, Bd. 9, 1905, pp. 310-311.

Ruedin's (18) findings and those of Rosanoff and Orr (17) lies in the fact that the hypokinetic state is inherited differently from the hyperkinetic. For Ruedin finds that in some manic depressive families inheritance of the psychoses is of the dominant sort, as we find is the case with mania, while Rosanoff and Orr find the manic depressive tendency to be recessive, as we find is the case with depression. But while, on the whole, the

Let us now see what can be said with regard to the last question, namely: "Can the manic depressive temperament be transmitted with qualities of a superior order, fitting the individual for accomplishments of a high order?" This question, simple as it seems, proved to be much more difficult to answer, inasmuch as among all the literature which came to the writer's notice so far, regarding the manic depressive temperament, only one con-

tribution dealt directly with that point. I am referring to the short remark by Reiss, in which, speaking of the heredity of the manic depressive psychoses, he states: "Mostly, with the manner of reacting affectively, the remaining personal qualities were transmitted in like manner, i. e., from the same side, be it father or mother."

Doctor Davenport (3) likewise gives this subject consideration, although not in such a direct manner. He gives the histories, taken from literature, of a number of identical twins who at some time or other suffered from psychoses. The poignant features in these psychoses were, first, the remarkable similarity of the disease picture, not only grossly but also in details of their symptomatology, for each pair, as well as the coincidence in the time of their occurrence, which, in some instances, was extremely striking. And not only was there this similarity in the nature, form, time, and often also duration of the psychosis for each pair, but likewise a similarity, sometimes very pronounced, of their mentality, a similarity which also covered numerous detailed traits. While the authors reporting these cases do not go into a special description of temperament, at any rate not with the details desirable for our subject, yet in one or two

chosis. Nevertheless, as already mentioned, in one or two instances a comparison of the mental traits of a twin pair revealed a striking similarity of mental makeup in most details.

One such comparative description is here literally rendered:

A. D.
Very childish in manner, is easily led and induced to do wrong; is very cunning, mischievous, and takes great delight in committing petty acts of theft. His memory and judgment are very defective, and he cannot form an opinion on any subject with which he is not familiar, nor has he any idea of his age; but he converses a little and knows the people with whom he associates daily. When not allowed to do as he wishes he frequently becomes very passionate and can scarcely control himself; usually he is quiet and fairly well behaved.

W. P.
Not so childish as his brother, but often sulks, is very depraved and vicious, and more cunning than the other. He frequently commits petty acts of theft. His memory is weak and his judgment defective, and he cannot give an opinion on a subject with which he is not familiar, nor does he know his age, but he can converse in a simple way and knows the people with whom he associates. He is irritable and very passionate, and occasionally, when thwarted, gives way to fits of ungovernable rage, amounting nearly to short maniacal attacks, but he is usually fairly well behaved.

The following conclusion at which Doctor

TABLE II.

FAMILIES WITH DEMENTIA PRÆCOX IN THE ASCENDANCY AND IN THE DESCENDANCY.

Number and family name.	Family relationship.	Sex.	Heredity.	Age of the onset of the disease.	Form of disease.	First descendant born before the onset of the disease of the descendant.	Did the disease of the descendant run a similar course to that of the ancestor?
No. 1 Family. Er.	1. Ascendant. 2. Descendant.	Female. Male. Male.	Mother insane.	Twenty-nine. Thirty-five. Thirty-one.	Dementia præcox. Dementia præcox. Dementia præcox.	Before. Before.	Same. Same.
No. 2 Family. So.	1. Ascendant. 2. Descendant.	Female. Female.	First cousin insane.	Twenty-four. Sixteen.	Dementia præcox. Same.	After. After.	More grave. Lighter.
No. 3 Family. Ed.	Ascendant. Descendant.	Female. Male.	First cousin insane.	Forty-two. Twenty.	Catatonia. Same.	After.	More grave.
No. 4 Family. Su.	Ascendant. Descendant.	Female. Female.	None.	Twenty-three. Nineteen.	Dementia præcox. Same.	After.	Not definite.*
No. 5 Family. Hr.	Ascendant. Descendant.	Female. Female.	None.	Twenty-seven. Twenty-six.	Dementia præcox. Same.	Before.	More grave.
No. 6 Family. Mue.	Ascendant. Descendant.	Female. Female.	Father a drunkard.	Twenty-four. Thirteen.	Hebephrenia. Same.	Before.	Not definite.
No. 7 Family. Mu.	Ascendant. Descendant.	Male. Male.	None.	Before the thirty-eight year. Before the thirty-fourth year.	Dementia præcox. Same.	After.	Same.
No. 8 Family. Er.	Ascendant. Descendant.	Female. Female.	None.	Thirty-nine. Twenty-three.	Dementia præcox. Same.	Before.	Not definite.

*From Vorster's paper, Ueber die Vererbung endogener, Psychosen, etc., *Monatsschrift für Psychiatrie und Neurologie*, Bd. 9, 1901, p. 389.

*Meaning probably "not definitely ascertained" or not ascertained (*unbestimmt*).

instances the similarity of emotional reaction was indicated; and it should be emphasized that, to judge from the histories quoted, the psychoses described were evidently all of the manic depressive order.

It must be admitted that in most cases the history is concerned mostly with a description of the psychosis, not entering upon an actual characterization of the patient's personality, apart from the psy-

Davenport arrives on the basis of the material presented by him is significant.

"The foregoing histories of twins, which are quite in line with, and doubtless largely inspired by, Galton's (1883) essay on the *History of Twins*, bring out in clear light the almost complete dependence of temperament upon internal, hereditary factors. Since the same emotional peculiarities develop in twins who are separated from each other

by miles or even oceans, i. e., who have undergone very dissimilar experiences, we are forced to admit that, of the factors that determine the mood, the internal are the most significant."

The objection that might be raised against using the similarity of mental makeup of identical twins as evidence of the hereditary transmission of intellectual, together with emotional and also physical qualities, is that intrauterine factors, in addition to hereditary ones, may have to be considered in explaining the origin of this similarity. But this does not appear to me as a strong objection, since in the case of nonidentical twins the intrauterine factors fail to bring about a similarity of physical and mental makeup, probably because in this latter case we have to deal with the fertilization of two separate ova, while in the first case probably only one ovum becomes fertilized, and splits into two ova secondarily.

It would have seemed most appropriate to investigate the family histories of the musical composers who presented the manic depressive temperament for the presence of a manic depressive permanent, in addition to high musical qualifications of other orders, in the ascendants, or descendants or collaterals of such composers. But unfortunately the data obtainable from the biographies which formed the main basis of the study were mostly too deficient, too vague, to be made use of.

An extensive genealogy of one musical family exists, namely, that of the Bachs, of which Sebastian Bach was the most illustrious representative. In this family the musical faculty was transmitted through eight generations, as seen from the genealogical table and pedigree, with explanatory biographical data, given by Francis Galton (7), but these explanatory biographical data are too meager to give us any information on the general mental makeups and especially of the temperamental makeup of each prominent musician and composer of the family. Thus, while some features of Bach's mental makeup, as far as biographical descriptions go, decidedly suggest a manic depressive temperament within physiological boundaries, the data obtainable regarding other musical members of the family were too meager to show whether such temperament was hereditarily transmitted to him.

In one instance of the family we have somewhat more satisfactory data, but they again concern twins, namely, Johann Ambrosius Bach and Johann Christoph Bach, of which the following description is given in the biography of Sebastian Bach (5), appearing in *Famous Musical Composers*.

"Johann Ambrosius Bach and Johann Christoph Bach were twin brothers, resembling each other both in appearance and character, to a degree which excited universal astonishment. Their thoughts and mode of expression were identical; they played the same instrument and in the same style. The sympathy between them is said to have been so close that they shared each other's illnesses, and the elder survived the death of the younger but a short time." It is added in the biographical data of the Bach family given by Galton that their wives could

not distinguish them except by their dresses. This description surely gives us no idea of the nature of the temperament of the said Bach twins, but it indicates by its general tone that whatever the temperament of one was, must have resembled very closely that of the other, and that it was transmitted, together with other mental characteristics, including musical abilities of a high order, since it is said of Johann Ambrosius Bach that he was a distinguished organist. That the evidence submitted is far from complete, must be freely admitted; nevertheless it points in a general way to the conclusion that temperament in general, and manic depressive temperament in particular, may be transmitted with other qualifications, including qualities of a superior order, physical as well as mental, fitting the individual for accomplishments of a high order.

To learn more fully the mode and precision with which such transmissions may be brought about, will have to be the subject of many other investigations, with detailed application of the laws of heredity established so far, and of the new ones that may be added. The work embodied in this study or paper is more in the form of a guide in certain directions and is presented as such, with full knowledge of its defects.

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LONDON LETTER.

(From Our Own Correspondent.)

Reforms in the Teaching of Midwifery—Last Year's Vital Statistics of England and Wales—The Bible as Doctor's Textbook.

LONDON, March 6, 1920.

The British medical profession, or those at the head of it, are endeavoring to set their house in order in every respect. Nurses are registered, dentists will soon be registered, and the practice of midwifery is to be placed on a proper basis. Sir George Newman, chief adviser to the Ministry of Health, in his *Outline of the Practice of Preventive Medicine*, published recently, is particularly emphatic on the question of adequate and skilful maternity care, of which, of course, midwifery is a most important phase. He is of the opinion that the Midwives Act of 1902, amended in 1918, was designed "to secure the better training of midwives and to regulate their practice." But much remains to be done to insure that every woman in childbirth shall receive proper and adequate attention, antenatal, natal and postnatal. In this letter only the natal aspect of the matter will be considered; in subsequent letters the antenatal and postnatal aspects of the case will be discussed. It is obvious then, that the first step in the systematic and national organization of the supervision of maternity is the adequate training of midwives and doctors for the work, thus bringing skill and experience to the bedside of every woman in labor.

An excellent exposition of the defects in the methods of teaching midwifery in Great Britain is given in the *Bulletin of the Fellowship of Medicine and Post-Graduate Medical Association*, February 14, 1920. The concise and apt summary of the position of affairs as regards the teaching of midwifery in the country is written by Dr. Comyns Berkeley, obstetrical and gynecological surgeon to the Middlesex Hospital who says, in part: The present position of midwifery in the United Kingdom, both from the public and the professional points of view, is a disgrace. No better evidence can be afforded of this

statement than the fact that the death rate from childbirth for Great Britain and Ireland for the years 1891 to 1914 fell only from 5.5 to 5.05 in 1,000. Moreover, if the figures for England and Scotland during 1911 to 1914 are taken, it is found that the death rate actually rose. Unless one knew that the source of these figures, the registrar general's reports, were above suspicion, it is inconceivable that any medical man would regard them as at all accurate, for childbirth is a surgical procedure and during the period under discussion the greatest advances have been made in surgery and in the surgical training of medical students. In the branch of midwifery only, the results, far from improving, have in certain parts of the kingdom actually become worse, while the training of students in midwifery has advanced, with rare exceptions, little or not at all. The causes that have prevented any improvement in midwifery are threefold: 1. The lack of proper provision for the lying-in woman; 2, the superficial nature of the training of the student in midwifery; 3, the failure of the public to recognize the importance of midwifery. As to the lack of provision, take London alone, in which 90,000 children are born every year. The total number of beds for lying-in women is only 400. Most of the 77,000 women for whom no provision has been made are confined in circumstances and amid surroundings which should make any medical man shudder who has the least idea of what is conveyed by the terms sepsis, asepsis and antiseptis, and what obtains in London obtains elsewhere in the United Kingdom. With regard to the matter from the professional point of view the management of labor is a surgical procedure, and just as other surgical procedures are only efficiently taught in up to date hospitals by the student serving an apprenticeship of at least one year as a clinical dresser, during which period he is instructed by surgical experts, so midwifery can only properly be taught. The great majority of medical students have to pick up their knowledge of practical midwifery themselves. The greater number of medical men practising today learned their practical midwifery from twenty cases in a "district" amid surroundings which they remember and talk about for the rest of their lives, without experts to instruct them, and under conditions in which it is impossible to attain asepsis and in many cases even ordinary cleanliness.

As a matter of fact for midwifery the student is only required to do three months' dressing altogether, and it is not a *sine qua non* that that part of his training shall be in the patients' department. The regulations as to midwifery are delightfully vague. All that the student has to do, somewhere or other, is three months' dressing. He need have no practical bedside treatment in midwifery, he need never have seen a patient delivered by anyone, far less an expert. The regulations also with regard to the examinations for midwifery are inadequate and unsatisfactory. Further, a student is not bound to attend the antenatal or the children's welfare department, both of the first importance. Doctor Berkeley, therefore, in view of these circumstances, deems it no surprising matter that medical practitioners, knowing all this, fail to look

upon pregnancy and its results in the proper light but are willing to put up with anything.

As regards the manner in which the public consider the question, in every walk of life, the importance of special precautions being taken if an operation has to be performed is recognized and insisted upon. The poor are taken to hospitals, others who can afford it to nursing homes, or, if the surroundings are suitable, are attended in their own homes, in which case they are provided with highly trained nurses and every accessory in the way of sterilized dressings, and the room is specially prepared. What obtains in midwifery even in good homes is well known. It is also to be borne in mind that even apart from the fact that normal labor is a surgical procedure, every day the most serious operations are being performed upon women in labor in their own homes amid most unsatisfactory surroundings, and by men who had to pick up most of their knowledge of such matters after they went into practice. The public is largely to blame for this state of affairs, for while it is willing to pay, if it can, adequate fees for medical and surgical attendance, the fees it pays for midwifery are absolutely and entirely inadequate.

Doctor Berkeley thus summarizes the principal means by which this deplorable situation may be remedied. Proper provision should be made for lying-in women in the nature of adequately equipped centres scattered throughout the country; if necessary, in the large towns, two or three centres. Medical practitioners should be able to send their patients to these centres so that they can attend them under proper conditions. In every town in which students are trained for the medical profession large hospitals containing beds for midwifery and diseases of women should be established. These hospitals should be staffed by experts. Students should be compelled to attend such hospitals and the outpatient department associated with such hospitals for a period of at least four months, half of which must have been spent in the hospitals as clinical obstetrical and gynecological dressers. No student should be appointed a clinical dresser in the obstetrical and gynecological department until he has filled the posts of clinical clerk and dresser in the medical and surgical departments. No student should be allowed to present himself for the final examination in midwifery and diseases of women until the termination of his educational curriculum.

Sir George Newman urges that maternity homes, hospitals, and lying-in institutions should be established in all parts of the country, urban and rural, for normal cases which cannot properly or safely be dealt with in crowded tenements or inconvenient cottages, and for abnormal cases which need skilled nursing and medical treatment. In his opinion a complete maternity scheme is as follows: 1. An adequate medical, midwifery, and nursing service; 2, the satisfactory and sufficient nutrition of the mother; 3, maternity centres and antenatal supervision; 4, maternity home and hospital accommodation; 5, domestic aid before, at the time of, and after childbirth; 6, maternity benefit and other financial aid in certain cases and, 7, notification of births and stillbirths.

It goes without saying that vital statistics are of vital importance, and are interwoven with the question of the proper conduct of midwifery. How midwifery is managed obviously exerts a decided influence on the mortality later. A study of the registrar general's figures regarding births and deaths in England and Wales during the past year does not give rise to any very optimistic feeling. The birth rate causes melancholy foreboding. The rate has been falling for years, but the war has accelerated its downward course to an unthought of degree. Influenza also played its deadly part in rendering the report of the registrar general depressing reading. It is believed that in the first quarter of last year influenza killed so many people that the death rate was raised far above the birth rate. While birth rate statistics are distressing, infant mortality gives us hope, for infant mortality in this country for the last year was the lowest ever recorded, being an immense improvement on that of 1918. Infant mortality during last year was remarkable. In the first quarter the figure was 1.0 in 1,000. In the third quarter, which used to be termed the "deadly third quarter" when stigmatizing infant mortality at the beginning of the century, the figure stood at seventy, the lowest ever recorded for any quarter of any year. And this occurred in spite of the fact that the weather was hot and dry and of the kind that had hitherto been productive of an immense mortality from summer diarrhea. The really important consideration as to vital statistics is their dynamic, not their static aspect. It must be recognized that the true significance of fertility statistics cannot be comprehended until their movement is known.

One reform of great importance will result from the establishment of a Ministry of Health. It will undoubtedly mean the end of the division between statistics of births and deaths and those of disease. The registrar general's department becomes an effective part of the whole. The ministry will probably develop the research side of its vital statistics branch. Why it did not follow the proposal of the registrar general that a permanent general registrar should be established, it is hard to say. It seems that such a register is really what is required.

Sir George Newman in his *Outline of the Practice of Preventive Medicine* sums up the lessons to be learned from a study of the registrar general's report and from other sources as follows: The most impressive points in a survey of conditions are the falling birth and death rates, the improving of environment, the high proportion of deaths taking place under fifty years of age, and the vast burden at all ages of preventable invalidity. Thus the problems of preventive medicine are, first, to rear and maintain a healthy race of people, and secondly, to continue its attack upon infection and to initiate an attack upon all forms of preventable disease and invalidity. For invalidity, physical impairment or bodily disablement, involving loss of capacity and even unemployment may be a greater evil and a heavier burden to a nation than a rise in the death rate. Our attention, therefore, must be directed not only against the death rate but against preventable morbidity and invalidity of all kinds.

Editorial Notes and Comments

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INFLUENZA AND BAD TEETH.

Prevention of influenza is the most important feature, although, with our limited knowledge, or, it might be more aptly said, our lack of knowledge, regarding the causation and mode of dissemination of the disease, complete prevention seems impossible. However, it may be asserted with confidence that infection is not air borne, at least not in the ordinary sense. Infection is contracted at very short range from the infectious person who may not appear sick. Therefore, the first principle of prevention, which is isolation of the infectious person, is impracticable or nearly so. The infection is too widespread and the subject is infectious before he is palpably ill. Ordinary measures or even extraordinary measures of prevention, such as the closing of places of public resort, seem to be set at naught by this insidious and almost mysterious malady.

In any event, the infection can be diluted and perhaps robbed of some of its worst terrors by certain means. For instance, it is obvious that overcrowding and defective ventilation are potent agencies for spreading the infection, and while the housing difficulty stands in the way of preventing overcrowding as effectively as it ought to be prevented, yet something can be done to counterbalance this unfortunate state of affairs by ventilating houses and public buildings. Moreover, we should breathe through our noses and blow our noses frequently when we have been straphanging in cars, subways, or elevated trains. Also our powers of resistance must be maintained at the highest standard attain-

able. All this advice, however, has been given almost ad nauseam, and it is only because recapitulation has the tendency of driving a point home that these maxims are tendered once again.

In spite of the fact that a great deal has been written on the subject, its onset, symptoms, treatment, and so on, and warnings and advice have been plentiful, it is curious that there has not been any special reference made to the teeth and their bearing on influenza, its prevention and severity. Pyorrhea alveolaris is notoriously prevalent. Some medical men have gone so far as to assert that fifty per cent. of the population are thus afflicted. This is probably an exaggerated estimate. At the same time there is no doubt that it is extremely prevalent, more prevalent than is generally imagined and even more prevalent than it is thought to be by members of the medical and dental professions. May it not be likely that many of the cases of septic pneumonia, which have been so deadly and frequent, were due to or intensified by faulty or diseased gums. It is certain that a septic mouth is an immense handicap when a person is attacked by influenza, and it seems rational therefore to advise, as one of the most important methods of prevention, to have the mouth and teeth in as aseptic a condition as possible.

THE HISTORY OF THE PATHOGENESIS OF MALARIA.

As far back as one can go in the history of paludism it will be found that the parasitic nature of the affection was suspected, and a hundred years before the Christian era both Varro and Columella, as well as Vitruvius, already incriminated various inferior vegetable and animal species in their hypotheses as to its cause. In reality, the conditions which seemed to favor the development of malaria were the same as those necessary for the life of these species. Lancisi (1654-1720) and Rasori (1761-1837) stated that malaria was produced by animalculæ which engendered by the putrefaction arising in marshes, became disengaged and mingled in the atmosphere of malarial regions and entered the circulation by the respiratory tract. In Italy, this theory was regarded with such absolute faith that among the people these animalculæ were called *serafici*.

Virey attributed the infusoria to unhealthy marshes, while Boudin maintained that certain vegetable species belonging to swampy regions, es-

pecially the effluvia arising from marshes, disengaged toxic volatile principles in the atmosphere which were capable of giving malaria to those who inhaled them. Bouchardat said the etiological agent of the infection was a species of poison secreted by certain animalcula which abound in marshy lands, but all these opinions were mere hypotheses and it was proved later that the accidents of paludism were not due to the factors incriminated by the older writers. At a later date, Mitchell, Mühry and Hammond maintained that the spores which pullulate in the air over swampy districts were the cause of malaria, but it was not until 1864 that Lemaire, in a work entitled *Recherches sur les organismes microscopiques renfermés dans l'air des marais*, declared that malarial infection was to be attributed to microphytes and microzoons contained in this same air, but he did not designate any particular species. At the same epoch Massy at Ceylon, Cunningham at Calcutta and Corre at Senegal adopted the views of Lemaire *in toto*, although none of them specified any particular species.

From 1866 to 1880, the researches undertaken tended to more precision and on several occasions the agent of paludism was stated to have been discovered, bacteria of the atmosphere, earth and water being successively incriminated. In 1866, Salisbury announced that he had constantly met with the presence of minute vegetable cells of the palmella species in both the urine and sweat of fever patients in Ohio and Mississippi and believed he had discovered the agent of paludism. Then a year later (1867), Binz pointed to the existence of bacteria in the blood of malaria patients and proclaimed to the world in good German fashion that he had produced paludism in animals by intravenous injections of putrid vegetable matter. In 1869, Balestra described an alga found in the water of the Pontine marshes as the cause of malaria, while in 1876, Lanzi and Terrigi injected water obtained from the swamps of Ostia into the circulation and came to the conclusion that a brownish bacterium caused paludism and gave rise to the pigmentation of the viscera present in this malady. Then in 1878, Ecklund published an account of his *Limnophysalis hyalina* which he had frequently encountered in febrigenous swamps, while in 1879, Klebs after much experimental work thought he had found the specific organism to which he gave the name of *Bacillus malarie*. Other observers unfortunately said that they had cultivated this bacillus which gave rise to accidents similar to those of malaria, but the famous *Bacillus malarie* could not be identified from numerous other bacteria found in the earth.

Nevertheless the work undertaken in Italy seemed at first to confirm Klebs's view. Cuboni stated that he had cultivated this organism, while Marchiava and Ferraresi pretended to have found it in the blood. In 1880, Ceci, after working with Klebs, stated that he had produced malarial symptoms in animals by intravenous injections of cultures made from mud taken from swamps.

Such was the status of the question when, in 1880, Laveran announced that he had found in the blood of malaria cases a hematozoon whose description did not correspond with any of the pathogenic agents thus far published, but it was not until 1887 that Metchnikoff was able to confirm Laveran's discovery and regarded it as a coccidia. Laveran's discovery occurred just at the time when Klebs and Tommasi Crudeli were making a great display of the *Bacillus malarie*, so that it was received with considerable scepticism, but finally the French investigator's work was credited by the scientific world. Thanks to the conceptions of Laveran and Manson, as well as to the remarkable experiments of Ross, Bignami, Bastiannelli, Grassi and Koch, the reality of the plasmodium of malaria was placed upon a solid basis, and then came the ever memorable work of American physicians on the rôle of the mosquito in the transmission of the disease.

IMPRESSING THE PUBLIC.

The rigid examination, the great precautions taken by authorities before a man travels in air-land, have been derided by many, but physicians are not wholly concerned with the individual before them: he represents the foreflyer of an enormous crowd into space, a region where (we presume) there are no winged doctors or nurses or druggists firstaidly alert.

To give the public a salutary idea of all the means taken to guarantee them safe pilotage, an interesting exhibition has been held in Paris, with special demonstrations, among them, the identification of the pilot, a veritable international bertillonage; the examination of the circulation, as the heart has to adapt itself to varying pressure; then the respiration must be tested with the aid of the radiograph, the spirometer, and the manometer of Marey. The room given to examination of the nervous system was for all the studies relative to equilibrium; there was the oscillating Broca chair, the demonstration of vertigo by the voltaic current, by the Barány tests, and the exposing of defective vision and audition by the Foy and Cantonnet methods not only in clear noonday but in the night. The last room showed a résumé of all the experi-

ences with the pneumatic clock of St. Cyr by Gar-
siaux on the reactions of the organism in ascen-
sions, and the breathing apparatus used by pilots
during the war. The number of visitors was
enormous, and they were apparently impressed.
There should be more exhibits in the interests of
public gratitude for safety and comfort, for they
might lead to a lessening of that careless, ungrate-
ful acceptance of results brought about by our
touching the button at the door of Science, and car-
ing to know nothing of her methods save when
there is no answer and the troublefinder cannot be
had. The trouble is often that of a disordered
brain too lazy, too dull to be interested in all that
Science is so generously giving.

THE TREATMENT OF SERIOUS FORMS OF GRANULAR OPHTHALMIA BY BROSSAGE.

At the clinics of Bordeaux Marque has collect-
ed ninety-five cases of granular ophthalmia
treated by brossage and of these eighteen re-
curred. Complete recovery was obtained, how-
ever, in these eighteen recurrences by repeating
the brossage and the patients were followed for
seven years. Five other patients were found
much improved at the end of a year, while sev-
enty-two were cured at once by the treatment.
Arranged on a percentage basis these statistics
show recurrences, 18.95 per cent., ameliorations,
5.20 per cent., and complete cures, 75.78 per cent.
If we include the three cases of recurrence, in
which a cure was effected by a second brossage,
we find that cures amounted to 76.52 per cent.

From these figures and others quite compar-
able from other oculists, it would appear that
brossage gives results not obtained by any other
therapeutic measure in so short a time. In all the
cases investigated by Marque medical treatment
—applications of silver nitrate, copper sulphate
—had been a failure, even when continued for a
long time, while brossage resulted in cure in from
one to two months on an average, and these
cures were absolute because the patients were
seen from two to eight years after treatment.

The advantages of brossage are clearly evident;
it acts upon the entire conjunctival surface; it
has a happy action on pannus, which is quite as
efficacious as other treatments, and it is not dan-
gerous. Finally, brossage combats the bacterial ele-
ments, since it carries the antiseptic into the very
focus of the infection, namely, the deep layers of
the conjunctiva.

As to the objections offered to this procedure,
it is undesirable that when a granular ophthalmia

is left alone, complications arise which are at
least quite as serious as those which may be
caused by brossage. Only one instance of sym-
blepharon was met with by Marque, and it is
probable that had the proper postoperative pre-
cautions been taken this complication would have
been avoided. He also observed one case of mild
entropion. As to corneal specks, several in-
stances were seen, but these occurred in very
serious forms of corneal lesions, and if brossage
had been done in time they could have been pre-
vented.

It is clear that brossage is not to be resorted to
in every case of granular ophthalmia. The vari-
ety, type, intensity, and site of the granulations
oblige the practitioner to vary his treatment. In
all cases of acute granulations with redness, free
secretion of pus, and edema of the eyelids, sul-
phate of copper or silver nitrate are to be pre-
ferred, but in subacute and chronic cases bross-
age and scarifications have rendered unques-
tionable service. Therefore, when the granulations
persist in spite of other forms of treatment, when
they show a tendency to increase, or when the
cornea begins to become vascularized, hesitation
should no longer be possible and treatment by
brossage should be instituted.

THE MALADY OF DOUBT.

There are plenty of people who think that to
doubt everything shows common sense and shrewd-
ness, whereas it may indicate only a narrow-
mindedness. But there is an uneasy doubting of
one's self which, if not resisted, may become al-
most a disease. Often, though perfectly sure that
we did lock the door, or deliver an injunction, or
put a memorandum in our pocket, we nourish the
doubt all day, or turn out our pocket on our way
to work. One symptom of this malady is the hur-
ried, worried search for a missing article in every
place save where it usually is and the astonishment
at finding it there.

Some doctors in France have had patients re-
cently who doubted whether their soldier relatives
were really dead, though they themselves had vi-
sited the graves or been to the funeral. One man,
who had been at his son's funeral, was quite
sure, three days after, that the boy was not dead,
and he became so restless that he insisted on ex-
humation and seeing the corpse. This postwar
condition of the naturally indeterminate may arise
from the doubts confirmed, relieved, or only par-
tially confirmed which uncertain news has engen-
dered. Hoping against hope is merged into one
idea, that seeing is believing.

There has been much criticism of those who have
transplanted the remains of their soldier relatives
from Europe to America. Where they nobly fell,
there let them peacefully rest, but some thousands
have been received here, with a government order
not to open the coffin, yet, with natural desire to

see once more, or a lingering hope that the man yet lives in a European hospital or prison, the order has been disobeyed. Six residents in Michigan have found the body of a stranger, so the *folie du doute* may soon be more heard of in our own country.

APPLIED ALIMENTARY HYGIENE.

The municipal council of Paris is considering the establishment at the University of Paris of a chair of applied alimentary hygiene, with a service of alimentary consultations. A careful study made before the war by the *Société scientifique d'hygiène alimentaire* showed that in France there was a waste of from fifteen to twenty per cent., at least, of the thirty millions representing the value of the food consumed, and that the economy which could have been realized on that score would have paid the entire budget of the country. And this in the land of the thrifty French housekeeper! Dr. Georges Vitoux, writing in the *Presse médicale*, says that nothing could have come at a better time than the demand for a chair of applied alimentary hygiene. In France, as in the rest of the world, economy in foodstuffs is necessary, but in order to live economically, it is necessary not only to regulate expenses, but to regulate the alimentary régime. Such a venture should aid the whole country to pass more easily through the difficult period created throughout the world by the events of the last five years.

News Items.

Gifts to Hospitals.—By the will of the late David Bloom, of New York, bequests of \$1,000 each are made to Beth Israel Hospital and the Jewish Maternity Hospital.

Swiss Care for Teuton Children.—A dispatch from Geneva states that each month there is an average of 43,000 children, mostly from Vienna, Budapest, and Berlin, in Swiss hospitals.

Hospital Bequest.—By the will of the late James A. Scrymser, an estate of \$2,423,784 will eventually be divided between St. Luke's Hospital and the American Red Cross. The decedent's widow will receive the income of this fund during her life, but after her death the two institutions will share equally.

Lethargic Encephalitis.—Statistics given out by Dr. Royal S. Copeland, health commissioner of New York, are to the effect that 175 cases of encephalitis lethargica have been reported in this city since January 1st, as compared with 167 for all of last year. There have been forty deaths from the disease this year, against forty-three in 1919.

Brooklyn Hospital Addition Authorized.—A bill appropriating \$500,000 for the construction of an addition for the Brooklyn State Hospital at Creedmore and the development of the grounds has been passed by the New York legislature and signed by Governor Smith. Plans for the work have been completed and the State Hospital Commission is ready to start construction.

Personal.—Dr. Burr Burton Mosher, of Brooklyn, was injured several days ago when the automobile in which he was riding was struck by a trolley car.

Salmon Poisoning.—Thirty cases of poisoning and two deaths have occurred at Dannemora Prison, N. Y. Canned salmon is thought to have been responsible for the outbreak, the symptoms of which included partial blindness.

To Extend Schick Test.—The use of the Schick test for diphtheria will be extended to 100 schools in New York, it has been announced. The extension follows the successful application of the test last year in twenty schools.

Diphtheria Epidemic.—An epidemic of diphtheria has been reported at Rye and Port Chester, N. Y., and Greenwich, Conn. It is thought that the disease was transmitted through the milk supply. Several deaths have occurred.

Hospital Fire Kills Eight.—Eight patients are dead and two are expected to die as the result of a fire which destroyed one cottage and a pavilion at the Ohio Hospital for Epileptics in Cleveland. The cottage was operated as a hospital for men patients.

Doctor Noguchi and Doctor Kligler Return.—Dr. Hideyo Noguchi and Dr. I. J. Kligler have returned to New York after carrying on experimental work in tropical Latin countries under the auspices of the International Health Board of the Rockefeller Foundation.

New York to Buy Radium?—A bill appropriating \$250,000 for the purchase of two grams of radium has been introduced into the State Senate of New York. The radium if purchased would be used by the State Institute in Buffalo for the study of malignant diseases, especially cancer.

The Fight against Typhus.—The interallied medical commission, sent to Poland by the league of Red Cross societies, has issued a statement from London insisting on the seriousness of the epidemic, which is overriding the boundaries of Poland, and drawing attention to the need of organizing without delay an extensive service of revictualing and other aid. Some cases of typhus have been reported in Paris.

Health Department to Fight Landlords?—A statement describing the various ways in which the New York health department might aid in the rent crisis has been issued by Dr. Royal S. Copeland. Doctor Copeland's plan is that before a warrant of dispossession is issued it shall be ascertained whether or not any sanitary violations are pending against the premises or if there is illness in the family that should prevent eviction.

Canadian Hospital Project.—Members of the Canadian Club of New York are making plans for a campaign for \$1,000,000 or as much more as may be needed with which to build and equip a Canadian hospital in this city. The project was suggested at a recent club dinner by a member, who pointed out the need for such an institution and called attention to the fact that there are a large number of American citizens of Canadian birth who will welcome an opportunity to show their appreciation of their citizenship in the United States.

Influenza in Vienna.—A press dispatch from Vienna states that 40,000 cases of influenza are reported in the city and the death rate is very high. Dr. Ernest Wertheim is among the recent victims of the disease.

New Medical Publication.—The *Journal de Médecine de Lyon* is a new publication which will be devoted to the medical activity of the region, particularly to internal medicine. It will appear twice a month.

Britain Thanks U. S. Medical Corps.—A certificate expressing appreciation of the services rendered in the war by members of the Army Medical Corps while associated with British troops has been received by Surgeon General Ireland.

Half Pound Baby Gains.—The smallest baby on record, who weighed half a pound when born seventeen days ago in New York, is said to have gained a quarter of a pound. The baby's twin brother, who weighed three quarters of a pound, died soon after birth.

New Health Insurance Bill.—A bill introduced into the New York State legislature by Senator Frederick M. Davenport provides minimum benefits for sickness and for medical, surgical, hospital, sanatorium, and dental treatment and cash benefits for sickness, maternity, and funerals for workers in the State.

Swiss Quarantine.—The Swiss Federal Council has established a five day period of quarantine detection against persons, vehicles of transport, and merchandise arriving from countries in Asia Minor, and from Greece, Russia, and Turkey, on account of the existence of plague in those countries.

Clinic for Functional Reeducation.—The Clinic for Functional Reeducation, 5 Livingston Place, Stuyvesant Square, New York, has issued its first annual report covering activities for the year 1918-1919. This institution was founded for the purpose of treating injured workmen, though starting out as it did while the country was at war, a good portion of its activities were directed to the care of disabled soldiers and sailors. Its work is accomplished through coordination of general and orthopedic surgery, with an extensive physiotherapy department, as well as hospital and outpatient service. Since the opening of the clinic in July, 1918, the service has grown to an average daily attendance of 100. An average of forty-five beds is maintained for operative cases. In many of the cases treated excellent results have been obtained and the period of disability has been greatly shortened. "Several patients with complete paralysis of the legs have been made to walk," the report states; "helpless hands have been restored to usefulness; deforming and crippling scars have been relieved, and artificial limbs have been furnished, with training in their use. Above all, a spirit of encouragement and hopefulness has been engendered in the patients, very many of whom have experienced timely rescue from relapsing into a condition and attitude of permanent disability." Dr. W. Gilman Thompson is president of the clinic, and Dr. John A. Hartwell and Dr. William H. Sheldon are respectively president and secretary of the medical board.

Ohio State Medical Association.—The Ohio State Medical Association will hold its annual meeting June 1st to 3d at Toledo. The chairmen of the various sections for this year's meeting are: Medicine, Dr. G. F. Zininger, Canton; surgery, Dr. Harry Noble, St. Mary's; obstetrics and pediatrics, Dr. John Gardiner, Toledo; eye, ear, nose and throat, Dr. J. M. Ingersoll, Cleveland; dermatology, proctology and genitourinary surgery, Dr. M. B. McGonigle, Toledo; nervous and mental diseases, Dr. F. C. Wagenhals, Columbus; hygiene and sanitary science, Dr. A. W. Freeman, Columbus.

Standard Pies.—Following its setting up of standards for ice cream and gelatin, the Bureau of Food and Drugs of the New York health department is carrying on an investigation into the subject of pies and pastry. In its search the department has found lemon pies without a drop of lemon; the meringue is frequently made of sulphur dioxide, bleached, aerated clarified glucose; in one instance vaseline flavored with a synthetic extract had been used in the crust. Cakes are often dyed to give the appearance of having been made with eggs. Mince pie is usually made of raisins, cornstarch, and burnt sugar. After this field has been thoroughly gone over standards for pastry will be proposed.

Surgeon General Cumming Discusses European Health Conditions.—Dr. Hugh S. Cumming, new surgeon general of the United States Public Health Service, succeeding Dr. Rupert Blue, returned from his duties in Europe to assume his new position in Washington on March 10th. For two years Doctor Cumming has been in Europe, as the official representative of the United States government on various international health boards, studying conditions of disease and public health. Doctor Cumming says that typhus, far from being checked, seems to be increasing, so that unless the strictest quarantine regulations and other control measures are enforced there is imminent danger of the epidemic invading Europe on a large scale. Once the disease is entrenched at European ports the next danger point will be the United States. He believes that it will not be difficult to check typhus even if it should invade America, because of different living conditions here. On the other hand, nothing should be left undone to keep out bubonic plague. At the present time this disease is present in practically all the Mediterranean ports.

Doctor Cumming states that European health authorities consider the quarantine regulations of the United States so well adapted to check the invasion of either typhus fever or bubonic plague that these regulations have been recommended for adoption by other nations. Referring to international health relations, he says that an agency would soon be established under the League of Nations which would coordinate and strengthen the health work of all nations, and would particularly improve the reporting of diseases and the maintenance of quarantine between nations. A meeting is to be held in London on April 12th to which representatives of the health departments of various nations have been invited, at which time it is believed a permanent organization will be formed. The United States will send a representative to this conference.

Book Reviews

OBSERVATIONS BY HAVELOCK ELLIS.

The Philosophy of Conflict, and Other Essays in War Time. Second Series. By HAVELOCK ELLIS. Boston: Houghton Mifflin Company, 1919. Pp. v-299.

The physician, the sociologist, and the man of letters will all find in this book material suited to their special needs. Only a portion of it is devoted to conflict; for the rest, the author's versatile and admirably lucid pen takes up such subjects as psychanalysis, eugenics, drink control, the position and mind of woman, and, by no means last, certain studies in literature. Havelock Ellis's contention that war is unnecessary and that it will disappear with "the regularization of industrial and commercial activities of the whole material side of life" is hopeful even though the world does not seem to offer much opportunity for optimism on that score. Excessive industrialism has passed its climax, he says, and there is no more world left to fight for. War is "a result and not a cause of organization," a product of civilization and not an inheritance from primitive man. Conflict is a genus with many species, of which war is only one. He does not say what is to prevent nations from fighting over the old world, even though there is no new. The reflections contained in the essay *Vae Victoribus* are by this time sadly familiar to people of liberal thought the world over, who have found that "Militarism is thus a weapon which, under certain circumstances, must inevitably be used, but a weapon only to be used with extreme precaution—such a two edged sword, in fact, that the cause, however excellent, which takes it up, takes up also the risk of perishing by it."

Though maintaining friendly relations with Freud and his followers, Havelock Ellis has never gone over to their camp. It is doubtful whether the uncritical exponent of psychanalysis will find much to comfort him in the essay on Psychanalysis in Relation to Sex, not so much because of Mr. Ellis's refusal to dot the last *i* and cross the last *t* of the system, as because of his attitude toward Freud himself. With certain reservations, Havelock Ellis is mainly in agreement with the theory and method of psychanalysis. He is tempted to think that "the convert (Freud) has sometimes been dazzled by his new vision and drawn by his convictions to excess," and that Freud has exposed his position to "quite unnecessary attacks by speaking of childish sexual psychology in terms of adult physical facts"; but he admits that "when the misapprehensions arising from bad terminology and extreme statement are put aside, the essentials of the Freudian vision of life may still be found acceptable. We have refused to face them, but we have obscurely recognized them, and they have even been plainly recognized, especially by poets and novelists." However, he sees Freud as an artist. This is a trifle hard. "We cannot even describe him as a man of science—even as a psychologist he is too large to be fitted into any school—and his activities are individualized, intuitive, and conceptual to a degree which removes them

from the impersonal and objectively verifiable basis of science. . . . His activities are, above all, plastic and creative, and we cannot understand him unless we regard him as, above all, an artist. He is indeed an artist who arose in science, and to a large extent remains within that sphere, with disconcerting results alike to himself and his followers when he, or they, attempt to treat his work as a body of objectively demonstrable scientific propositions." One wonders whether this comment might not be made on the work of Havelock Ellis himself. He makes the final disconcerting prophecy that "less finely gifted men may not fare so well in the unconsciousness. They must select among facts they find, and in their selection ordinary psychanalysts who have not the sensitive *flair* of genius to guide them will be guided by the rigid and systematic theory which has them in its clutches." But is this not true of any system of thought?

Mr. Ellis's observations on matters of political and social importance, such as drink control, eugenics, "equal pay for equal work," and kindred topics, are timely and illuminating. He is opposed to rigid prohibition, believing that "it is only by the slow process of civilizing our lives and humanizing our manners that we can abolish the evils of drink"; and he thinks the United States melodramatic and a trifle naive in attempting this sort of legislative reform. He sees birth control effectively taught, and followed up with whatever restriction is necessary for the mentally unfit stocks, as the mechanism by which eugenics may operate; and, reverting to the philosophy of conflict, a high birth rate is one of the propulsive forces that make for wars. But it is in his studies of such literary men as Conrad, Baudelaire, and Elie Faure that Havelock Ellis attains the finely discriminating analysis that has endeared him to booklovers. His critical temperament is both strong and sensitive, a rare combination, and he brings to its aid a humane culture and a wide knowledge of letters. If his prose is not quite as luminous as in the days of Impressions and Comments, it must be remembered that trying times have passed over us all since then. He may be a little tired.

A BOOK FOR EVERYBODY.

Vicious Circles in Disease. By JAMIESON B. HURRY, M. A., M. D. (Cantab.). With Illustrations. Third and Enlarged Edition. Philadelphia: P. Blakiston's Son & Co., 1919.

The human economy might be likened to a large business where each man has his work, as much as he can do. If, for a time, one employee be incapacitated, the others will work a little harder and the lack be unfelt, but, if, eventually, the loss be unsupplied, every man will be a little overworked and the weakest be most at the mercy of adverse happenings. Fill up the loss quickly and the impetus to work will undulate to normality throughout the entire business.

Even the layman, studying the vicious circles, will become painfully awake to what may happen

if a vice is started unintentionally or unresisted. Neglected teeth, unspectacled eyes, funk exercise, bolted food, unnatural stimulants, dope purchased sleep, a too lengthily followed prescription, anything which establishes a vicious habit as a custom (moral) and the whole functioning of the body is threatened with organic disease.

This book will teach autopsychanalysis to a student and enable him and the doctor to find out more quickly and correctly how the vicious circle was first started. Hurry and indulged worry may soon shut up a man in a sanatorium or asylum. A hasty breakfast, riding instead of walking to business, bolted lunch or hardly any, riding home again to a heavy dinner or one of fancy dishes at a restaurant, hurrying to theater or pleasure resorts where tired eyes and brain, nerveless and dulled by affairs, defiantly look for the pleasure sought, so is the circle of headache, insomnia, dyspepsia started.

The reading is frightful, but salutary. It crushes us under the mighty wheels of fact. The wailing ghosts of neglect, bad habit, disturbed functioning, organic disease attend us, and, even if we doubt the author's own words, crowds of his learned confrères lie ambushed in the notes and quotations ready to drive in the coffin nails or coax us to attack the evil courageously and gain the reward of clean health.

PROPHYLAXIS IN ENGLAND.

Veneral Disease. Its Prevention, Symptoms, and Treatment. By HUGH WANSEY BAYLY, M.C., Hon. Sec. Veneral Prevention Committee; Late Surgeon, R.N. (Temp.); Pathologist to the London Lock Hospitals; Clinical Pathologist, National Hospital for the Paralyzed and Epileptic; Assistant, Bacteriological Department, and Medical Officer in Charge, Veneral Department, St. George's Hospital, London. Illustrated. London: J. & A. Churchill, 1920. Pp. iii-152.

The book under review is the work of a man who has had extensive experience in venereal diseases. The preface is devoted to an appeal for more sense and less sentiment in the matter of venereal prophylaxis. He attacks, with good reason, in the reviewer's opinion, the report of a "few mostly very senior members of the profession who are greatly influenced by their moral views." This report, after condemning personal prophylaxis, expressed the unanimous view that "the true safeguard against these diseases is individual continence and a high standard of moral life," to which the author replies that he "considers it established that these diseases cannot be stamped out by exhortation." He favors the use of personal prophylaxis, and even goes so far as to advocate the widespread distribution of the "packet." "If every public urinal for the use of either sex were provided with one or two compartments devoted to such prophylactic treatment where the necessary bidets, sinks, apparatus, and antiseptics were available at a very small charge, and clear instructions exhibited in the compartment, perhaps such early treatment would be of considerable value in towns." Otherwise he favors the carrying of disinfection outfits by every individual who is likely to expose himself to infection. Apart from this extreme view on the character of per-

sonal prophylactic measures to be taken, the chapter on prophylaxis is extremely sane and wholesome, and in marked contrast with the sentimental "exhortations" of the elderly men influenced by their moral views.

The book itself, as a whole, is extremely readable, though one must admit that much in it could have been omitted without damage. Particularly is this true of some of the "excellent illustrations" of Mr. H. A. Dickens. These drawings are truly marvels of futuristic art, and in our ignorance of things artistic, we feel utterly unable to characterize them; words fail us. We can truthfully say, however, that the drawings do not represent the things they are supposed to represent, and in these days of high class photography, one wonders why it was necessary for Mr. Dickens to employ his pen in depicting such commonplace lesions as Hutchinson's teeth, serpiginous syphilide, rupia, and above all, we stand aghast at those marvels of modern art, his pen and ink sketches depicting what is designated as the "macular roseolar rash of early secondary syphilis," beefsteak chancre, and necrotic ulcer (page 70). An otherwise good book has been marred, and expensive paper wasted with these utterly useless and nondescriptive drawings.

The treatment of syphilis is very good; especially good is the author's exposition of the Wassermann reaction and its value in diagnosis and in therapeutics. He rejects the view that a positive reaction *per se* means syphilis, unless the reaction is supported by a suspicious history or other symptoms which clear up under antiluetic treatment. Gonorrhea is treated along generally accepted lines, but there is no mention of vasotomy, nor do we find any mention of the verumontanum or colliculus and its treatment in chronic conditions.

On the whole the book is fairly good, but its greatest value will probably be that of an appeal for personal prophylaxis, rather than by moral exhortation. There are fifty-four illustrations; some of them have been referred to above.

FOOD AND THE PATIENT.

The Itinerary of a Breakfast. By J. H. KELLOGG, M.D., Medical Director of the Battle Creek Sanitarium. Illustrated. New York: Funk & Wagnalls Company, 1919. Pp. iv-210.

Doctor Kellogg has endeavored in this book to publicize the alimentary canal and the meatless dietary. He gives graphic diagrams of various stages in the passage of food through the body, with particular emphasis on the ill effects of constipation. The "housebroken colon" is one of the phrases with which he designates the pernicious results of civilization in this respect. The author's insistence on the meatless dietary is, however, open to question, and statements such as that the declining birth rate in the British Isles is due to the marked increase in the consumption of meat within the last fifty years, cannot be taken seriously. As a whole the book is clear, dogmatic, repetitious, and simple—sometimes more simple than the facts warrant. Cause and effect have been carelessly mated and at times their progeny wrongly identified.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

SOME RECENT GLEANINGS IN DIPHTHERIA PROPHYLAXIS.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

Diphtheria prophylaxis involves, as is now well known, precautions not only as regards the established, clinically patent case of the disease but also as regards carriers, who may, unless detected and isolated, be responsible for numerous additional cases in persons possessing a less degree of immunity to the infection than themselves.

Experience has shown that the clinical appearances in diphtheria are not wholly trustworthy from the viewpoint of accuracy in diagnosis and treatment, and that a positive or nearly positive decision can be made only on the basis of properly taken and carefully examined cultures from the patient's nose and throat. In the case of carriers the culture is absolutely essential, for while in some of these the carrier state may have been initiated consentaneously with a mild, unrecognized, abortive diphtheria, or a concealed nasopharyngeal diphtheria, or an inconspicuous faucial erythema, the morbid process will generally have been completely overlooked, and in many instances, apparently, no pathological condition other than the mere presence of the infection will have occurred at any time. The relative frequency with which, among families from whom one individual has been removed to a hospital for diphtheria, one or more others are found by culture to be harboring virulent diphtheria germs, only to lose them after a few days more, have elapsed, strongly suggests that sometimes codwellers with a diphtheria patient temporarily become infected from him but soon develop enough immunity to throw off the germs. Again, not infrequently such carriers may be held responsible for having acquired the infection outside their home and brought it into the child who has fallen ill with diphtheria, their own resistance to the infection being such that the disease does not develop and the diphtheria germs are overpowered within a more or less brief period of time.

Historically, diphtheria convalescents were the first individuals to be recognized as carriers, Roux and Yersin having already in 1890 urged that such convalescents be kept in isolation for a considerable time on the ground that their observed ability to propagate the disease was due to persistence of virulent bacilli long after apparent recovery. Later, the occurrence of apparently normal carriers was demonstrated, and their rôle in diphtheria transmission proved. These may be divided into the recent carriers, occurring in persons recently exposed to the infection, and who usually subdue the germs within a few days or weeks, and the old or long standing carriers, who have been unable to throw off the infection so promptly—possibly at times because they are living in a permanently contaminated

environment—but in whom the Schick test reveals a degree of immunity sufficient to prevent their developing clinical diphtheria.

The manner in which carriers arise and behave in a large group of individuals living in close association and among whom diphtheritic infection has been introduced is illustrated by the following episode witnessed and recorded by Guyénot in the French Army: An epidemic of diphtheria having continued several weeks in a camp containing 4,978 men, cultures were taken from all these men at the rate of 500 a day. There were thus discovered 586—or over ten per cent.—of suspects yielding gram positive bacilli. These were all segregated from the negative body of men, the 176 subjects with long bacilli being, furthermore, kept apart from the larger number harboring only short bacilli. One month later there remained no less than ninety-five carriers; five weeks after this, twenty-seven carriers; one month later, eleven carriers, and one month later, four carriers. Of the latter four, two remained carriers for over a year. Among the 115 diphtheria convalescents, cultured systematically at the same time, only nine remained positive seven weeks after the start of the wholesale culturing; two months later, i. e., two weeks after the healthy carriers were still represented by four positives, there remained one carrier from among the convalescents.

According to this, healthy carriers and convalescent carriers behave in approximately the same manner as regards persistence of the infection. The outstanding practical result from the wholesale culturing was that as soon as the entire group of carriers was segregated from the negative body of men, development of diphtheria cases among the latter promptly ceased. Furthermore, individuals among the negative men could be transferred elsewhere for different duties without causing development of any cases of diphtheria among the members of other units with which they came in contact.

The number of healthy carriers among city populations has been estimated to be very large—possibly two and one half per cent. of the entire aggregate of inhabitants. Fortunately, the average carrier is somewhat less dangerous as a disseminator of virulent diphtheritic infection than a patient actually suffering from the disease. Were this not the case, it would be difficult to understand why the incidence of diphtheria is not even greater than it is. The most virulent diphtheria germs are in general found in diphtheria patients, and the throat secretions from such persons yield the largest number of colonies when inoculated on culture media (L. Martin). Even with this qualification, however, the diphtheria carrier must be conceded an exceedingly important factor in transmission, and his detection and isolation a corresponding valuable measure in prophylaxis.

(To be continued.)

The Use of the Schick Test and Toxin Antitoxin in the Extinction of Diphtheria.—Thomas E. Lilly (*Boston Medical and Surgical Journal*, January 29, 1920) draws the following conclusions from his experiences: In institutions, schools, or communities, where diphtheria has been prevalent for a considerable period of time, the universal taking of cultures, excepting in cases of sore throat, is practically useless. A nonvirulent bacillus is often found to be persistent in the throats of so-called chronic diphtheria carriers. Repeated passive immunization with diphtheria antitoxin does not protect families, schools, or institutions, and such immunization lasts less than three weeks. Immunity to diphtheria is both absolute and comparative. Toxin antitoxin does give absolute immunity to diphtheria when more than one month has elapsed after its administration, it causes no such troublesome and alarming reaction as antitoxin often does, and the immunity persists indefinitely. Toxin antitoxin has no curative properties and does not immediately protect against diphtheria. In clinical cases large doses of antitoxin should be used instead of toxin antitoxin for both patients and contacts. The Schick test is not rapid enough to be of immediate use in cases exposed to clinical diphtheria and should be used only to separate immunes from nonimmunes. The Schick test and active immunization should be used in schools, camps, institutions, and communities where diphtheria persists and where there is no immediate demand to protect life. His experience has made him optimistic enough to believe that in this method we have a means of exterminating diphtheria.

Treatment of Breast Fissures.—A. Olivier (*Journal de médecine de Paris*, December, 1919) recommends particularly orthoform, methylene blue, and horse serum. Orthoform may be used as a powder, blown over the fissure or dusted on sterile gauze which is then applied over the breast and bandaged on. A saturated solution of orthoform in eighty per cent. alcohol, of which four drops are applied fifteen minutes before alternate feedings, has also been recommended, but the alcohol causes some pain and a better preparation is a liniment consisting of orthoform, five grams; oil of sweet almonds, ten grams, and ether, 9.5 grams. Dresch uses a three per cent. solution of methylene blue as a prophylactic against and for the treatment of fissures. The child's mouth and central portions of the breasts are first washed with a tepid two per cent. solution of sodium bicarbonate. The methylene blue solution is then painted over the nipples immediately after feedings. The child feeds as usual, without any difficulty. Its mouth becomes bluish, but not enough of the drug passes into the urine to stain the linen. The drug not only acts as a local anesthetic but also favors healing of the fissure; eight or ten days' application of it is sufficient. Horse serum acts both indirectly as an antiseptic, attracting many leucocytes to deal with the germs, their toxins, and the poisonous products of tissue degeneration; as a promoter of healing, and as an analgesic. In a recently delivered woman in whom fissures of both nipples threat-

ened wholly to prevent nursing of the new born infant, and after failure of the ordinary measures, the author applied two small aseptic compresses with the serum preparation known as hemostyl over the nipples and areolae, and renewed them three times a day. After one day's treatment, one of the breasts could be used for nursing, and after three days, the other. The grayish fissures took on a more healthy, red aspect, rapidly became smaller, and were no longer painful. In seven other cases, favorable results were likewise obtained. The dressing should be applied after each act of nursing; the areola should previously be well washed with boiled water, and the dressing covered with some impervious material, to prevent drying and caking of the serum. Serum should be used prophylactically whenever the breast becomes a little sensitive. Washing the nipples with antiseptic soap, followed by neutral glycerin and boiled water, two or three times weekly during the last two months of pregnancy, helps to prevent fissures; alcoholic preparations should not be applied, tending rather to favor fissure formation.

Diagnosis and Treatment of Chronic Gastric Ulcer.—B. Moynihan (*British Medical Journal*, December 13, 1919) believes that much that has been written on gastric ulcer should be revised in the light of modern surgery and radiography. Gastric ulcer is very frequently simulated by other conditions and is itself comparatively rare. Ulcer of the stomach occurs twice as often in men as in women and its chief symptom is pain. The pain is boring, burning, aching or gnawing, and comes on with remarkable regularity from one to one and one half hours after eating. There is no let up after a meal unless it is during one of the characteristic remissions when no pain is suffered for periods of a month or longer. The pain of duodenal ulcer comes on just as characteristically two, three or four hours after eating and is not likely to let up before eating again as is the pain of gastric ulcer, which is very likely to disappear for about one hour after onset. Heavy food causes much more severe and more lasting pain than does light food. The pain is usually felt high in the epigastrium, on the left side or in the back. The pain may be relieved by food, alkali, vomiting, or lavage, and the relief from eating is so definite that patients often gain weight during the attacks. The constant sequence of food, comfort, pain, is the most important point clinically in the diagnosis of the condition. Vomiting and hematemesis are comparatively rare symptoms of the condition in the writer's experience. The importance of the roentgenographic examination in making the diagnosis is emphasized and the writer's methods are given. Chemical examination of the gastric contents is considered of little importance in the diagnosis. Physical examination rarely shows more than the almost constant tenderness in the epigastrium. Few cases of so-called gastric ulcer conform to the picture described above and operation would show that many of them would not be ulcer. It has been demonstrated that cholelithiasis and chronic disease of the appendix cause hypersecretion and spasm in the stomach and so produce

symptoms similar to those of ulcer. These conditions are frequently wrongly diagnosed as ulcer. The diagnosis of gastric ulcer being so uncertain clinically, the writer feels that it should not be made unless the röntgenograph confirms it.

The most rational treatment medically is that of Sippy, which reduces the acidity of the stomach contents and gives the best conditions for the healing of the ulcer. This is accomplished by diluting the food, alkalinizing the gastric contents every hour, and administering fats. Medical treatment does heal ulcers if faithfully carried out. The healed ulcers frequently break down again, however; if they do not, they frequently form cicatrizations which require surgical interference. When an ulcer fails to heal after medical treatment or recurs after such treatment, surgical treatment is necessary. Gastroenterostomy is the operation usually performed but it is uncertain in its results, occasionally giving highly satisfactory results but more often either mediocre or unsatisfactory results. The writer is averse to the operation except in existing or threatened obstruction due to the ulcer.

Balfour's operation, gastroenterostomy combined with excision or cauterization of the ulcer has many favorable points but the writer has not used it as he feels that a partial gastrectomy should usually be performed. In cases where the patient is too old or in too poor condition to undergo the operation of partial gastrectomy, the gastroenterostomy in "Y" is performed and a tube inserted in the proximal limb. The patient is fed through this tube for months or years until the ulcer is shown by x ray to be healed. The chief advantages of gastrectomy are that it prevents recurrence, relieves immediately all gastric pains and symptoms, and entirely removes all chance of cancerous changes in the ulcer.

Physiotherapy in Arthritis.—C. M. Sampson (*American Journal of Electrotherapeutics and Radiology*, November, 1919) gives the typical treatment in arthritis. The only medicinal treatment is a thorough and constant cleansing of the intestinal tract. The patient is then taken in hand and after a brief talk his state of mind is determined, and this often needs correction. He is told that the first few treatments are not painful but will do much to relieve pain. The De Kraft blue pencil effluve is then applied for two or three days. This gets the patient over the initial fear of the machine, proves to him that the truth has been told, and so encourages him that he will stand the ordeal later. The convalescing patients can be depended upon to guide new patients into a state of mind where they will stand any treatment. This friendly rivalry makes it possible to push treatment. After the blue pencil the indirect spark is added, the joints and contracted muscles being covered. Then a flexible metal electrode is applied and fifteen or twenty minutes of the Morton or static wave given. If the joint is stiff but no calcium deposits shown in the x ray plates, thermopenetration precedes the static application. If calcium is present the joint is ionized with a two to four per cent. sodium chloride solution before

the static treatment and manipulation follows either the diathermia or the ionization and the static ends the treatment.

All patients with arthritis receive as a tonic and elimination measure either daily autocondensation treatment or autocondensation every other day alternated with an electric light cabinet bath and Scotch douche or spray. More rapid results were secured when tonic treatment was added to the local, but good results were also obtained when the treatment was purely local. The intensity of the effluve was increased after the fourth or fifth treatment. If the case was particularly stubborn the treatments were given twice daily for a few days, and gradually diminished in severity and frequency until the reaction had subsided. Localized high frequency had a place in the treatment as well as radiant heat and light. The whirlpool bath had also given excellent results when effusion was present, when it had been used in conjunction with the static modalities. Massage and manipulation were used in conjunction with other physical remedies.

Operative Treatment in Elephantiasis of the Scrotum.—W. E. Masters (*Journal of Tropical Medicine and Hygiene*, December 15, 1919) reports a number of cases of enormous scrotal enlargement successfully treated by operation. In preparing the skin flaps for such cases, allowance should be made for a marked retraction of the skin upward on the abdominal wall, the weight of a forty pound tumor having drawn much skin down from the abdomen. In some instances, in which there is not enough healthy skin available, the bare areas must be covered by skin grafts or left to granulate. In one case in which the prepuce grafts had become as thick as the patient's thigh and the penis, when dissected out, was found ten inches long, skin flaps were made for the proximal half, and the mucous membrane forming the urinary orifice was carefully dissected out, inverted over the distal end of the penis like the finger of a glove, and then sutured to the skin flaps covering the proximal half. Difficulty in controlling bleeding is likely to be experienced in these cases unless some special plan, such as the author describes, is followed. In all cases a figure of eight tourniquet is applied around the patient's waist and the neck of the tumor. The skin flaps are then cut, below and above; the urinary orifice slit up along a director to the glans penis; a rubber catheter passed down the urethra as a guide in dissecting out the penis, care being taken not to cut the urethra, and the testicles and cords identified and dissected out. Trouble with hemorrhage arises when one begins to remove the tumor itself, owing to the enlarged veins and arteries beneath the skin. It is best to penetrate the mass by blunt dissection near the right cord, for example, and then to apply a pair of strong three inch forceps and clamps and cut away above it, repeating this process around the tumor until it has all been divided. With such a procedure there is very little hemorrhage, and it may even be unnecessary to ligature a single vessel during the cutting away of the mass. About six pairs of large strong clamps are required in operating on large scrotal tumors.

Treatment of Postoperative Abdominal Pains.

—A. Schwartz (*Paris médical*, November 22, 1919) refers to the so-called "gas pains" occurring nearly always in patients who have been subjected to abdominal operations. In some cases the pain is so severe as to react on the general condition, causing increased pulse rate, nausea or vomiting, and an anxious facies. Schwartz maintains that "gas pains" can be completely arrested by the application of a large icebag over the abdomen, and reports three recent cases in which this result was obtained. In a fourth case, that of a young woman subjected to appendectomy for chronic appendicitis and to double plication of a dilated cecum, gas pains were wholly prevented by the application of an icebag on the second day. Gas was passed painlessly on that day and through the succeeding night, during which the patient slept soundly without a narcotic. The procedure recommended to obviate gas pains is to remove the dressing on the day after the operation, leaving only a thin compress over the suture line; a single thickness of gauze is then laid over the entire abdomen, next one thickness of chiffon taffeta, and finally a broad icebag covering the whole surface. The ice is renewed as soon as melted and the icebag kept on until the gas has been passed—generally for twenty-four hours. The skin should, of course, be watched, and a layer of flannel applied if required. Schwartz's explanation of the mode of action of the icebag is that after the initial stage of intestinal paralysis there occurs one of spasmodic contractions of the intestine, continuing until the gas begins to pass, or sometimes for a more or less prolonged period; the ice removes the spasm while allowing persistence of peristalsis and hence passage of the gas.

Treatment of Certain Unusual Cases of Intermittent Fever.—S. Artault de Vevey (*Bulletin de l'Académie de médecine*, December 23, 1919) refers to five cases of intermittent fever developing suddenly in soldiers recently returned to France from the Salonica district. The condition is not believed to have been of malarial origin, as the blood was positive for malarial organisms only in two instances, and none of the patients had had any pronounced malarial manifestations while in the Balkans. Although the spleen and liver were enlarged in every case, and the febrile paroxysms were typical of malaria and came at regular intervals, quinine completely failed, even when given by intramuscular injection. The fever is ascribed to angiocholitis, developing in individuals with livers fatigued by camp diet and later suddenly overtaxed through overeating and drinking upon return to France. In contrast to the inefficacy of quinine, a highly active remedy was found for the condition, viz., an alcoholic distillate of the box tree, *Buxus sempervirens*. One teaspoonful of this preparation being given morning and evening, the febrile paroxysms promptly ceased, and complete and permanent recovery was obtained in two to three weeks. The relative effects of quinine and box are of diagnostic value in the differentiation of true malarial intermittent fever and the hepatic intermittent fever due to angiocholitis.

Treatment of Goitre with Injections of Phenol, Tincture of Iodine, and Glycerin.—Joseph Eastman Sheehan and William H. Newcomb (*Journal American Medical Association*, January 10, 1920) studied the treatment of eighty cases of goitre with the injection of a mixture of equal parts of phenol, tincture of iodine and glycerin. It was noted that no untoward results followed the injection of the phenol preparation into the goitre, although in four of the ten cases subsequently operated in, some difficulty was encountered in separating adhesions between the anatomical and surgical capsule, caused by a leakage of the fluid as the needle was withdrawn from the gland. It was determined that the injections were particularly efficacious in the ordinary parenchymatous goitres of young women, resulting in the cure of 76.4 per cent. of the fifty-five patients of this type treated. This preparation seems to have the effect of relieving the thyrotoxicosis, as in exophthalmic goitre, but unfortunately, the relief is only temporary. It also quiets the heart's action, improves the appetite, has a favorable effect on metabolism, stays emaciation and reduces the mental irritability. This treatment is especially advised as a preliminary in these cases when operative interference is deemed necessary. No beneficial results were noted in the cystic and colloid forms, and it is probable that harm and much respiratory discomfort may result by enlargement of the gland, if this form of treatment should be continued with any degree of persistency.

Treatment of Burns.—M. S. Corbett (*International Journal of Surgery*, January, 1920) reports a case of extensive burns of the second and third degree, which had been caused by boiling hot dye. The entire body had been burned below the level of the pommel Adam, with the exception of the left arm and a portion of the neck and face. First aid was given within five minutes of the burn and consisted in the application of ambrine. The shock which was present was overcome by injections of morphine. At the hospital areas which had been overlooked were covered with ambrine. The ambrine treatment was continued for four days and then changed to applications of hot boric and magnesium sulphate dressings, as the temperature had mounted to 103° to 104° F. and the hot boric dressings would absorb the secretions better. On the second day hiccough developed and continued with slight interruptions for two weeks. Muscatone finally seemed to check the hiccough. From the first day the patient complained of pain in the abdomen, as he did of pain in the burned areas, and tarry stools occurred. He was given aqueous hydrastis for this and apparently there were no lesions of the internal viscera. Interstitial nephritis developed but later disappeared. Little scarring resulted, not enough to interfere with locomotion. An extensive necrosis developed over the sacrum in spite of every precaution having been taken to prevent it. The scar was about seven inches in diameter and extended to the fascia. This was treated with sterile petrolatum until the fascia was covered and then with ambrine. Complete recovery followed.

Practical Every Day Pediatrics.—E. J. Hueneke (*Northwest Medicine*, October, 1919) discusses the commoner diseases of children and outlines his methods of treatment. The four common causes of fever in children are: 1. Pharyngitis, which must never be diagnosed without considering diphtheria. 2. Otitis media treated by hot boric acid irrigations three or four times a day. If fever and reddening of the drum do not subside in twenty-four hours, paracentesis should be performed. 3. Lobar pneumonia is common in children but the signs and course may often be very irregular. X rays give the only sure diagnosis in many early cases. The treatment consists of tepid or cool compresses about the chest, fresh air, good nursing, with oxygen and hypodermics of camphorated oil for emergencies. In bronchopneumonia, the cold fresh air treatment should be used with the greatest caution. 4. Pyelocystitis may give the most varied symptoms and can only be diagnosed by urine examination, which must be made in all unexplained fevers. The treatment consists of hexamethylenamine, salol or the alkalies, but most important of all is the ingestion of large amounts of water. Two or three quarts must be given daily even if a stomach tube is necessary.

In pertussis it is found that large doses of freshly prepared vaccine are very useful both as a prophylactic and as a method of treatment in early cases; one to three billion should be given every other day for three doses.

Rickets is very common and should be recognized early by the softening of the bones of the occiput. Babies over nine months should be given a mixed diet comprising cereals, vegetables, toast, cooked fruit, and only one to one and a half pints of fresh cow's milk a day. Phosphorus in codliver oil (1:10,000), one teaspoonful three times a day, is given unless the baby is breastfed or premature, when calcium, as tricalcium phosphate, must be used.

Spasmophilia, that is, hyperexcitability of the peripheral nervous system and a tendency to convulsions, due to a defect of calcium metabolism and perhaps brought on by some functional involvement of the parathyroid glands, is very common. It is diagnosed by a positive Chvostek phenomenon and a positive electrical reaction (cathodal opening contraction less than five milliamperes). Large doses of calcium chloride must be given. Five to six grams of anhydrous salt should be used in a day and care must be taken that the whole amount is given, as the dose is unpleasant and often the child does not get as much as directed. In most cases, the convulsions stop in twelve hours. Phosphorus and codliver oil must be taken for at least two months but the calcium chloride may be discontinued in one to two weeks. The diet must be breast milk or cereal water for the first few days, after which cereals, vegetables, and fruits may be added and finally, cow's milk.

Pylorospasm appears in children of from ten to fourteen days with vomiting. It frequently yields to feeding breast milk with the least exertion on the part of the child by bottle or gavage. This can frequently be supplemented to advantage by

thick farina. If the child continues to lose weight in spite of treatment the Rammstedt operation should be performed.

Eczema usually responds well to dietary treatment. Under nine months great care should be exercised not to overnourish. Cut down breast feeding, begin solid food as early as the fifth month, and reduce cow's milk as low as possible. In severe cases in infants over nine months, milk may have to be omitted and eggs should not be given until the age of three years. Test the child out for protein sensitization and eliminate such as show the reaction from the diet. Local treatment consists in the removal of irritants, such as soap, water, and woolen clothing. In acute stages apply a solution of alum and lead acetate and in sub-acute stages Lassar's paste with ten per cent. resorcinol.

Pharyngospasm Simulating Anorexia in Children.—E. Weill (*Paris medical*, December 6, 1919) calls attention to the fact that in some cases of apparent anorexia the difficulty actually arises from dysphagia. The typical case of this variety is one of a child of two to five years, slightly pale and thin, but not complaining in any way. When weaned, he had some difficulty in swallowing the more solid articles of food; he never became fond of bread or cake, and continued later to take his food in liquid form and in small amounts, in spite of all attempts by his parents to have him eat more food of semisolid or solid consistency. Such children eat better just after awaking than later in the day, and better when playing with friends or in the presence of strangers than at other times. Unlike the neurotic anorexics, these children show little evidence of mental disturbance, e. g., obsessions, phobias, melancholia, and apathy, or of physical stigmata, such as extreme loss of weight, cyanotic hands, tapering fingers, light colored urine with extreme reduction of mineral constituents, and low temperature. Food taken into the mouth by these children is well chewed but not swallowed. In acute cases, small ulcerations on the posterior pharyngeal wall account for the disinclination to swallow. In chronic cases, pharyngospasm of obscure origin exists, which yields readily to the passage of a solid, soft bougie into the esophagus. The bougie is first placed in boiling water and then dipped in glycerine before use. No. 24, No. 30, and No. 34 bougies are passed in succession at a single sitting, each being slipped up and down several times. The whole procedure occupies but one minute, and usually after the first sitting the child is able to eat and swallow a piece of bread crust at once. Recurrence may occur some days later, but a permanent cure is obtained by two or three more treatments. Where use of the bougie is impracticable, a compress of cold water, renewed every ten minutes, is placed over the front of the neck for thirty or forty minutes before each meal. This is followed by a few minutes' massage over the floor of the mouth and suprahyoid region. During the meal, if the child delays in swallowing, firm pressure is made over the trachea with the finger; the choking sensation thus produced induces deglutition.

Miscellany from Home and Foreign Journals

Involvement of the Ciliary Region in Wounds of the Eye.—F. Lagrange (*Bulletin de l'Académie de médecine*, November 11, 1919) states that the severity of eye wounds has been shown by experience in the late war to depend to a marked extent upon the portion of the organ involved. Wounds of the ciliary body, in particular, are far more serious than injuries of other tissues. Study of eighty-three cases has convinced the author that, from the viewpoint of treatment, eye wounds must be divided into those involving the ciliary body, with or without persistence of a foreign body in the tissues, and those of structures other than the ciliary body. While sympathetic ophthalmia was rare during the war, Lagrange saw enough cases of it to convince him that it must be taken into account in the treatment. Whenever a foreign body is embedded in the ciliary body of a sightless eye and cannot be removed, the eye should be enucleated, even if it presents a favorable appearance and there is no pain or sign of irritation. Where the foreign body is not in the ciliary body and the eye seems well preserved, and neither irritated, painful, nor hypotonic, the eye should be allowed to remain, the patient being warned, however, that trouble may develop later. If such an eye, on the other hand, is hypotonic, slightly tender, and manifestly suffering from impaired nutrition, it should be removed without delay in order to remove the existing threat to the other eye. Similar rules apply where no foreign body is retained. Even the slightest inflammatory reaction, refractory for several months to appropriate treatment, demands enucleation. All the more necessary is enucleation where the eye is already reduced by injury to an atrophied stump.

Observations on Thyroid Intoxication.—J. M. Blackford (*Northwest Medicine*, October, 1919) reports observations on 100 autopsies in cases of goitre and gives briefly the clinical histories of the patients. In a group of seventy-four cases of exophthalmic goitre all patients under forty showed persisting thymus, and over forty, half showed thymus and half showed none. The thyroid in each case showed definite hyperplasia. Case histories showed that while nearly half the patients died without surgical intervention there were no deaths between thirty and forty which were non-surgical. Also half of the deaths occurred during the ninth month after the first symptoms, while the other half occurred after twelve years. There was no case of complicating active tuberculosis. Differential blood counts were practically the same as in living patients suffering from exophthalmic goitre. Extreme cardiac damage was found in half the old cases of long standing goitre. No case of thyroid carcinoma was found in exophthalmic goitre and no case of carcinoma was found elsewhere in goitre cases. An outline of the course of the disease follows with comments on new work, and in conclusion it is emphasized that the tremendous operative mortality can be avoided by operating only when the wave of the disease is constant or improving.

Cerebral Pressure Following Influenza.—W. A. Jones (*Northwest Medicine*, October, 1919) discusses the most important neurological and psychiatric complications of influenza. He considers that the pathology of the condition is an edema of the nerve structures and quotes a severe case of influenzal encephalitis in which autopsy showed edema, congestion and minute hemorrhages in the brain stem, basal ganglia, and central substances. The various complications, from single fatigue with complete rapid recovery, slight transient paralyses, brief aphasia or amnesia, etc., to the more lasting and severe manifestations, such as the so-called encephalitis lethargica, are mentioned and cases with various protracted or delayed nervous or psychiatric symptoms are cited. Concerning treatment, there should be the usual careful nursing of acute infections and severe exercise should be long prohibited. Early and frequent lumbar punctures should be performed. No operative procedures except of an emergency nature should be done. Hospital care, with strict rules and regular diet and habits, hydrotherapy and massage, are useful and hypodermic injections of iron and strychnine from one to three times daily hasten recovery.

Value of the Röntgen Ray in the Diagnostic Work of the Internist.—G. W. McCaskey (*Journal of the Indiana State Medical Association*, January 15, 1920) says that the remarkable advances made within recent years have thrown on the internist ever increasing obligations. By such methods as the determination of blood contents of sugar, urea, nonprotein nitrogen, and lipoids; of oxygen consumption in its relation to metabolism, and particularly endocrine disease; and especially by the use of röntgen ray, by far the most important of all, it has become possible to discharge our obligations to our patients by the more or less exact determination of pathologic conditions hitherto undeterminable or at best obscurely so. By so doing the patient and his physician are obviously placed on a vantage ground. One should never fail to emphasize the fact that these methods never make a complete or rational diagnosis but are simply factors, albeit sometimes indispensable factors, in the general diagnostic judgment. So far as the x ray is concerned, on every patient whose condition justifies the submission of the case to the special diagnostician, at least a few very simple routine x ray procedures should be carried out. Focal infections must always be excluded in such cases, and abscesses of teeth and sinuses cannot be otherwise excluded with certainty. A fluoroscopic examination of the chest and of the gastrointestinal tract after the ingestion of barium should be made. In a very few minutes gross lesions of heart, lungs, mediastinum, and stomach may be determined or excluded with a strong degree of probability. In special cases in which history, symptoms, or physical examination make it advisable, x ray plates will give details which the fluoroscopic screen cannot furnish.

Antagonism of Adrenalin and Quinine.—A. Clerc and C. Pezzi (*Presse médicale*, December 20, 1919) report experimental work showing that in some respects adrenalin and quinine are antagonistic in their pharmacological effects. Complete antagonism exists as regards the medullary centres of the vagi, which adrenalin excites and quinine paralyzes, and as regards the heart, which adrenalin stimulates and accelerates, while quinine depresses and slows. Arterial pressure is raised by adrenalin and lowered by quinine. The adrenalin raises the pressure, however, by combined cardiac and vascular actions, while quinine lowers the pressure by depressing the heart more strongly than it contracts the vessels. Whereas adrenalin is a stimulant to the sympathetic nervous system, quinine may be considered to have a sedative action.

Rôle of Flies in the Transmission of Trachoma.—C. Nicolle, A. Cuénod and G. Blanc (*Presse médicale*, December 20, 1919) conclude from experimental work that a fly which has been in contact with a trachomatous eye is capable of transmitting the infection for at least twenty-four hours. The same results are obtained if the fly has been in contact with infected linen six hours after the latter has been removed from the patient. Flies are not capable of transmitting ordinary acute conjunctivitis under the same conditions. Without discarding direct contact as a factor in trachoma propagation, the fly must be considered an important means of transmission. This fact can alone account for the intensity of certain foci of the disease, the frequency of the disorder in native races, and the development of cases at points remote from preexisting infection. In the prophylaxis of trachoma, trachoma wards in hospitals must be isolated with metal screens and systematic destruction of flies undertaken.

Alcoholism and Thyroid Aplasia.—Le Clerc (*Bulletin de l'Académie de médecine*, December 9, 1919) reports three instances of thyroid aplasia in the offspring of fathers addicted to alcoholic abuse. The first myxedematous patient was aged thirty years and was the son of a heavy drinker who had succumbed relatively early in life to alcoholic cirrhosis; he was the fourth and last child of the family. In the second case, myxedema had begun to appear at the age of two and a half years; the father was a heavy drinker, but the mother in good health. The third patient, while not myxedematous, showed mongolism and imbecility, and was aged fourteen years. The mother was always healthy, but the father had been a noted drinker, and had died suddenly; in his family, of the last four among the eight children, three died in infancy and the fourth survived with thyroid aplasia. The author recalls the views expressed by Bourneville, Roubinovitch, and Vincent, as to the rôle of parental alcoholism in the production of myxedema in the offspring. Having seen, in the course of his experience, only the three cases of thyroid aplasia referred to, the author thinks marked alcoholism in the father must be an important factor in some cases of thyroid aplasia, replacing infection during pregnancy as a cause.

Clinical Experience with Sahli's Sphygmobolometer.—Nathaniel Bowditch Potter (*American Journal of the Medical Sciences*, January, 1920) says that the method of volume bolometry is relatively simple, easily applicable, not unduly time consuming, and of at least practical accuracy. To determine whether the results obtained therefrom are sufficiently valuable either in estimating circulatory efficiency, i. e., a functional circulatory test, or in following or judging the effect of medicinal or extramedicinal methods of treatment, more clinical experience under a greater variety of conditions must necessarily be available. It suggests a new conception of the circulation and is worth further study. It is better adapted to clinic or perhaps to office practice than to routine private practice at a patient's home.

Frequency of Latent Tuberculosis in Infancy. Juan P. Garrahan (*La Semana Médica*, December 18, 1919) reports the results of investigation of 1,214 children in the so-called second stage of childhood with tuberculin tests, with the result that it seems probable that at least three quarters of the children between twelve and fifteen years of age in Buenos Aires, of the poorer class, are carriers of tuberculous infection. These children are apparently well. Repetition of the tuberculin test, according to Hamburger's technic, shows thirty per cent. more positive reactions than a single cutaneous test. Children who had passed the greater part of their lives in institutions showed twenty per cent. fewer positive reactions than those who had lived at home. Garrahan believes that the frequency of latent tuberculosis is not appreciably less in other large cities. True latent tuberculosis was not found in early childhood or in infancy.

Linitis Gastrica.—Paul Carnot (*Paris médical*, December 20, 1919) states that linitis plastica, now universally recognized to be of neoplastic nature, is far more common than has hitherto been thought, and produces definite symptoms which, in conjunction with the results of x ray examination, render its diagnosis during life relatively easy. In linitis confined to the body of the stomach, without participation of its orifices, the manifestations are those of microgastria, with rigidity and thickening of the gastric parietes. The symptoms consist of dysphagia and regurgitations of food, and the condition is one of cardioesophageal pseudostenosis, due to the markedly reduced size of the gastric cavity which becomes immediately filled upon ingestion of food and soon overflows into the esophagus. In a second variety of cases, in which the cardiac portion is also affected with linitis, there occurs the true symptom—complex of cardiac stenosis—stenosis usually having the upper hand over insufficiency. In the third group, in which the pylorus is invaded, there is rigidity of the pyloric orifice; in these cases incontinence is generally a more important factor than stenosis, and the clinical manifestations are those of pyloric incontinence. The combinations of symptoms resulting from these three different conditions are sufficiently characteristic to permit of a diagnosis of neoplastic linitis.

Two Cases of Fetal Asphyxia with Uncommon History.—Charles J. Kickham (*Boston Medical and Surgical Journal*, January 22, 1920) reports one case in which the patient, near term, while walking felt "something come down," and a full term fetus was found outside the vagina with the exception of the head. It was in a state of pallid asphyxia with the fetal heart still audible. Efforts to resuscitate, continued for more than an hour, proved futile and the child died without breathing. In his second case there was a precipitate birth of twins after only one sharp pain. One child was still in the amniotic sac, which was entirely outside the vulva, though it had not ruptured. The membranes were ruptured at once, and though the fetal heart was still beating, the child had the typical appearance of pallid asphyxia and died without breathing, in spite of all attempts at resuscitation.

Fatal Anaphylaxis Following Diphtheria Antitoxin.—A. D. McCallum (*British Medical Journal*, November 8, 1919) injected 2,000 units of a standard diphtheria antitoxin, according to the customary method subcutaneously in the inner side of the right scapula of an apparently healthy boy of eight. Two minutes later the boy complained that "it had gone to his stomach" and ran to the toilet. A minute or two later he was found to be apparently choking and his face was extremely cyanotic. Artificial respiration was begun but the heart had stopped and the boy could not be resuscitated. Postmortem examination showed nothing of importance pathologically save a mass of tuberculous nodes in the mesentery. There was no history of symptoms brought on by the proximity of horses. The only suggestive previous symptom was a susceptibility to bronchial colds in the winter.

Malarial Parasite Cultures.—Chambelland (*Presse médicale*, December 20, 1919) reports successful culture experiments with a modification of Bass's method. *Plasmodium vivax* and *Plasmodium quartanum* did not exhibit enough vitality to be cultured, but *Plasmodium falciparum* grew rather well on the culture medium, and was kept alive for six days by inducing infection of healthy erythrocytes with young merozoites from blood collected during a febrile paroxysm. The procedure was applied for clinical purposes in afebrile patients who had contracted malaria several months before and in whom recent blood examinations had been negative. Young forms of the parasites, with the morphological features of *Plasmodium falciparum*, appeared on the cultures in twenty hours. These forms were apparently derived from gametes too sparse to be detected in stained blood smears. A third generation of merozoites was sometimes obtained when fresh erythrocytes were supplied at the proper time for their use. In some instances mitotic figures were observed in the division attending the production of this third generation. A great number of generations and more vigorous parasites will doubtless be obtained with improved methods affording better nutrition of the erythrocytes and parasites, and in particular, a better removal of waste and toxic materials. Inoculation experiments with the cultivated parasites have not as yet been attempted.

An Undiagnosed Disease Probably of Infectious Nature.—C. F. Orr White (*Practitioner*, January, 1920) reports four cases with similar symptoms; slight fever, the temperature in no case exceeding 100° F., for only one day, and a rash with circular flat papules, which did not entirely fade on pressure, as large and larger than a pea, which were most pronounced on the wrist and forearms and beginning to appear on the chest, thighs and legs. Later he saw a large number of similar cases, in some of which the temperature reached 103° F. The onset was usually sudden, with severe frontal headache, giddiness, or actual fainting. Intense pruritus was present in rather less than half the cases. All of the cases occurred in a British regiment which had recently arrived in India. Venereal disease, chickenpox, and smallpox were excluded. White has seen no cases of dengue or three day fevers with any clinical resemblance to these, and they did not correspond to any conditions he had seen caused by bug bites combined with dermatitis.

Blood Plasma Chlorides versus Renal Function.—W. C. Rappelye (*Boston Medical and Surgical Journal*, January 22, 1920) determined the blood plasma chlorides in 104 patients showing no obvious evidence of compromising physical disease, the blood being drawn twelve hours after the preceding meal. The ages ranged from forty to eighty-five years. No relationship could be established between the chloride values and the blood urea nitrogen, rate of elimination of phenolsulphonephthalein, blood pressure readings or urine specific gravity. In a second group of forty cases, the plasma chlorides on fasting blood and blood drawn four hours after the preceding meal were determined. Although eighty-five per cent. of the cases showed a definite and considerable rise after the meal, the rise would not be associated with any consistency with the parallel determinations enumerated above. The small group of cases of so-called essential vascular hypertension studied seem to show an elevated renal threshold for sodium chloride. Attempts to lower the threshold have given no conclusive results.

Toxins and Antitoxins of Bacillus Dysenteriae Shiga.—Peter K. Olitsky and I. J. Kligler (*Journal of Experimental Medicine*, January, 1920) found that the Shiga bacillus, when grown on a suitable medium, in the first days of cultivation yields an exotoxin which is relatively thermostable, is capable of inciting antitoxin formation, and is constant in its properties, independent of the source of the Shiga culture. This produces in rabbits, after a definite period of incubation, typical lesions of the central nervous system, without any accompanying injuries to the intestines. At a later period an endotoxin is formed which is heat stable and exerts a typical action on the intestinal tract, producing edema, hemorrhages, necroses, and ulcerations, especially in the large intestine. The authors call attention to the significance of these facts from the viewpoint of serum therapy in bacillary dysentery. They state that a potent antidyenteric serum should contain antibodies against both the exotoxin and endotoxin, and that such a serum has been experimentally produced in horses.

Proceedings of National and Local Societies

WESTERN SURGICAL ASSOCIATION.

Twenty-ninth Annual Meeting, Held at Kansas City, Mo., December 5 and 6, 1919.

The President, Dr. ROLAND HILL, of St. Louis, in the Chair.

Artificial Impaction of the Femur in the Aged.—Dr. CHARLES D. LOCKWOOD, of Pasadena, Calif., said that the frequent occurrence of nonunion in fractures of the neck of the femur, not only in the aged but also in young adults, was chiefly due to peculiarities of circulation in this location. The blood supply of the neck of the femur was different from that in the shaft of the bone. The more accurate the approximation of the fragments in fractures, the less exudate and callus there would be, and the more rapid the healing process. Failure of bony contact would often cause nonunion in the long bones at any age; it was almost sure to result in nonunion in the neck of the femur in old people.

Artificial impaction was an essential part of the treatment as demonstrated by Cotton. It afforded immediate bony contact and insured an adequate blood supply for union. With the patient under anesthesia, the limb was placed in extreme abduction and strong traction with slight internal rotation applied. The great trochanter protected by two layers of felt, was struck three or four swinging blows with a large wooden mallet. A light plaster of paris cast was applied from below the knee to the waist line and including the sound limb to the knee. The anesthesia lasted only five or ten minutes, and there was no shock to the patient. The patient was placed upon a fracture bed equipped with a special frame and elevating device, enabling the nurse to raise the patient with ease, to bathe, to attend to the bowels and to change the bedding. The cast might be removed as early as the eighth week but, if well borne, it should be left on for twelve weeks. By the end of the fourth month the patient was up and about on crutches and bearing some weight on the broken leg. He had treated three fractures successfully by this method in people over seventy years of age and all were walking and were perfectly well.

Some Rarer Fractures.—Dr. EDWARD EVANS, of LaCrosse, Wis., drew the following conclusions: 1. Industrial injuries and employment liability insurance acts of various states had shown that it was indispensable to take x rays of injuries involving hands or feet, if any suggestion whatever of crushing or sprain existed, as fracture of the small bones of the hands and feet were very frequent, often had very little displacement, and were frequently overlooked unless the x ray was used. 2. Fractures of the bones of the hands and feet required careful and sufficiently prolonged immobilization, after careful reposition, if there was displacement, to get good results. 3. It was rather hard to get and maintain exact apposition of fractures and prevent overlapping of fractures of the long bones. 4. It was not certain whether open

reposition under favorable conditions—proper surgical and hospital facilities—should be resorted to more frequently. 5. While the war had helped to stimulate a much needed closer study and interest in the treatment of fractures, it was doubtful if we had learned much applicable to, or at least as yet applied in, our practice. 6. No satisfactory explanation had been made apparently for the rarefaction of the bone leading to pathological fracture, no fundamental cause or causes sufficient to explain this condition.

Surgical Experience with Tuberculosis of the Joints: Rollier's Heliotherapy.—Dr. GUSTAV SCHWYZER, of Minneapolis, stated that it was his practise to operate upon every tuberculous joint under Esmarch wherever it was feasible. Only with this bloodless procedure was he able to differentiate between healthy and diseased tissues. As to the method of operating, he generally followed the method of Kocher. Through his incisions free access could be gained to the entire diseased area, and it was found very important that all tuberculous tissue be carefully excised. If the disease was confined purely to the synovial membrane of the joint, he limited his work entirely to the removal of this membrane, thus avoiding complete ankylosis. But if the bone was involved, the bone ends were exposed by dislocation. The healthy outer integuments were stripped back and turned back like the cuff of a sleeve. Then the diseased part of the bone was cleanly removed. If one aimed at a complete ankylosis, a good apposition of the bones was imperative.

In all resections the wound cavities were drained with rubber tubes surrounded by washed out iodoform gauze strips. The buried suture material consisted of silk and linen. Silkworm gut was the best material for the surface. A plaster of paris cast was put on before the Esmarch bandage was released. The drains were removed through windows in the cast within a week.

As to Rollier's treatment, it would be taking another great step ahead in the treatment of surgical tuberculosis if we could establish numerous institutions in America where this treatment could be used intelligently; but not having the benefit of such institutions at present, we must face the situation as it lay before us. Granted we had the advantages of hospitals specializing in heliotherapy, there would always be patients who could not spend a year and a half to three years in such institutions, waiting for a definite cure. For these patients surgery might be preferable.

A Mixture of Ethyl Chloride, Chloroform, and Ether for General Anesthesia: An Experience in War Surgery.—Dr. E. P. QUAIN, of Bismarck, N. D., said that the observations that were made in the use of this mixture in the type of surgery which confronted the medical officer at the time were very favorable. It was uniformly considered the most suitable anesthetic for most minor injuries as well as for wounds of moderate sever-

ity. It was employed at Evacuation Hospital No. 114 in the Argonne during the last part of the war as the anesthetic of choice for most operations which could be finished within fifteen or twenty minutes. The speed of the operating team was, therefore, in many instances, the criterion as to whether the choice would be the ethyl chloride mixture or simply ether. Ethyl chloride was put into the bottle from a tube up to the five c.c. mark, one c.c. chloroform was added, lastly ether was poured in up to the thirty c.c. mark and the liquid was thoroughly mixed.

Method of administration.—1. One of the two pieces of canton flannel was laid dry over the patient's face and the other piece was placed in a cup or small pus basin. 2. The whole contents of the bottle was poured into the cup over the piece of flannel, which absorbed practically all of the thirty c.c. mixture. 3. The piece of flannel was then rapidly picked up before evaporation took place and spread out smoothly over the other piece on the patient's face. The patient was told to hold his breath before the saturated cloth was approximated to the face and until the mask was properly adjusted. 4. The mask was placed over the face and the puckering string drawn tightly and tied so that the margin of the mask was held firmly around the face, under the chin, in front of the ears and over the top of the head. It was desirable that the mask be applied air tight to the face, although practically this might be impossible, especially over the hairy part of the head. There could be no reason why this ethyl chloride mixture should not be used in emergency surgery in civil practice when conditions and necessities corresponded more or less to those of the wounded soldiers.

Operative Technic in Spina Bifida.—Dr. JOSEPH RILUS EASTMAN, of Indianapolis, Ind., drew the following conclusions: 1. Spina bifida associated with increasing hydrocephalus is inoperable. 2. Spina bifida associated with paralysis should be operated on only for the purpose of preventing subsequent ulceration and rupture. 3. Rubber dam, stitched at one margin to the skin below the tumor, adhesive plaster, and plentiful collodion, should be used to prevent fecal and urinary contamination. A light, rubber covered clamp applied to the neck of the tumor is the safest method of preventing the loss of cerebrospinal fluid, and also of excluding infection from the cord. 5. The sac can usually be tied off as in inguinal hernia.

Rhinophyma.—Dr. M. G. SEELIG, of St. Louis, Mo., stated that rhinophyma was an essential disease of the nose of more than ordinary interest. Rhinophyma might be described fairly accurately if one merely set down the various descriptive terms which had been used in naming the disease, such as whiskey nose, pound nose, nodular nose, growing nose, copper nose, elephantiasis of the nose, hypertrophy of the nose, lymphangioma, acne hyperplastica, fibroma molluscum, and cystadenofibroma. In the earliest stage of the disease the nose was a dark copper red, and there were dark red spots about it, particularly on the cheeks and at the glabella. Gradually there appeared on the nose lentil size to pea size discrete or confluent

nodules. As these nodules coalesced and the soft parts hypertrophied, the whole organ became deformed by the tumorlike nodules. The deformed growths occurred usually at the tip and on both alæ, and might be discrete and lobulated, or they might fuse, forming one large knob. Sometimes they were pedunculated. The disease occurred usually in the fifth and six decades, that is, the deformity was completed at these periods, the process having taken five to twenty years to develop.

The treatment of the disease was exclusively operative. The most satisfactory operative procedure consisted in shaving off the redundant tissue until the nose was brought back to what one assumed was its original form. In this shaving process, two things should be borne carefully in mind. 1. Do not shave too deeply. 2. Preserve a thin rim of epithelium around the nares. If the shaving was carried too deeply, all sebaceous gland rests were removed and no niduses of epithelium from which, as brood centres, epithelization might spread, were left. This delayed healing, and even if the nose was grafted, the resultant skin had a harsh, white, dry appearance so striking as always to command attention and cause comment. Furthermore, deep shaving might injure the nasal cartilages and set up a stubborn perichondritis. If a thin ring of intact skin was not left around the nares, serious disfigurement might result from the contractions incident of cicatrization. Hemorrhage, which was usually very free, was checked with comparative ease by simple gauze pressure, and the patient was sent to bed with a large well vaselined gauze pad over his nose. The next day this pad was removed, and the denuded area was strapped with imbricated strips of sterile zinc oxide adhesive plaster. This plaster dressing was changed daily. It was not necessary to skin graft these patients.

Jaundice and Its Surgical Significance.—Dr. CHARLES H. MAYO, of Rochester, Minn., stated that jaundice as a symptom of disease might present a very serious problem in tracing its cause. In approximately fifty per cent. of the cases seen the absorption of bile was due to obstruction of the common duct by gallstones; in twenty per cent. of all cases it was due to absorption of bile in the liver, or infective or catarrhal jaundice without duct obstruction. From five to eight per cent. of cases of jaundice were due to serious infection of the gallbladder, possibly gangrene with or without stones. They were usually accompanied by a degree of pancreatitis with marked swelling of the lymph glands on the three ducts; all persons having one on each duct, but no one more than two. Jaundice from cancer presented a very serious problem, although it represented but fifteen per cent. of the cases seen; one half of these were from cancer of the liver, the other half from cancer of the pancreas, or the gallbladder and ducts.

During the years 1916, 1917 and 1918, in thirteen cases seen, it was necessary to unite the hepatic duct either to the duodenum or to the stomach; two of the patients died. Jaundice was a late symptom of gallstones in the majority of cases, the result of neglect to recognize the condition or to advise operation in the preventive period.

The mortality following cholecystectomy in the treatment of cholecystitis with or without stones was low, only 1.8 per cent. in 2,460 operations performed during a period of three years. There were 337 cases in which the cholecystectomy and choledochotomy were both done, with a mortality of 3.2 per cent. In a group of thirty-six very serious cases of obstruction and malignancy, cholecystostomy and choledochotomy were done with a mortality of 16.6 per cent. Choledochotomy alone was done in a group of forty-seven somewhat similar cases, with a mortality of fifteen per cent. If all the choledochotomies were grouped together, however, the mortality in the 420 cases was but 5.7 per cent., too high a mortality for simple cases of stone and obstruction, and too low for the late and complicated cases, including the cancers. Stones were found in the common duct in 274 of the 420 cases.

(To be concluded)

Letters to the Editors.

CAPITAL PUNISHMENT.

137 EAST FIFTY-SECOND STREET,
NEW YORK, March 9, 1920.

To the Editor:

A bill providing for the abolishment of capital punishment will come up for a hearing in the Legislature at Albany about the middle of this month, and up to the present time I have failed to hear a word or read a line from the medical profession in favor of the passage of this bill. It seems to attract little or no attention from any one outside of a few humane societies and the *New York Evening Journal*, which usually is among the pioneers in any movement having for its aim the relief and uplift of unfortunate members of society.

Some years ago the physicians of New York county officially expressed themselves by resolution in favor of the abolishment of capital punishment, and it indeed seems strange that now on the eve of a hearing in their own State it does not appear that any word of encouragement or approval has been offered by them on behalf of a bill which seeks to abolish this medieval custom and thereby to place the State of New York in the vanguard of the forces which work for real humanitarianism and social progress.

In this connection, we cannot ignore the remarks of Doctor Timme at a recent meeting of the County Medical Society on endocrine therapy, at which time he stated that the pathological cases in Sing Sing prison numbered from sixty to seventy per cent. If this is true, they must be still higher in the deathhouse—probably eighty to ninety per cent., and if only viewed from this angle, without regard to other and higher moral aspects, the matter certainly deserves the most sincere and earnest attention of the medical fraternity.

The method employed in the accomplishment of the death penalty matters little, whether it is the presumably more refined way of turning the switch as practiced in this State or the cruder manner of the guillotine as used in France—the vital point is

that human life is taken in cold blood by the State, which is presumed to exemplify the highest intelligence and morality of the community, and often for a crime never committed by the individual, or, if committed, for which he cannot righteously be held accountable.

The medical fraternity in particular bears a solemn responsibility in this matter, aside and apart from the moral culpability shared by the community at large, for to no other branch of society is entrusted a duty that is more sacred or nobler than its appointed function of conserving human life, and certainly this responsibility and duty are not fulfilled in proper measure, nor with credit either to its humanitarian ideals or scientific knowledge, if the medical profession is to deny its approval and support to a cause which should receive its quickest response and warmest cooperation from among our ranks.

It is to be hoped that prompt official action may be taken by the medical fraternity in this State, to the end that its support and influence on behalf of the bill in question may be exerted in connection with the present movement to purge the State of New York of the odium of this barbaric practice, which is both morally wrong and socially offensive.

Sincerely yours,

JOHN D. COGLAN, M. D.

Births, Marriages, and Deaths.

Died.

BEAVER.—In Akron, Ohio, on Thursday, February 19th, Dr. Thurman Koss Beaver, of Indianapolis, aged thirty-two years.

CAREY.—In New York, N. Y., on Saturday, March 6th, Dr. Henry Carey, aged fifty-two years.

DE BLOIS.—In Boston, Mass., on Friday, February 27th, Dr. Thomas Amory De Blois, aged seventy-two years.

DOSTER.—In Columbus, N. M., on Monday, March 8th, Captain Wade Doster, Medical Corps, U. S. A., aged forty years.

HENRY.—In Philadelphia, Pa., on Thursday, February 26th, Dr. John Philip Henry.

HORTON.—In Unionville, Conn., on Thursday, February 19th, Dr. William Wickham Horton, aged sixty-five years.

HULL.—In Brooklyn, N. Y., on Saturday, March 6th, Dr. Silas Blaisdell Hull, aged twenty-five years.

MAKEPEACE.—In Farmington, Me., on Monday, February 16th, Dr. Benjamin F. Makepeace, aged sixty years.

MUNSON.—In Bath, N. Y., on Saturday, February 28th, Dr. Willis M. Munson, of Otisco, aged seventy-eight years.

RITTER.—In Tannersville, Pa., on Monday, February 23d, Dr. Frederick Knip Ritter, aged fifty-three years.

SCHENCK.—In Brooklyn, N. Y., on Saturday, March 6th, Dr. Peter Lawrence Schenck, aged seventy-six years.

SCHMOLL.—In Oakland, Cal., on Wednesday, March 10th, Dr. Emile Schmoll, aged forty-eight years.

SEAMAN.—In Los Angeles, Cal., on Friday, February 20th, Dr. Edgar D. Seaman, aged sixty-five years.

VIOLET.—In Watford, Wis., on Wednesday, February 25th, Dr. Malcolm G. Violet, aged fifty-six years.

WHITEMORE.—In New Haven, Conn., on Thursday, February 26th, Dr. Frank H. Whittemore, aged sixty-five years.

ZURHORST.—In Oakfield, N. Y., on Saturday, February 21st, Dr. Augusta F. G. Zurhorst, aged seventy-three years.

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Original Communications

THE TREATMENT OF FLAIL AND STIFF JOINTS.*

BY SIR ROBERT JONES, M. D.,
Liverpool, England.

One of the common products of the results of war injuries is the flail joint; in other words, the pseudarthrosis which is of very imperfect function because the bones forming it do not come in contact, and in consequence the lever is imperfect because it has no fulcrum. The greater number of these disabilities are the direct result of excisions performed in order to save the patient's life or limb by preventing general sepsis, or to minimize local sepsis. It is our duty to try to lay down suggestions for the immediate and later treatment of these loose joints in order to minimize the loss of function. It is well to realize that the cases of so-called limited resection have resulted in better function than where the excision has been extensive. Furthermore, cases where the sepsis has been overcome and the bones allowed to remain in position have usually resulted in very good and firm ankylosis with excellent function if the position of election has been maintained.

The flail joint may follow, a, as a direct result of excision; b, the removal of large comminuted masses of bone; c, the direct loss of bone from missile, and d, the extrusion of necrosed bone during sepsis.

METHODS OF PREVENTION.

1. The extent of excision should be strictly limited, subject only to conditions of safety.
2. Extension applied should be very moderate.
3. Ankylosis should be aimed at rather than mobility.

All muscular attachments should be spared. The tuberosities of the humerus; the nerve supply of the deltoid; the condylar attachments governing the elbow; the triceps expansion; the biceps insertion; the coronoid and, if possible, the whole or portion of the olecranon should be preserved. One should endeavor also to retain as much width of the lower end of the humerus as is possible, in order to allow the surgeon to restore leverage later. If it is impossible to leave the important muscular attachments *in situ*, it may be possible to chisel off the portion of the bones to which the muscles are in-

serted, such as the olecranon, tubercle of radius, coronoid process, and the tuberosities of the humerus, and use them for reconstructive purposes later.

Extension applied to a joint, when necessary at all, should be of the very lightest kind and maintained for the shortest period possible. An abducted shoulder and a flexed elbow admit of excellent drainage, but if treated in the dependent position purulent tracking down the muscular planes is permitted.

The rule should be to aim for ankylosis in the best functional position. As soon as he can do so the surgeon at the front should place the bones as near together as he can, and in the best position for further function whether a pseudarthrosis or an ankylosis occurs.

TREATMENT OF THE FLAIL JOINT.

A proportion of flail joints are infected and discharging. Where it is possible they should be treated by excision of sinuses, scars, and infected bone. Whether operated on or not, the bone surfaces should be approximated and retained in the best functional position. A proportion of cases take in their slack and result in a much firmer pseudarthrosis or ankylose. The shoulder and elbow joints are most responsive to this treatment. Where all wounds are healed the joints should be placed in the functional position either by means of a splint or plaster. The bones should be insinuated into juxtaposition to each other without crumpling the soft tissue between them. Absolute immobility must be maintained continuously for at least three months. If the muscles governing the joint retain power the aftertreatment must be carefully conducted, only a few degrees of movement being allowed. The range of active movement may be increased gradually as the muscles regain their strength. If a pseudarthrosis of the shoulder joint is a bony or short fibrous one, the shoulder blade becomes the joint and the deltoid may be trained to lift the arm.

Pseudarthrosis of the elbow joint always results in considerable lateral instability. Attempts may be made at improving the stability by operation in cases where the muscles governing the joints may be reasonably expected to recover strength. The operation consists of removal of intervening scar tissue, bringing the bone into contact and maintaining that position by means of an absorbable

*Presented before the Clinical Congress of the American College of Surgeons, New York, October, 1919. (Abridged.)

material. Ankylosis of the flail joint, often a difficult matter, will be discussed in relation to the joints involved.

Flail hip.—If the femur has merely been deprived of the head and neck, all that is needed is to correct any deformity which obstructs walking, such as adduction. When the trochanter and part of the shaft are lost, and in other conditions in which the limb cannot bear weight, a jointed caliper should be applied. The most likely method of obtaining an ankylosis in this condition is to take a long strip of femur, half its thickness, and slide it into a prepared acetabulum. The slide should rest for two or three inches in the groove of the femur.

Flail knee.—Ankylosis of this joint is the only practical treatment, and if the bones are in good condition, nothing is needed except to saw the ends and fix with screw or nail. If there is a wide separation, however, and the ends have been associated with sinuses, union is not easily secured. In such a case it will be necessary in addition to bring a bulky sliding graft from tibia or femur and wedge it in at right angles to the line of the joint. If there is a shortening of many inches and operation is refused, the caliper splint and a high boot will afford the best help.

Flail ankle.—This condition is exceedingly rare, and the treatment will lie between an ankylosis or an amputation.

Flail shoulder.—I have already advised the postural treatment for this joint in cases where the muscles are functioning. Abduction and careful muscle reeducation may result in a joint preferred by some people to an ankylosis. The very flail joint should be ankylosed by fully exposing it. The glenoid can be then gouged as deeply as possible, the base of the coracoid and the acromion should be chiselled, and the bony flaps left attached. The upper part of the humerus should be exposed and sawed through, and a groove made into the upper part of the shaft for the reception of the acromion. The humerus is pushed into the glenoid and the acromion sawed through and received into the groove prepared for it. The glenoid, humerus and the acromion should be fixed in contact by kangaroo tendon and placed into functional position.

I have found that any operation less extensive than this is usually insufficient. If there is no shortening of the humerus the position of selection is just in front of the coronal plane of the body, while if there is much loss of bone it will be necessary to fix it in a plane posterior to this, otherwise, in flexion of the elbow, the hand will pass beyond the mouth. After all operations to obtain ankylosis, the arm should be immobilized for at least three months.

The various methods of bone transplant may still be considered under trial, and I adopt a more certain route, such as the production of ankylosis by end to end apposition. Before the arm is ankylosed, care should be taken to ascertain whether the scapula is mobile, also whether it retains its normal position in regard to the humerus, as if the scapula is fixed, the result of the operation is a tragedy.

Flail elbow.—There are two methods of treatment available here, a, the nonoperative, and b, the operative. The nonoperative consists of the approximation of the bone ends, counteracting the effect of gravity, and in muscle reeducation and development. It also often involves the wearing of apparatus. The operative treatment has one of two aims, a, the formation of a bony ankylosis, or, b, the provision of a mobile arm with stability. The nonoperative method is likely to be successful only where the bone ends are broad, giving the maximum surfaces of attachments. Where a larger apposition of raw surface is desired the bone ends may be split and in this way widened. The introduction of nonabsorbable material is inadvisable, as the blood supply is usually poor.

Pseudarthrosis of the elbow.—There are various operations for pseudarthrosis of the elbow, the best being a dovetailing of the humerus into a V shaped cut into the radius and ulna with the interposition of fascia.

Flail wrist.—This is so rare that one need only say that ankylosis should be performed if thereby function is likely to benefit. It is interesting to notice that we often succeed in producing a satisfactory pseudarthrosis while attempting to produce ankylosis of flail joints. When we directly aim at a pseudarthrosis we are in danger of losing stability.

TREATMENT OF STIFF JOINTS.

The stiff joints following war wounds have to be approached with much greater care than stiffness due to prolonged immobilization of the joint, as latent sepsis is so often present in the neighborhood of healed war wounds. For instance, a fracture of the femur in prewar days, either simple or compound, retained in a Thomas splint used to leave the knee joint very stiff temporarily, and a fortnight of massage and gentle movement was sufficient to restore mobility. This is not the case in fractures we are dealing with now, for the rigidity is much more pronounced and requires a longer time to overcome. Recent improvements in the Thomas splint and the ice tong extension make it quite unnecessary now to keep the knee immobile for months. Rigidity is sometimes so marked that surgeons have failed to make any impression on it by attempts at forcible movement—a procedure of doubtful wisdom. Such cases will often yield to the influence of gravity and gradual pressure.

When treating a stiff knee joint a long posterior splint, bent to an angle of fifteen degrees, is applied firmly to the extended limb, the lower end of the splint and heel being kept unsupported. As the limb flexes, the angle of splint flexion may be gradually increased, but a few days' rest in the new position should be allowed to strained tissues before each increase in flexion is made. The power of voluntary full extension must be assured on each occasion. If the knee becomes firmly fixed in its new angle of flexion it is sufficient proof that this method of attack is premature or useless. A limited flexion can be recovered under anesthesia in certain cases. If the limb is immobilized for a week or so in the new position, a further flexion can often be secured under a second anesthetic.

These principles apply to all joints. When strong periarticular adhesions are thus stretched a certain transient degree of stiffness in the new position will occur, but after a short course of massage and voluntary effort this will disappear. The advantage of gradual stretching over rapid tearing is that hemorrhage and excessive inflammatory reaction are avoided, also instances have occurred where the patellar tendon has been torn, the patella fractured and also where the quadriceps have been ruptured. Surgical intervention may be necessary in cases of: a, muscular adhesions to bone; b, scarring and shortening of capsule; c, intraarticular adhesions due to arthritis or fracture; d, fixed patella, and, e, bony ankylosis of femur and tibia.

Muscular adhesions.—When these adhesions interfere with flexion they are generally associated with the quadriceps. If the muscle is firmly bound down the rigidity of the knee is very marked. Force should never be applied to these joints, as it will only result in a lengthened or ruptured patellar ligament or even a compound fracture, suppuration in muscle sheaths, or osteomyelitis. Muscle must be free from its adhesions by operation, and a living flap of fat or fascia placed between it and the bone. Muscle which is shortened through loss of structure must be elongated. The knee should be kept flexed during healing and the muscle freed from adhesions subjected to electrical stimulation.

Shortening of capsule.—A firmly rigid joint with no undue tension of the surrounding ligaments, accompanied by a normal x ray picture, can be safely diagnosed as one of tense or contracted capsule. This should be treated on the lines laid down in regard to severe periarticular adhesions and if the rigidity still persists, operative interference may be called for.

Operation.—A tenotomy knife may be used to divide the contracted capsule of ankle and phalanges of fingers and toes. An open operation is usually necessary for the other joints. Care must be taken to avoid injury to important ligaments which secure the stability of the joint, such as the internal and external ligaments and crucials of the knee joints, upon which so much depends.

Intraarticular adhesions.—These are treated by gradual flexion with periods of rest. Severe pain with rise of temperature and effusion should warn us of trouble, but a little pain and some effusion need not interfere with the stretching.

The patella is sometimes fixed to the femur, thus preventing flexion. If this is caused by light adhesions they will occasionally yield to manipulation and exercise, but where the attachment is bony a separation may be effected by chisel, and a flap of fascia or the bursa of the patella introduced between the bones. If an ankylosis is complete and in good position no surgical interference is needed, but if ankylosis has occurred with the limb in a bad position, the condition must be corrected.

Flexion of the knee.—If a sound knee is ankylosed with more than thirty degrees of flexion, it is unnecessary to straighten it. Marked degrees of flexion may require the removal of a wedge from the front of the knee joint. A flexion of fifteen or twenty degrees gives the best functional result.

Lateral deviation or genu recurvatum.—This should be treated by a supracondylar osteotomy, and put up with the deformity completely obliterated. After excision and osteotomy, a caliper splint should be worn for three months. We must remember that a sound ankylosis of a joint in a good functional position is much more useful than a flail pseudarthrosis or an unsound ankylosis with limited and painful movement.

11 NELSON STREET.

APPENDICITIS IN THE ARGONNE.

BY ELLSWORTH ELIOT, JR., M. D.,
New York.

It is the common belief that, during the period of active hostilities, the surgeon in a hospital near the front is exclusively concerned in the treatment of various casualties. The fact, however, that surgical emergencies, similar to those in civil practice, may develop, especially where large numbers of troops are concentrated, must not be overlooked. The need of treatment in these cases is urgent, in many instances more urgent than is the treatment of the wounded soldier, and yet not infrequently, owing to the already crowded condition of the mobile or evacuation hospital to which the patient is first taken, the necessary treatment cannot be given until the patient reaches the base, after a delay of from twenty-four to seventy-two hours. That such delay may at times be unavoidable must be granted, and yet when the organization and equipment of a hospital, no matter how near the front, is in such a condition that patients can be received, cared for, and disposed of in an orderly manner, it must be emphasized that the soldier, combatant or not, who is stricken with an attack of appendicitis or presents the symptoms of a ruptured abdominal viscus, resulting from a severe crush, or who suffers from any condition by which his life is threatened, deserves equal consideration with the combatant wounded in battle. Priority of treatment should be accorded those, in either class, whose lives would either be sacrificed or seriously threatened by further transportation or delay.

Exceptionally, patients suffering from conditions or injuries in which the risk is so negligible as to permit of transportation to the rear are treated, for specific reasons, at the front, but only during an interval between attacks when the hospital is not overcrowded. By way of illustration the case may be cited of an officer, operated upon in an evacuation hospital for hemorrhoids in order that he might rejoin his command as quickly as possible. To have had the operation in a base hospital would have at least doubled the length of his absence from active duty. Similarly those members of a hospital unit in need of surgical attention, who have rendered valuable service as officers or corps men, are treated by their own staff for, if evacuated to the rear, their replacement by less competent men would proportionately lower the hospital efficiency.

Of the comparatively small number of surgical emergencies which, for reasons just mentioned, were treated in evacuation hospital No. 11 while

on duty during the Argonne campaign, the following is worthy of report:

J. B., a member of the Twenty-seventh Division, twenty-three years of age, and with no previous history of abdominal trouble of any kind, was brought to the hospital with an acute abdominal inflammatory condition of eighteen hours' duration. Several attacks of vomiting had marked the invasion and severe pain referred at first to the navel and afterward to the lower right quadrant had existed throughout.

Examination disclosed restricted respiratory movement of the lower abdominal wall, with rigidity more marked on the right than on the left side and more intense below, rather than above, the level of the navel. The physical examination was carefully made and its result was corroborated by another member of the staff. No blood count was taken, the hospital not yet being supplied with laboratory apparatus.

Under ether anesthesia, and with the assistance of Captain W. F. Bartelt, the abdomen was opened through an intermuscular incision over the point of maximum resistance in the lower right quadrant. The peritoneal cavity contained a considerable amount of turbid, odorless fluid, suggestive of a nonruptured gangrenous appendix. As there was, however, no sign of the caput coli or any portion of the large intestine, the muscles were divided upward from the centre of the incision along the outer border of the rectus muscle, exposing the gallbladder and the duodenum. Even then there was no sign of any part of the large intestine. As the gallbladder, duodenum and pyloric end of the stomach were normal, the rectus muscle was divided transversely at a point near the centre of the pararectal incision, corresponding to the normal position of the transverse colon. Retraction of the incision then disclosed the caput coli lying just to the left of the middle line and two inches above the level of the navel with a necrotic appendix springing from the ileocecal junction. From this location the large intestine passed in folds to the splenic flexure and then downward along the descending colon to a rather voluminous sigmoid, the entire colon being attached to the posterior parieties by a mesentery of variable length. The necrotic appendix was removed and the stump infolded by means of a pursestring suture. A cigarette drain was inserted through the lower part of the incision to the right iliac fossa and a second drain through the upper angle of the incision to the site of the caput coli, the incision throughout its entire extent being closed with chromic gut sutures.

The recovery was without incident. The discharge from the appendix site was nil and the drain was removed and not replaced at the end of the thirty-sixth hour. The discharge from the opening in the original intermuscular incision was abundant and purulent, without odor and without necrosis of the abdominal fascia. It had much diminished by the tenth day, the general condition of the patient at that time permitting his evacuation to a base hospital.

Although the occasional failure of the large in-

testine to rotate has long been recognized as a rare anatomical anomaly, a lesion of the appendix under these circumstances is necessarily of still greater rarity. It is the sole instance of this particular lesion seen by the writer in the course of an active hospital experience extending over twenty-five years. It is chiefly worthy of report, however, in view of the fact that, while the appendix lay above and to the left of the navel, the right lower quadrant presented the area of most marked muscular rigidity. The writer has called attention to this anachronism before, especially in the condition of spreading peritonitis where the peritoneal irritation due to the advancing infection is occasionally more intense than that due to the original focus, which frequently shows a subsiding tendency. This condition was well demonstrated in the case herewith reported by the presence, at the time of operation, of the largest amount of irritating exudate in the right lower quadrant opposite the point of maximum peritoneal irritation, and also by the fact that, although both upper and lower angles of the incision were drained, the former drainage tract, passing down to the vicinity of the appendix stump, closed promptly, while from the latter, passing down to the right iliac fossa, a purulent discharge, gradually decreasing, and without necrosis of the abdominal fascia, persisted for at least ten days, though without in any way impeding the convalescence of the patient.

The writer wishes also to call attention to the value of the transverse incision in providing an exposure through which the abnormally situated caput coli was quickly found. That this incision also proves of great value in the diagnosis and treatment of other obscure abdominal conditions has often been emphasized and need not now be mentioned. Furthermore, in case of the extension of an abdominal infection to the abdominal wall, the gaping of the wound, after a transverse incision, with its coincident danger of prolapse, is much less pronounced and the eventual yielding of the scar with the formation of a ventral hernia decidedly less frequent than after a vertical or oblique incision irrespective of its location.

34 EAST SIXTY-SEVENTH STREET.

Treatment of Hyperthyroidism.—Wingate M. Johnson (*Charlotte Medical Journal*, November, 1919) advises a thorough search for a focus of infection. The patient should be put to bed and kept quiet. Meat should be reduced and no stimulants allowed. Sodium phosphate should be administered for the bowels, as it is supposed to aid in replacing the phosphorus oxidized in the excessive metabolism of the body. An ice cap over the thyroid for part of the time may reduce its activity. Quinine hydrobromide, five grains in a capsule with one grain of ergotin, should be given three or four times daily. Tincture of belladonna is frequently used to check the thyroid secretion. Thyroidectin—the desiccated blood of animals whose thyroid glands have been removed—is given in five grain doses two or three times daily. The x ray is also of value.

GONORRHEAL INFECTION IN CHILDHOOD.

BY P. BROOKE BLAND, M. D., F. A. C. S.,
Philadelphia,

Gynecologist to St. Joseph's Hospital; Assistant Gynecologist to Jefferson Hospital; Assistant Professor of Gynecology, Jefferson Medical College.

One of the most troublesome and serious affections of early life is that of gonorrhea in infancy and childhood. This malady is much more frequent in the female than in the male, but fortunately widespread infection in little girls is far less common than in women who have entered the active menstrual life or those in early adolescence. Deep pelvic involvement in children, therefore, is not the rule, although destructive peritonitis before the advent of menstruation does sometimes occur. However, this favorable tendency of the disease to localization is overbalanced by its vicious determination to persist and to develop into a family or institutional contamination, as seen in a general infection of a family group, in girls' orphanages, or in the pediatric wards of hospitals. Recently, I observed gonorrhea in a family of five little girls, all of whom were infected consecutively. These children ranged in age from two to eleven years. The primary infection was transferred to the youngest child by the attending nurse. Occasionally, I have seen the children's ward of Jefferson Hospital quarantined as a result of a gonorrheal epidemic.

Nomenclature.—The specific term of vulvovaginitis has been applied to gonorrheal infection in little girls because it is said that the infection is not, as in the adult, limited largely to the vulva, but that the vagina is equally involved. This phase of its pathology is attributed to the undeveloped, delicate, and nonfunctioning vaginal mucous membrane, and, perhaps, also to the absence of the bactericidal acid vaginal secretion.

Frequency.—Gonorrheal infection in little girls in general is extremely common, but it is obviously impossible even to guess how frequently the disease occurs. Many cases, no doubt, are never recognized and never treated. Many are looked upon by the parent as a simple catarrhal condition and are not submitted to medical care. Besides, venereal infection in children, to the lay mind, is not the common thought. This is especially true of the so-called milder cases or in those not assuming an acute nature. Therefore, the physician seldom has an opportunity to observe the condition in the initial stage and medical advice is only sought after the trouble has existed for a considerable period of time. However, statistics have proved conclusively that the malady is extremely common and hence the large proportion of inflammatory lesions of the lower genitals in little girls should be regarded with suspicion. Norris, who has carefully studied this subject, states that gonorrhea was found in sixty-three per cent. of all cases of vulvitis in the Johns Hopkins Dispensary and he quotes other authors who found the proportion as high as eighty-five and seven tenths per cent. Guiteras fixes the percentage of gonorrheal infection at seventy-five and the remaining

twenty-five per cent., he asserts, is due to saprophytic organisms. Hallier asserts that the large majority of cases of purulent vulvovaginitis are gonorrheal in origin. Holt has found that this disease occurs in from two to ten per cent. of all inmates of children's institutions. Hamilton, quoted by Norris, found that four per cent. of all the applicants to the Babies' Hospital, in New York, suffered from this disease. As previously mentioned, this infection in institutions is prone to assume epidemic proportions, and Holt, according to Norris, observed four epidemics in the Babies' Hospital in New York, from 1899 to 1904, or approximately one each year.

Methods of infection.—In the great majority of cases of vulvovaginitis the infection is indirect and the organisms are conveyed to the children through ignorance and carelessness. Direct infection by coitus with the infected adult male, Guiteras believes, is comparatively rare, although this theory was formerly generally and freely accepted. However, this mode of contamination undoubtedly does occur, and I have had under my care a little girl of fourteen who was infected by an attempt at rape when seven years old. The disease persisted until the age of fourteen when she was operated upon abdominally for large bilateral pus tubes. Direct infection of the five little girls previously referred to was transferred by their infected nurse in an endeavor to gratify her sexual passion. In the majority of cases, of course, the infection results from indirect transfer and Norris believes that under ten years of age the infection is nearly always accidental.

The forms or methods of conveyance are innumerable. Today, the clinical thermometer is said to form a common medium of transfer. Underclothing, perhaps, stands second in point of frequency and then in the following order are bed linen, napkins, towels, sponges, wash cloths, syringes, bath tubs and, according to Norris, bath water may even be a source of contamination. The first two, it is stated, are especially the most usual means of conveyance in our hospital wards. The age old superstition that infected persons may obtain relief by contact with the uninfected, still persists and this superstitious belief is one of the most frequent causes of outrage committed on little children. It is said that this belief is especially prevalent among foreigners and those coming from Southern Europe. Norris quotes Seippel, who recently examined fifty-three girls who had been attacked as a result of this old superstition. Thirteen of these girls were under eleven years of age. The belief that contact with a healthy individual cures the disease is not held alone by men, for Wolbarst records a case in which several little boys were infected by a prostitute. That this superstition has a positive hold on certain individuals Wolbarst has proved by the fact that frequently the infected individual did not desire sexual gratification for there was no sign of rape. They hope exposure to a normal individual will aid in cure.

As to parturient infection, most writers are unanimous in the belief that this type is relatively uncommon. This is due, in a large measure, to

the fact that there is after birth almost immediate mechanical cleansing of the external genitals. Moreover, the large proportion of vertex presentations adds a certain degree of genital protection. Vulvovaginitis neonatorum is, therefore, relatively infrequent. Hallier states that birth infection, "while unusual yet is not unknown." He asserts, furthermore, that the vulvar tissue is less vulnerable than the conjunctiva and that the head presentations do have some relation to the infrequency of vulvar infection. Distinct cases of birth infection are recorded by several writers and Epstein, referred to by Norris, reports three cases, two of which were associated with gonorrheal ophthalmia.

Age.—The majority of cases occur early in life, usually between the second and tenth years. The average age of 344 patients examined by Hamilton in the children's department of the Vanderbilt clinic, was 5.1 years, the youngest patient was three weeks and the oldest twelve and one half years.

Symptoms.—In most cases, the systemic and local symptoms of vulvovaginitis are moderate and the course of the disease is also relatively mild. This is due to the absence of certain anatomical and physiological conditions. The vagina in the infant is short and the folds or corrugations of the mucosa are not prominent, therefore, the gonococcus and its secretions do not find a favorable site of habitation or concealment. The infection, however, frequently extends as high as the cervix and Hamilton has demonstrated involvement of this structure in every one of the forty cases personally investigated by him. Seldom does the infection extend higher than the cervix. Indeed, invasion of the uterine cavity is extremely rare and, therefore, adnexal or peritoneal infection is naturally very unusual.

The constitutional reaction to the disease is not commonly observed by the physician and the general systemic symptoms, as a rule, have disappeared when the patient is presented for treatment. No doubt there are certain mild constitutional phenomena at the onset of the trouble, such as one observes in all acute inflammatory processes. The patient may experience a mild febrile reaction with the general symptoms associated with that condition. Cases vary greatly in intensity, however, but only a very small minority run an acute course with pronounced, distressing, local symptoms. The great majority pursue a moderate course and indeed, at the onset, the symptoms may be so mild as not even to attract immediate attention. In a general way the local symptoms are precisely like those observed in many other forms of vulvar irritation.

The little patient first complains of itching, which is quite constant day and night, and may be so pronounced as to interfere with the child's rest. This itching, and the rubbing incident thereto, may be the first signs to arouse the parents' suspicion of trouble. The child also complains of a burning or stinging sensation which is decidedly aggravated during urination. For this reason the child will refrain from emptying the bladder as

long as possible. If marked urethral involvement complicates the trouble, the dysuria, of course, becomes more marked and the child suffers even in anticipation of emptying the bladder. Pain on urination is not the only source of discomfort. There is the distinct throbbing distress observed in all inflammatory lesions. This is aggravated by motion or manipulation. The patient finds the recumbent position most comfortable and occasionally, the little girl will be found lying down with the thighs elevated and widely separated. This position overcomes tension and friction and affords the most comfort. Shortly after the onset of the disease, the discharge appears. At first this is thin and ichorous; later it assumes the typical thick yellow or yellowish-green profuse gonorrheal type; in the still later stages it becomes mucoid, creamy or watery.

Diagnosis.—The diagnosis of vulvovaginitis should be made first by a careful analysis of the clinical history, second by a painstaking physical examination, third, by a microscopic examination of the discharge, and fourth by a serological or complement fixation test.

Inspection.—The local picture of vulvovaginitis is always suggestive. On inspection a rather free purulent discharge is observed, the character of which, of course, depending upon the stage of the disease. In the early period, this discharge is rather thin, irritating, hot, and scalding. In the subacute period, the discharge is free and purulent, and the organs usually are generously bathed with it. In consistence it is sticky and the labia are plastered or glued together. In color it is usually yellow or yellowish-green and the telltale sign is observed in isolated yellowish stained spots on the child's underclothing. Later the discharge becomes mucoid or creamy or thin and more watery in consistency. The irritating character of the fluid is shown by the excoriation of the vulva, perineum, anal region, and inner side of the thighs. This may be so marked as to result in papillary proliferation of the skin with formation of venereal warts or condylomata. The latter lesions, however, are not so frequently observed in the adult. The vulvar skin is swollen, red, and angry, particularly the labia and the tissue about the perineum and anus. The urethral meatus is generally red, swollen, and pouting. The orifices of the ducts of the vulvovaginal glands are also pouty and velvety red in appearance. Involvement of the gland itself may occur, but this is not common. Personally, I have never seen a Bartholinitis in early childhood. Norris, however, states that this is not an infrequent complication of the disease. In addition to urethral and Bartholin duct involvement, the vagina and cervix are found affected. This occurs in practically all cases, but extension beyond the cervix is not the rule. This is due to the fact that active function has not begun and that the cervical canal is tightly contracted.

Palpation.—On palpation the parts are extremely tender and digital examination is almost impossible. This is not due alone to the inherent childish fear, but to actual discomfort. The tenderness is most marked about the hymeneal ring and the

external urethral meatus. This extreme tenderness plus the natural fear of the child render the examination and subsequent local treatment discouraging and often difficult.

In establishing a diagnosis naturally every possible resource should be utilized. A careful scrutiny should be made to determine the presence or absence of the gonococcus in the discharge. This organism is usually found in the acute and also in the subacute stage, but in the advanced stage of the disease it is generally absent or at least not microscopically demonstrable. The complement fixation test should also be resorted to because it has, according to Kolmer, a decided positive value, and a positive reaction always means gonorrhea. A negative reaction, on the contrary, does not indicate that an individual is not infected, for a negative result is obtained in a definite number of infected cases. In adult women Kolmer found a negative result in practically all cases until the disease involved the cervix, but in little girls, he obtained positive reactions in both acute and chronic vulvovaginal infection. This indicates, he states, "that the disease is either more severe in children, that they have more antibody formation, or that the disease affects the cervix relatively early." This latter feature of the trouble we have already referred to as the common observation of men who have especially investigated the subject. The test, like many of our laboratory measures, has certain technical objections. Nevertheless, whenever possible, it should be instituted, for a positive reaction means that the patient is the host of a focus of active living gonococci. As to that, there can be no question and hence the diagnosis is sure. In doubtful cases, therefore, it should always be used. Kolmer has obtained a positive reaction in from fifty to eighty per cent. of all cases.

Duration.—The duration of vulvovaginitis is as varied as its course. Many cases respond fairly promptly to treatment and tend to a favorable result; in others, despite every measure, the trouble persists and recurs. This is due, perhaps, to the concealment of the organism in the cervix, in the glands of Skene, or the ducts of Bartholin and from these locations give rise to autoinfection of the individual. I recall one patient, in whom general treatment had been carried out over a period of several years and in whom the germ was still found. The complement fixation test in this patient was also positive. It may be said that the acute stage of the disease does not extend over a period of more than three to six weeks, but the duration of this stage will depend largely on the faithfulness and assiduousness with which the treatment is carried out. If the trouble is found reasonably early and active treatment instituted, the condition should be under fair control in from two to three months and a cure should be obtained in from six to twelve months. Of course, in many cases the patients recover in a much shorter time. However, one should not give an over optimistic outlook. In one hundred and forty cases reported by Skutsch, the gonococcus was found in forty-three per cent. after twelve weeks

of active treatment. Some writers have observed that the disease persists from two to ten years despite every plan of treatment. Hamilton, referred to by Norris, reports sixty-one cases of so-called cures. In fourteen of these cases the patients returned with a recurrence of the trouble in from six months to two years. Trenwith reported twelve cases which he carefully followed in which recovery occurred in four and one half months. I had one patient in whom the disease was contracted at the age of seven and upon whom we operated for double pus tubes at the age of fourteen.

Prognosis.—From what has been said, one must naturally be very guarded in submitting a prognosis. The condition is a rather gloomy one and frequently very discouraging. Hamilton states that a positive statement of cure should not be given until four negative smears have been reported extending over a period of one week. In addition, I should say that at least one or preferably two negative serological examinations should be also secured.

Treatment.—In considering the treatment of gonorrheal infection of the generative organs in children the importance of prevention cannot be too strongly emphasized. A great deal can be accomplished along preventive lines. In institutions for girls, in babies' hospitals, and in the pediatric wards of general hospitals, a strong barrier of preventive measures should always be constructed. This should consist in the routine bacteriological analysis of the vulvovaginal secretion of all patients applying for admission, for most of the institutional epidemics are not developed from within, but are introduced from without. Norris, in his work, refers to Seippel who found that in fifty-four per cent. of a series of 252 cases of vulvovaginitis, admitted to his care, the patients had been brought to the institution for some other condition. Hamilton, previously referred to, found four per cent. of all applicants to the Babies' Hospital in New York suffering from gonorrheal infection of the vulva. In institutions in which the disease appears, the patient should be isolated immediately. The bed and clothing of the child should be sterilized or fumigated separately. A special nurse should be assigned to the patient and she should not be allowed to attend any other inmate. Everything used in the treatment of the child should be separately sterilized, including the clinical thermometer, bed clothing, bedpans, feeding utensils, irrigating nozzles, and instruments. Wooden applicators should be employed and these with all dressings should be burned. Special care should be taken also to prevent eye infection. The hands of the patient should be kept from coming in contact with the external genitals. This precaution should further be observed by frequently cleansing the hands with weak lysol solution followed by water. In private houses all children should be kept from contact with infected parents. Failure to observe this simple care is not an infrequent source of contamination.

Active treatment.—Considerable difficulty is frequently experienced in instituting active treatment. This is due to the natural timidity and fear

on the part of the child, therefore, in the beginning every effort should be made not to frighten or cause the patient distress or pain. Efforts should be made to obtain the child's confidence. For the first two or three treatments simple nonirritating solutions and applications should be used. If the first treatments are painful, future treatments are almost impossible. The little patient will squirm and fight even at the subsequent appearance of the doctor or nurse. For this reason then, only soothing, warm water or boric acid solution should at first be given. Indeed, Norris states that Wagner, of Frankfort, relies entirely on the copious use of warm water and from this he claims to have obtained excellent results. Menge, of Heidelberg, he states, employs chamomile tea as a mechanical cleanser. He follows this by the instillation of a one or two per cent. solution of silver nitrate into the vagina.

Our plan has been first to use for a period of two or three days copious cleansing of the vulva and vagina with simple warm water. This is accomplished through a number fourteen soft rubber catheter. After gaining the confidence of the child, we employ Lugol's solution of iodine in warm water. We begin with a very weak solution, usually one quarter of a teaspoonful to two quarts of warm water, or approximately one quarter of one per cent. This is gradually increased to one per cent. The vulva is first thoroughly cleansed with this preparation, after which the catheter is introduced into the vagina and this canal is thoroughly flushed. No special amount is used. The solution is allowed to run until it returns absolutely clear, but not less than one gallon is used at a sitting. The irrigation is carried out morning and evening and continued for at least the first three or four weeks. In addition, once daily a twenty-five per cent. solution of argyrol is instilled into the vaginal canal. Usually twenty minims or a medicine dropper completely filled is quite sufficient. At the same time the vulva is also painted with this material and a cotton pad moistened with twenty-five per cent. argyrol is placed in contact with the labia and vestibule. At the expiration of a month or six weeks, the irrigation is used only once a day, but the application is carried out daily. This treatment is continued until four successive negative smears are returned and also until the complement fixation test is negative. Systemically, there is not much to do for the condition. In the early stage the child should be kept as quiet as possible. No general therapeutic agencies are of value. We have employed vaccines, but have obtained no favorable results. Hence, whatever treatment is instituted must be of a local nature and the simple measures outlined above have given us the most satisfaction.

1621 SPRUCE STREET.

BLOOD TRANSFUSION IN MODERN THERAPEUTICS.

BY GEORGE I. MILLER, M. D.,
Brooklyn.

The ease, simplicity and safety of the operation of blood transfusion in recent years have given a valuable therapeutic remedy to the clinician. Heretofore, owing to the exceedingly difficult task of performing this operation, medical teachers for a period of over fifty years have failed even to intimate to the student of medicine the existence or possibility of the operation of blood transfusion. Today, a course in medicine would be incomplete unless thorough instruction in the hemolysis test and the operation for blood transfusion were given, and a candidate for final examination should feel uncertain of passing without being able to state several methods of blood transfusion and enumerate at least two dozen pathological conditions in infants, children and adults which can be improved and cured by blood transfusion.

The transfusion of blood in some cases is as absolute a specific as is quinine, digitalis or salvarsan. Transfusion performed in a proper case and at the proper time is an immediate lifesaving therapeutic remedy, unequaled by any drug, including the specific remedies. A patient who is unconscious from gas poisoning, or from acute loss of blood from any cause, can often be saved by the prompt transfusion of blood, and not always by saline or drugs. Physicians who have been in active practice for years are less receptive to the suggestion of blood transfusion than the recent graduate, owing to their just skepticism when new remedies are recommended. In the hope of convincing my older colleagues of the lifesaving effect of blood transfusion, I shall cite several cases with different pathological lesions in which transfusion was done. In hemorrhagic diseases of the newborn transfusion checks the bleeding and restores the blood which has been lost.

L. Bruce Robertson, of Toronto, Canada, cites the case of an infant a day and a half old admitted to his hospital, who had had intestinal hemorrhage since twelve hours after birth. Within three hours of the time of admission the infant passed three large bloody stools. Ninety c.c. of the father's blood were transfused soon after. Before transfusion was done the red cell count was 2,400,000. Directly after transfusion it rose to 4,700,000, and fourteen hours later 6,400,000, showing the stimulating effect of the injected blood. The patient was discharged the following day. Following the transfusion, the child passed two bloody stools, while three hours after transfusion another stool was passed, showing no microscopic blood.

Infants are very susceptible to the effect of hemorrhage. The loss of several ounces of blood exsanguinates the patient to a degree of danger which demands prompt attention. In cases of acute traumatic hemorrhage which produces anemia, showing a blood count below 2,000,000 and hemoglobin of twenty to thirty per cent., transfusion should be done.

Erythema Nodosum and Tuberculosis.—E. Ward (*British Medical Journal*, December 20, 1919) reports several cases of erythema nodosum appearing in the course of pulmonary tuberculosis. Usually the appearance came when the patient was suffering an exacerbation of the disease.

One of my early cases of transfusion was in a woman who had been injured in an automobile accident. Her right kidney was crushed. She had lost a considerable amount of blood and had become exsanguinated to an alarming degree. Transfusion was done three times, 1,200 c.c. of blood being injected. She made an uneventful recovery.

In placenta prævia, postpartum and ectopic hemorrhages, where the patient is in a state of shock with symptoms of pallor and air hunger, with a red count as low as 1,000,000, transfusion is a specific remedy and will result in the saving of life.

On January 18, 1916, I was called by Doctor Straus to see Mrs. H., who was at full term with a central placenta prævia. When I arrived she was in bed, she was pale, her lips were white and she was yawning and pulseless. The mattress was saturated with blood. With the husband acting as donor, I transfused 500 c.c. of blood and rapidly delivered her of a living baby. The following morning the condition of the patient was normal. Transfusion was done in two similar cases of placenta prævia on October 31, 1916, and April 9, 1917.

At times postpartum hemorrhage taxes the ingenuity of the accoucheur. On January 21, 1917, at three a. m., Mrs. K., a primipara, twenty-one years of age, had an apparently normal delivery. A very able obstetrician was in charge. Soon after delivery the patient had a profuse hemorrhage and became pulseless and lapsed into unconsciousness. Two leading consultants were quickly summoned to the bedside. Everything known to science in the art of obstetrics was tried without the least sign of saving the patient. Through the courtesy of one of the consultants I was hurriedly summoned and within a period of about fifteen minutes I had transfused 500 c.c. of blood from the husband. Five minutes after transfusion the patient woke up, the pulse returned, the bleeding stopped, and the next morning the patient was in a normal postpartum condition. Her life was saved by the transfusion.

At the Jewish Hospital, Brooklyn, on January 11, 1917, a patient was exsanguinated from an ectopic hemorrhage. I transfused 500 c.c. of blood. She stood the operation without the least shock and made an uneventful recovery.

Blood transfusion in surgical hemorrhage is of decided value. At the Jewish Hospital, Brooklyn, on September 27 and October 3, 1916, I transfused blood to M. B., who was in a dying condition. She was bleeding from the stump following a salpingo-oophorectomy operation. The abdomen was reopened. No bleeding point could be located. Slow oozing from the congested tissue surrounding the stump was visible. The bleeding portion was packed with iodoform gauze, which became saturated shortly after. She had a red cell count of less than 1,000,000 and hemoglobin index of fifteen per cent. The patient became unconscious and pulseless. The first transfusion of one and a half pints of blood stopped the bleeding and brought back the pulse; the second transfusion of two pints raised the blood count to 4,000,000 red cells and the

hemoglobin to seventy per cent. The wound healed and two weeks later the patient walked out of the hospital.

In all cases of hemorrhage it is essential to ligate the bleeding point before transfusing. When the point of bleeding is inaccessible, as in ulcers of the viscera, gastric, duodenal, typhoid, or tuberculous, several smaller transfusions of from 300 to 500 c.c. are of greater value, since a large quantity of fluid increases the blood pressure and may increase the bleeding. Patients who are anemic from continuous slow bleeding are poor operative risks and should be transfused before operation, to increase their powers of resistance.

At St. Catherine's Hospital, Brooklyn, on March 9, 1916, transfusion was done for a negress, thirty years of age, before operation for a large bleeding fibroid of the uterus. The donor was a white man. After transferring 100 c.c. of blood she shrieked and became unconscious. The transfusion was continued up to 500 c.c. when she regained her senses, stood the hysterectomy well, and left the hospital in two weeks, cured. On February 27, 1917, I transfused 750 c.c. of blood into a patient at Trinity Hospital, for bleeding fibroid uterus, prior to hysterectomy. Two patients who had become markedly anemic from excessively bleeding hemorrhoids received transfusion before operation and they became safe operative risks.

Anemia resulting from profuse and prolonged menstruation in virgins may be remedied by transfusion when the usual remedies have failed to check the bleeding. In a case of repeated pulmonary hemorrhages in a girl of twenty-one years, at the request of Dr. Joel M. Chasis, of New York, I transfused 400 c.c. of blood on December 12, 1916. The previously uncontrollable hemorrhages, which had failed to be stopped by every known means, ceased after the transfusion.

In patients who suffer from blood dyscrasia, as in hemophilia, transfusion of whole blood renders the coagulation time approximately normal and checks the bleeding. Anticoagulants are contraindicated in these cases because, as in the method of defibrination, they remove fibrinogen and blood plates. The disease is hereditary and congenital and is characterized by repeated, protracted bleeding. The coagulation time of the blood is much delayed, due to the deficient quality of the platelets and deficiency in prothrombin. The prothrombin in hemophilic patients is of an inferior quality, compared to that of a normal individual, and this explains the delay in coagulation, while the addition of a small quantity of normal prothrombin to the patient's plasma accelerates coagulation. Small transfusions, frequently repeated, from an alien donor, will control the bleeding. I did six transfusions on four hemophilic patients, three of whom died because of the lateness of the operation. The fourth case was that of a boy six years of age, whose father, a physician, furnished the blood. He was transfused twice with good result. Other remedies had been tried without effect.

In purpura hemorrhagica transfusion is an exceedingly valuable remedy. The disease is charac-

terized by spontaneous hemorrhages in various locations. The coagulation time of the blood remains normal, but the number of blood plates is greatly decreased. Transfusion was done on five patients six times for this disease; one case in particular, that of a man forty years of age, who had been in bed for a week with a severe attack of purpura, and had failed to respond to all other remedies, was cured, as if by magic, after transfusion of 500 c.c. of blood.

Postoperative secondary hemorrhage following severe infections, is attributed to deficiency in fibrinogen, or absence of some of the ferment forming substances. Of this group transfusion was done in five patients six times, three of whom died. Two had intestinal hemorrhages from profound sepsis of general peritonitis following a ruptured appendix, one of whom died. One patient, a girl of eighteen, with lymphatic leucemia with hemorrhages from the gums, mouth and nose, received a transfusion twice. The first time 600 c.c. of blood were injected with marked improvement, which lasted for three and a half months. She then relapsed and transfusion with 900 c.c. was given with no effect. She died ten days later. Two patients of this group received transfusions for cholemia. One died and the other recovered.

For pernicious anemia twenty-five patients were transfused forty-four times. I feel certain that life can be prolonged in this condition for a variable period, but a complete recovery cannot be promised. Repeated transfusions early in this disease with splenectomy before the patient is exhausted, offers a reasonable chance of cure. The removal of the spleen brings about a decided reduction in the blood destroyed and a cessation of the hyperhemolysis, proving that the spleen is a factor in the production of the disease. The toxic condition causing the destruction in the blood may rest in the spleen itself, because spleens which have been removed usually show evidence of chronic inflammation in the form of splenitis and perisplenitis. The toxic, or infective, state of the spleen is often correlated with infective foci in the appendix, gallbladder, nose, mouth and throat.

Ottenberg and Libman, who are leaders in the subject of blood diseases, state in their classical article on the subject, that of their twenty-four patients with pernicious anemia treated by blood transfusion fourteen showed for a time continued improvement and ten failed to improve. They conclude that blood transfusion induces a remission in approximately half of the cases and wisely suggest new donors if improvement does not follow the first transfusion.

The effects of transfusion are impressive. The red cell count is markedly increased, often doubled, the hemoglobin percentage rises, the platelets are increased, the blast cells are more numerous, and Howell's plates at times appear in the blood, denoting the stimulating effect on the bone marrow. The exhausted hemopoietic organs are reinforced by a volume of protective antibodies by blood transfusion, which enables the patient to combat the destructive process in the various organs.

In early cases of pernicious anemia I transfused several small quantities of blood, 300 c.c. In the

past twelve months, however, I have been giving larger transfusions. At the Pilcher Hospital I injected repeatedly 800 to 1,200 c.c. with much more rapid results in favor of the patient. After larger transfusions the patient develops good appetite, he becomes stronger and the lemon tinted skin assumes a more natural color. The red cell count and the hemoglobin percentage are markedly increased. The patient is enabled to fight the infection and its products and has received a powerful natural stimulant to start blood formation in the exhausted hemopoietic organs.

In two cases of pernicious anemia I injected blood from a patient sick with polycythemia with marked benefit to the donor and recipient. At the Mayo Clinic, October 29, 1917, I transfused to Willard M. P., Case No. 209,645, 800 c.c. of blood for pernicious anemia.

I believe two or three larger transfusions, with splenectomy, constitute a complete therapeutic measure to bring about favorable results. Splenectomy in young persons with large spleens and considerable hemolysis give the best results.

In malignant disease transfusion has no effect on the course of the disease. It is of value as a blood stimulant to overcome part of the anemia and helps to increase the powers of resistance while other therapeutic measures can be tried.

In infectious diseases transfusion is of great value as a tonic and bactericide. Two patients with chronic furunculosis received transfusion after they had failed to respond to vaccines and other remedies. The result was wonderful. One patient was a man seventy-five years of age who was bedridden for five months. Following the transfusion of 500 c.c. all his furuncles disappeared, he became stronger and left his bed within a week. Post-abortive and postpartum sepsis patients are benefited by transfusion. Its strengthening effect is of great value in protracted cases. The patients are usually exhausted and anemic from the prolonged fever. The injection of blood increases their powers of resistance.

A. D. Kaiser (1) reports a case of erysipelas in a girl six years of age. Attempts to check the disease early were made with the usual methods—streptococcus serum, leucocyte extract, and other remedies. They seemed to have no effect on the course of the disease, the child's condition gradually becoming worse. Seven ounces of blood were withdrawn from a patient convalescing from erysipelas and transferred to the child. Within twelve hours the temperature dropped to 100° degrees F. and in twenty-four hours it was normal and remained so thereafter. With the drop in temperature there was a marked local and general improvement, followed by complete recovery within a few days. In severe cases, where the outcome looks dubious, transfusion may be the means of saving the life of the patient. A. Y. P. Garnett, of Washington, D. C. (2), reports two cases of pernicious vomiting of pregnancy cured by blood transfusion from a donor about ten days postpartum, in whom all uterine contractions had ceased. The donor's blood is supposed to contain an antibody antiferment that neutralizes the toxic

agent in the recipient, this neutralizing agent having been produced in the donor during her pregnancy, at which time the toxic substance, or substances, had apparently been overcome or neutralized by her.

CASE I.—A colored girl, aged nineteen, had her last menstruation on September 1, 1916. She first noticed vomiting October 10th. The vomiting grew in intensity until there had been continual vomiting to the date of admission, December 2, 1916 (Garfield Hospital). She had been unable to retain food for eight weeks, lost twenty-five pounds in weight, felt very sick and dizzy and had been confined to bed for the past two weeks. The examination showed an anxious expression, marked emaciation; weight, sixty-nine pounds; temperature, 99.8° F.; pulse, 124. Vaginal examination showed a gravid uterus of three months' pregnancy. The Wassermann was negative; white cells, 7,200; red cells, 2,472,000; hemoglobin, seventy-five per cent. There was no sugar in the urine; a trace of albumin; no acetone or diacetic acid; occasionally hyaline and granular casts.

The treatment consisted of nutrient enemata, colon irrigations, using two gallons of bicarbonate of soda solution, one ounce to the pint, every four hours; also adrenaline chloride, one in 1,000, by mouth, milk and vichy.

On December 14th the patient became worse; pulse, 140-150, weak and slightly delirious; blood appeared in the vomitus; hemoglobin, fifty per cent. Transfusion was done with 250 c.c. from a ten day postpartum patient. Within twenty-four hours the condition of the patient improved. Temperature 98.4; pulse, 80; respirations, 20; nausea and vomiting stopped; patient continued to improve; gained twenty-five pounds in weight; hemoglobin, eighty per cent.; red cells, 3,500,000; urine, normal, discharged February 9th and arranged to return to the hospital for delivery.

CASE II.—White, married, aged twenty-nine; pregnant three months; vomited thirteen and fourteen times a day before admission to the hospital; pulse, 120; grew weaker; urine showed acetone and diacetic acid; red cells, 3,700,000; white cells, 8,000; hemoglobin, sixty per cent. Transfusion was done with 250 c.c. of blood from a ten day postpartum patient. The pulse dropped to 100. The patient felt stronger; vomited once. A few days later vomited three times. A second transfusion of 200 c.c. from a seven day postpartum patient was done. The patient improved; vomiting ceased; food was retained. The acetone and diacetic acid disappeared. She returned home five days after the second transfusion and has had no nausea or vomiting since and has retained all nourishment.

In gas poisoning the condition of patients is toxic and not anemic. The oxygen is replaced by carbon dioxide. Phlebotomy of two pints of the poisoned blood and a copious transfusion of from two to three pints of normal blood, may save the patient's life. Transfusion has been tried in cases of obscure pathology, idiopathic epilepsy, mental depression, and chlorosis, with questionable results. It is contraindicated whenever hemolysis is tak-

ing place; in cases of severe infection in the cachexia of cancer; in patients with high blood pressure caused by uremia; in acute hyperthyroidism; and in diabetes.

Transfusion of blood is a therapeutic remedy provided by nature and is of the greatest value in the pathological conditions enumerated, when given in the early stages of the disease.

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700 ST. MARK'S AVENUE.

ETIOLOGY, TREATMENT AND RESULTS OF CHOLESTEATOMA.*

Report of Five Postoperative Cases.

By J. MORRISSETT SMITH, M. D.,
New York.

Occasionally cholesteatoma has been found in various parts of the body, such as the brain, the spinal cord, and the antrum, but unless otherwise designated, we consider it in connection with a chronic otitis media. It is rather difficult to prove the exact etiology of this condition. Virchow, in the eighteenth century, stated conclusively, in his book on pearly tumors, that it was a heterologous tumor. The consensus of opinion now is that it is due to an overproduction of epithelial tissue, the foothold having been obtained by direct extension into the middle ear, through a break in the tympanic and mucous membranes, or to a metaplasia of the tissues in the tympanic cavity.

We have two distinct types of cholesteatoma, the encapsulated and the nonencapsulated. V. Wyatt Wingrave (1) gives an interesting description of the pathology of the two types. The encapsulated type is a pearlike sac contained in a cavity lined by a single layer of short columnar or cubical epithelium; this rests on a thin fibrovascular endosteum. The sac itself consists of a somewhat thickened fibrovascular sheath containing a few plasma cells and lined by stratified epithelium similar to the malpighian layer of the epidermis, which consists of columnar, spheroidal and polyhedral cells in successive layers from below upward. The similarity is still further emphasized by the presence of eledin granules in the layer which corresponds to the stratum granulosum, by prickly cells, and by the formation of papillae. The horny layer is represented by the sac contents of closely packed and laminated, acid fast squamous cells, either devoid of nuclei, or showing their faint outline. He considers this a true metaplasia.

In the nonencapsulated type we find granuloma imbedded in loose lymphocytes, leucocytes and myelocytes in all stages of fatty and granular changes, blood, pus and numerous bacteria of all kinds, spicules of bone, squamous cells in loose or laminated pearls. Observation of discharges, curettings, swabs and other morbid material, such as granulations, polypi and neoplasms from the middle ear,

*Presented at the New York Academy of Medicine, January 2, 1920.

together with postmortem search, prove that the normal epithelium is invariably replaced by squamous cells after prolonged persistence of perforation.

The metaplasia is not confined to the tympanic cavity, but it involves the adjacent pneumatic space and its contents, such as granuloma and polypi. The new squamous epithelium, judging by comparison with cutaneous activity, is probably produced more rapidly and more abundantly than the normal columnar, and there can be little doubt that the cytology and disposal are also much more difficult.

It is also well to remember that cases of cholesteatoma have been reported with no evidence of a perforation in the drum membrane. This is probably explained by the perforation having closed after the process had got a start. Whether we have a true metaplasia or a direct extension due to a break in the mucous membrane, the results are the same, since we have an overproduction of the epithelial elements, and cholesteatoma results.

It is not possible to make a diagnosis of this condition in all cases. We may be able to remove some of the cheesy mass directly from the external auditory canal or tympanum. This was possible upon the first examination in Case V. When the growth has developed to a sufficient size, the x ray will show a darkened spot suggestive of its presence. Smears made from a chronic discharging ear showing repeatedly dead epithelium and cholesterol crystals may lead us to anticipate it.

Finally, we have seen ears which show absolutely no evidence of the growth and we are unaware of its presence until the time of operation. Past experience has taught us that all cholesteatomata are dangerous. Even though a certain proportion of them are sterile, especially the encapsulated variety, we know that, if uninterrupted, the mass continues to enlarge, and not only destroys the soft tissues, but the bony tissues as well. Therefore, the danger is due to a secondary intracranial infection.

There is no question in my mind but that an inaccessible bony cavity is the chief requisite for a flourishing cholesteatoma, once it has obtained a start; that the peculiar anatomical structures of the auditory canal, the middle ear, the antrum and the mastoid furnish a very susceptible field, both for the origin and for the development of this condition.

TREATMENT.

Once having definitely determined the presence of a cholesteatoma, there is but one thing to do, and that is a radical operation. By the operation we enlarge the auditory canal and convert the middle ear, the antrum and the mastoid into one continuous cavity. If we are thorough in our operation and in the aftertreatment prevent the formation of granulation tissue, then we get the cavity to dermatize, and a cure results.

It is important in any radical operation to be thorough, but we must be especially thorough when we are dealing with this condition. The field should be rendered smooth and as free as possible from any bony recesses and then a most careful and painstaking daily aftertreatment maintained.

Some of these cholesteatomata are so extensive that even the mastoid cavity is obliterated, and the proper procedure as to the aftertreatment becomes

difficult; or, in other words, should we let granulations form over bone which has been exposed to cholesteatoma? Personally, I think it is safe, provided we are sure of the entire removal of the growth. Case III is a good illustration of this principle. Here the entire mastoid was destroyed with the dura in the middle fossa and the dura and sinus exposed in the posterior fossa. Posterior drainage was maintained until this was well granulated and then the posterior incision was allowed to close, the middle ear later dermatizing, and the patient now has a dry ear.

After a complete cure, there may be a recurrence due to neglect of the cavity. Patients should be kept under observation and examined at least once in six weeks. The patient cannot properly cleanse the whole area, and the dead epithelium, cerumen, and other material if allowed to collect, will cause an ulceration with discharge, and possibly a recurrence of the cholesteatoma itself.

Ballenger, in his book on ear, nose and throat, states that the prognosis in cases of cholesteatoma is bad. I cannot agree with that statement; in fact, I feel that the prognosis is good. The results, where the patient is operated upon in time, should be uniformly good, and failure in a large majority of the cases is due either to faulty technic at the time of operation or in the aftertreatment.

CASE REPORTS.

In the five cases presented all the patients had cholesteatomata at the time of operation. The first one was operated upon in June, 1916; the last one in September, 1919. All are dry and there has been no recurrence in any of them.

CASE I.—Male; aged eighteen; discharging ear eighteen months; very foul odor. Examination showed a distinct sagging of the posterior superior canal wall. No evidence of cholesteatoma. The removal of the cortex revealed a cholesteatoma, nonencapsulated, and a radical operation was performed, June, 1916. The ear became dermatized and dry in about nine weeks. Hearing—C fork (128) by air, eight seconds; watch, five inches; acoumeter, eight feet; whisper, four feet. Hearing practically unchanged to date.

CASE II.—Male; aged sixteen; discharge since infancy; foul odor; drum gone; hearing poor. Radical operation on October 18, 1916. Cholesteatoma found. Ear dry in eight weeks. Hearing—C fork (128) by air, ten seconds; watch, 4 inches; whisper, six feet; acoumeter, six feet; spoken voice, ten feet. Hearing about the same.

CASE III.—Male; aged twenty-eight. Admitted to the hospital in a semiconscious condition. Neck partly rigid. Temperature 104° F. Examination showed a completely prolapsed canal on the right side. Removal of the cortex showed an unusually large encapsulated cholesteatoma with extensive exposure of the dura and sinus. Ear dry in about four months. Considerable difficulty experienced in removing granulations, due to exposed dura. Cavity now dermatized and dry.

CASE IV.—Male; aged twenty-three; discharge since four years of age, following scarlet fever. History of Wild's incision. Very foul discharge. No evidence of postauricular inflammation. Incision

disclosed cortical perforation with cavity filled with nonencapsulated cholesteatoma. A radical operation was performed July, 1919, cavity dermatized and dry in about nine weeks. Hearing—C fork (128) by air, fifteen seconds; acoumeter, four feet; watch, four inches; whisper, ten feet.

CASE V.—Girl; aged twenty-two; discharge for ten years. Masses of cholesteatoma removed from canal on examination. A radical operation in September, 1919, disclosed mastoid and tympanic cavity full of cholesteatoma. Cavity dry in about ten weeks. Hearing—C fork (128) by air, ten seconds; whisper, seven feet; acoumeter, three feet; spoken voice, eight feet.

CONCLUSIONS.

The cause is due to an overproduction of epithelial tissue in the tympanus and mastoid. The danger is that of intracranial infection, either brain abscess, sinus thrombosis, or meningitis. The treatment is radical operation. Prognosis is good, if operation is performed before intracranial complications occur. The hearing is not as good as that following the ordinary radical mastoid operation.

45 EAST SIXTY-SECOND STREET.

INFLUENZA PNEUMONIA.

Clinical and X Ray Study.

By JOSEPH HARKAVY, M. D.,
New York,

First Lieutenant, Medical Corps, U. S. Army.

AND

JOHN HUNTER SELBY, M. D.,
Washington, D. C.,

Major, Medical Corps, U. S. Army, Chief X Ray Section.

In the review of the pulmonary involvements which followed or were associated with the influenza epidemic at Walter Reed Hospital, 260 cases were analyzed for this paper. 190 of this group had been studied by daily serial x rays, the standard U. S. Army x ray machine being employed for this purpose. A number of these cases were studied from the day on which they were received at the hospital, diagnosed as influenza, when physical signs in the lungs were as yet non-existent, others from the moment of the first indication of pulmonary involvement. The method employed caused the patient very little discomfort.

In our observations we soon learned that the predominating type of pneumonia we were dealing with behaved in a distinct fashion, both from a clinical and roentgenological point of view. The intrathoracic complications which presented themselves from an x ray viewpoint were as follows:

- 1, Hemorrhagic pneumonitis involving various lobes; 2, interlobar pleuritis; 3, adenitis, mediastinal and peribronchial; 4, cardiac enlargement; 5, empyema; 6, pericardial effusion; 7, lobar pneumonia; 8, diffuse mottling (so-called streptococcic pneumonia); 9, plastic exudate, and 10, mediastinal empyema.

From a clinical study, it was impossible to detect these conditions with certainty, because of the limitation in our methods of physical diagnosis. Thus,

for example, interlobar pleuritis, so frequently observed by the x ray as a fine hair-like line of density between the lobes, never was detected by physical signs alone, until an effusion took place.

Clinically, two classes of patients were encountered: first, those who presented a regular course of influenza, signs of pneumonia developing later: Second, those in whom there was a gradual onset of the pneumonia, as a rule of two days' duration, characterized by general malaise, headache, beginning fever, pain in the chest and cough.

In the large number of patients in whom pneumonia was a complication of influenza this striking fact was noted. On about the third or fourth day the temperature would drop and remain normal for one or two days, when, without any warning, there would occur a secondary rise of temperature which within twelve hours reached 103° or 104° F. The patient who had been feeling well for two days would again be prostrated.

In mild cases of either of the two types mentioned, where a unilateral lesion was present, the temperature ranged from 100° to 103° F. The pulse was characteristically slow. It was low in tension; systolic, varying between 110 and 120 and diastolic between 65 and 75. The respirations were not exaggerated, and usually 26 a minute. The average duration of fever in such cases was five and seven tenths days. It was, in most instances, of a continuous type, with daily variations of from one to two degrees. It terminated by crisis in eighty per cent. of the cases; by prolonged crisis or lysis in twenty per cent.

The disease was more severe when bilateral lesions were present; and these phenomena more exaggerated. The cyanosis in the severe types of influenza became a constant and familiar feature. The color varied from a marked erythremia to an almost indigo blue, especially in those patients whose lobes were extensively affected. Conjunctivæ, mucous membranes, especially the gums, had a deep purplish tinge. The tongue was coated, the pharynx congested. Herpes were not infrequently observed. The patient often had a haunted anxious expression. Sweating was as marked as in uncomplicated acute influenza. The temperature ranged between 101° and 105° F. It was, in most instances, continuous in character, at times intermittent, with daily variations of two to three degrees. In certain cases one could anticipate the progress of the pulmonary involvement by the waxing and waning of the temperature curve. Thus, it would be continuous for two or three days, come down to normal, and go up again for three or four days with a fresh extension of pneumonia, and finally came down. The average duration of temperature in such cases was eight and four tenths days. The defervescence in these bilateral pneumonias was also by crisis in eighty-two per cent. of the cases, by prolonged crisis or lysis in the rest. The pulse here was likewise markedly slow; the lowest eighty-five, the highest 140, the average 115. Frequently, diastolic was noted. The respirations varied between twenty-five and thirty-five; cough was frequent; expectoration was blood streaked or mucopurulent in character.

Severe types, and those which went on to a fatal termination were toxic from the beginning. Delirium came early and persisted until the end; coma vigil was not infrequently observed; dyspnea, in which all the accessory muscles of respiration were employed, was pronounced. The respirations varied between thirty and seventy-five.

The majority of the patients were either cyanosed or had a muddy claylike pallor. These patients were more asthenic than the others. The spread of pulmonary signs was rapid; beginning usually on the left, it quickly went on to the right and up the left, or right, until the entire lung was filled with areas of bronchial breathing associated often with moist crepitant and subcrepitant râles, anteriorly and posteriorly. With the rapid onset of pulmonary edema everything was obscured by the stridor and bubbling râles. The temperature in such instances would be about 105° F., continuously rising, and death would ensue in three or four days with fever between 107° and 108° F.

The pulse presented all the characteristics of a failing myocardium. It was rapid, thready and scarcely perceptible. The heart, in some instances, was enlarged on the right, but often it was impossible to detect this.

The clinical complications, which those cases presented, were as follows:

Nasal.—Epistaxis was present in ten per cent. of the cases; acute rhinitis in three per cent.

Mouth.—Gingivitis was seen in two patients; tonsillitis was a rare complication; pharyngitis and laryngitis in five per cent. of the cases and ulcerative laryngitis was observed in two cases. In one patient, the ulcerations on vocal cords were due to a secondary hemolytic streptococcal infection. These ulcerations disappeared entirely in two months.

Ears.—Otitis media, catarrhal and suppurative, and sinusitis also prevailed but in a very small proportion of instances.

Eyes.—Simple conjunctivitis was often evident. In one case this was due to the Morax Axenfeld bacillus.

Chest.—Pleurisy with effusion, both serous and bloody, was frequently noted. Empyema, especially in the later cases, occurred eleven times; mediastinal empyema in one instance. This does not include the cases that went on to a fatal issue.

Pericarditis.—Occurred more often during December, January and February. Both serous and purulent types were seen.

Heart.—Valvulitis was observed in three instances, the mitral being diseased in each case. Toxic myocarditis with various types of extrasystoles and tachycardia as sequella were present in ten per cent. of the cases. This condition disappeared in two or three months.

Gastrointestinal.—Occasional diarrhea was present. Abdominal distention with tympanitis associated with toxemia was repeatedly seen at the height of the fever.

Urinary symptoms.—An analysis of the urine of 2000 patients showed a toxic nephritis in almost every instance. This varied from a mild albuminuria associated with few granular and hyaline casts which rapidly vanished as the patient got well, to

heavy traces of albumin and showers of all sorts of casts. When these appeared it led to a fatal termination. The blood urea and nonprotein nitrogen in such instances was frequently increased. Acidosis was also noted, occasionally. The Van Slyke method was used in this determination.

Skin.—Jaundice occurred in two per cent. of the cases.

Nervous symptoms.—Delirium, tremors, toxic psychoses, and meningismus, occurred in the very sick.

Blood count.—The leucopenia, as described, prevailing in the straightforward cases of influenza, was likewise a constant feature in our pneumonia patients. The total white count ran between 2,000 and 10,000. The differential count presented characteristics similar to the cases described, namely, a normal or diminished polynuclear count, with a relative lymphocytosis.

Leucocytosis, up to twenty or thirty thousand, was seen in preagonal stages, when a pleuritis or pericardial involvement occurred, and occasionally with an extension of the process into other lobes. This, however, was not at all common, for frequently even to the very end the leucopenia persisted.

PHYSICAL SIGNS ASSOCIATED WITH X RAY STUDIES.

In comparing the physical signs which we found in the cases described, with the x ray films, certain illuminating cases came to our attention. For the purpose of clarity we have divided the cases into three groups. a, mild unilateral, confined to one lobe; b, mild, bilateral, confined to two or more lobes, and c, more severe cases.

UNILATERAL CASES.

When one lobe was involved, the physical signs would most often appear first at the lower angle of the scapula and gradually spread in a downward direction, towards the base of the lung. Where the process was mild, it would be characterized by fine and medium sized moist crepitating râles best heard at the end of deep inspiration over an area not more than one or two inches in diameter between the vertebral column and the angle of the scapula. These râles were accompanied by harsh breathing, suggestive of a bronchovesicular type with practically no impairment of resonance on percussion, and no change in palpatory fremitus. Inspection presented no retractions and no immobility of the thorax. Some of these patients complained of pain in the chest, but the majority had no thoracic discomfort.

On the other hand, in the more severe cases with unilateral signs, the crepitating râles, which were heard early at the angle of the scapula, rapidly extended until practically the entire lobe was included. Within a few hours, the physical signs were completely changed. From a condition where the day before one heard a pellmell of crepitating and subcrepitating râles, a massive consolidation succeeded. Dullness and somewhat distant bronchial breathing and no râles, except at the edge of the consolidated area prevailed. Presumably a classical lobar pneumonia existed, and yet it differed entirely from the condition which we knew so well. Here we were dealing not with a hepatization but

rather with a bloody solidification, as we subsequently learned from our autopsy protocols, which showed that the lung parenchyma had become inundated with blood. This gave the signs of consolidation.

Out of sixty-six cases with unilateral signs in this series, forty-six showed left lower involvement. The area affected varied from the size of a half dollar until almost the entire lobe was embraced, rarely the complete lobe, such as is seen in lobar pneumonia. Forty-five of these diagnoses were confirmed by x ray examinations.

Of the twenty-two cases in which the clinician had diagnosed a right lower lobe involvement alone, only nine were confirmed by serial x ray films. In the remaining thirteen, the x ray films showed a small lesion situated in the central portion of the opposite lung; else there was in existence a small area of involvement of the right middle or upper lobe close to the hilus, so small and so contiguous to the lower lobe lesions that it was difficult of clinical differentiation. When, however, the lesion was more extensive, the physical signs closely paralleled the x ray diagnosis.

The question which next demanded attention in this group was how often it was possible to get x ray evidence of pulmonary invasion before the clinical signs could be detected. For this purpose the unilateral lobe lesions were concentrated upon and most often in the milder cases, because the more extensive involvements were naturally older and presented no diagnostic difficulties.

It was here observed that in two per cent. of left lobe lesions, x ray evidence of inflammatory changes was obtained from two to three days before the physical signs were obvious. To be sure, those patients were sick, and admitted as cases of uncomplicated influenza, presenting all the characteristic symptoms, and yet they had involvement with no detectable signs, until the lesion became quite superficial. That this must have been so, was gathered from our daily study of x ray films which showed the pneumonia to begin at the hilus of the lung.

On the other hand, in one and one half per cent. of cases, practically no physical signs were obtained. At most, one could detect harsh breathing, so-called puerile, frequently attributed to toxemia, but no definite râles. These cases formed an exceedingly interesting group. Serial plates would show an initial film which was negative, subsequently developing pneumonitis often not exceeding the size of a half dollar which would disappear within two to four days. Those patients were not unduly sick, and, under ordinary circumstances, would have been discharged as cases of influenza without pulmonary involvement.

Another important feature in connection with unilateral lesions is the fact that two per cent. of the patients who, on admission or later, presented nothing but a generalized bilateral bronchitis, with the usual sonorous râles, often showed the characteristic shadow of hemorrhagic pneumonia in the left lower lobe. This was not large in extent but presumably sufficiently deep to be masked by the associated bronchitis of the larger tubes, and in ordinary examinations would have been entirely

overlooked. In other instances it occurred in more than one lobe. In other words, small patches of bronchopneumonia demonstrable by the x ray were entirely obscured by the general bronchitis which prevented their detection by the clinician.

BILATERAL LOBE INVOLVEMENT.

In many of the cases the unilateral lesions, of course, did not stop there. In studying the progressive development of physical signs in connection with the x ray appearance, it was noted that the spread of pneumonia was readily comparable to the growth of a mushroom, in that it always commenced at the hilus, the lesion spreading forth from the root as a pivot. Both the left and the right lower lobes might appear to have become involved simultaneously, or the lower portion of the left upper and left lower, or possibly the mesial portions of the right lower, middle and upper, in their contiguous vicinity. Thence, it was propagated toward the periphery, and on the plate, the involvement looked like an advancing film of smoke. Various combinations prevailed. In analyzing the lobar distribution in the films of 189 cases, the following was observed:

TABLE No. I.

<i>Involvements Found.</i>	<i>Clinically.</i>	<i>X Ray.</i>
Right and left lower lobes only.....	69	42
¹ Left lower lobe only.....	46	45
Left upper and left lower lobe alone.....	0	9
Right upper middle and lower.....	1	3
Left upper and lower, right lower.....	1	1
Right middle and lower, left upper and lower.....	2	2
Right middle and lower, left lower.....	4	3
Right middle and lower.....	4	8
² Upper right, lower left.....	1	1
Right upper, middle and lower.....	1	4
Right lower, left upper and left lower.....	1	1
All lobes.....	8	9

¹ The reason for this remarkable coincidence is that the analysis of 470 cases studied by x ray showed that in eighty-two per cent. the pneumonitis began in the lower left lobe and in fourteen per cent. was confined to that lobe.

² In this case, the upper right was lobar pneumonia, the lower left, hemorrhagic pneumonitis.

The patients with severe involvement who recovered presented partial involvement of all lobes. There were five of those in whom the affected areas were small, as may be readily understood, for otherwise when the involvement was extensive, the mortality was high. It was an easy matter both from a clinical and röntgenological study, to make a prognosis based upon the progress of a pneumonia. With the possible exception of one case the röntgenologist from his point of view made a correct prognosis in every instance by watching the daily spread of the process. A recession of involvement could frequently be seen one day which almost always coincided with the clinical condition, and two days later a fresh spread, even over the same area, which was apparently recently subsiding, as corroborated by the x ray.

In those patients who recovered from influenzal pneumonia the following points were investigated:

1. How long did symptoms and physical signs persist after the x ray findings became negative?
2. Did x ray findings and clinical symptoms persist after all physical signs had disappeared?
3. Did physical signs and x ray evidence of a pathological lung condition disappear together?

Analyzing seventy-eight hemorrhagic pneumonia

cases in which the patients recovered without complications, the following distribution was noted: a, nineteen showed physical signs after the x ray had become negative for pulmonary involvement; b, forty-four presented x ray signs after the physical signs had disappeared; c, fifteen became free from physical and x ray signs about the same time.

The nineteen patients in whom physical signs were found to persist after the x ray was reported negative for lung lesions, as a rule, were apparently well clinically. They complained, perhaps, of an occasional slight dyspnea on exertion and moderate cough, as one might expect during convalescence. The temperature was normal in all cases. The physical signs which the patients presented were either the sonorous râles of a generalized bronchitis or a few moist crepitations at one base or both. These râles were superficial and best heard on deep inspiration. The impression which this created was that the râles were due to atelectasis rather than actual infiltration. As a rule, no dullness was noted. The longest duration which these signs persisted was fifteen days, the shortest, one. No cardiac symptoms were noted.

The forty-four patients in the second group, who presented no physical signs but in whom there was a residual pneumonia as demonstrated by the x ray only, presented the following group of symptoms: Asthenia was marked; loss of weight was pronounced. The patients coughed readily, occasionally expectorating blood streaked sputum, dyspnea was noted on exertion. The patients were prone to have an occasional elevation of temperature up to 99° F. in the afternoon. Not infrequently, tachycardia was present. Convalescence was much prolonged. The longest duration in which x ray findings persisted was twelve days; the shortest, one day.

In the third group, although the fifteen cases observed became free from physical signs and x ray evidence, approximately at the same time, in some of these cases persistence of both obtained as long as three months and longer after the temperature was normal. Up until now in patients of this group, who are still under observation, signs have been found for periods anywhere from three to fourteen weeks. The lesions are usually basic in distribution, most often affecting the left lower lobe and are characterized by crepitating râles, moist, fine and medium sized, associated with bronchovesicular breathing. Such cases bear a striking resemblance to persistent hemolytic streptococcic pneumonias, which were seen frequently during 1918. In those patients physical signs remained for from four to five months, and frequent search for the tubercle bacillus proved fruitless. When one bears in mind that secondary infection is of such importance in influenzal pneumonia, where the pneumococcus and hemolytic streptococci are so frequently found, it is not at all surprising that we can have persistent pneumonia due to these secondary invaders. That such bacteria are not at all unlikely to produce a productive inflammatory lesion where the process goes on for some time, is well known. When frequent examinations of sputum by the mouse in-

oculation method reveal the presence of these organisms time and again, such assumptions are not at all unfounded. This has been demonstrated in our cases, and x rays in such instances often showed localized involvement, and in addition a high degree of fibrosis and peribronchial adenitis.

It is not at all surprising that these prolonged influenzal pneumonia cases should be looked upon with a suspicion of being tuberculous. If they are not tuberculous originally, and as a rule they are not, they present a *locus minoris resistentiae* where the ubiquitous tubercle bacillus may find fruitful soil. For that reason alone, great care should be exercised, in the first place in the making of the diagnosis, and second, against condemning an individual to the category and association with tuberculous patients, on physical signs alone.

The important point for differentiation is, as has been repeatedly noted, that the streptococcic pneumonias and the so-called influenzal, are essentially basal in distribution. Although occasionally lesions due to these organisms have been encountered in the upper lobes, they never involve the true apex. The few cases of the upper lobe type that we have seen and which have suggested tuberculosis have cleared up completely, under observation, within three to four months.

Perhaps the most important group of cases which have come to our attention has been that in which the x ray demonstrated the occurrence of an acute peribronchial infiltration and mediastinal adenitis. Twenty-six cases have been collected because they showed a persistence of adenitis, varied in extent, and because of certain sequelae, which they presented, that in all probability have a definite bearing upon their subsequent history.

These cases, however, were not the only ones which showed adenitis. Where the pneumonic lesion was not so extensive as to obscure the view, it was noted that the mediastinal glands were more or less affected in most instances. The decrease in size of the glands in these cases could be observed daily, concomitant with the progress and recession of the pneumonic process. Not infrequently in the cases with unilateral lesions were seen hemorrhagic pneumonitis in one lower lobe and an acute mediastinal adenitis on the side opposite to the pulmonary lesion, as well as on the affected side. In addition, fourteen cases showed an acute root adenitis only, without any pulmonary infiltration. Clinically, those patients either had an acute bronchitis of the larger tubes which was not radiographable or else no physical signs that could be detected on routine examination. They were regarded as ordinary influenza. As we look back now, in the light of our present knowledge, we believe that we must have missed many patients with influenza in whom, in all probability, an acute adenitis was overlooked because an x ray examination was not done during the early epidemic days. The asthenia, the loss of weight and the depression which were seen, but to which no obvious cause could be assigned, were in all likelihood due to absorption of toxins from unresolved glands. The entire picture, in a word, was analogous to an acute tonsillitis with a secondary cervical adenitis, or a simple pri-

mary acute adenitis such as is seen quite often in children after exanthematous diseases. Later on in the epidemic, when information was received that an acute adenitis obtained, more careful examination frequently revealed increased whispered voice sounds and bronchial type of breathing close to the spine along the upper thoracic vertebrae. Apparently D'Espines's sign, so useful in the diagnosis of tuberculous adenitis, served as well in influenza. These findings are not at all strange; they correspond to the natural state of affairs which we see every day in glands draining inflammatory areas in obviously accessible locations. The autopsies of one hundred patients showed, in the greater proportion of cases, more or less involvement of these glands. In seventeen cases where cultures were made, the organisms which were recovered from the lungs were identical with those obtained from the glands, thus: Pneumococcus, nine times; hemolytic streptococcus, seven times; Bacillus Friedlander, eight times, staphylococcus, three times, and influenza, once.

It would seem from these figures that the lymph glands apparently either harbored the organisms which caused the pneumonia or else the organisms invaded the glands secondarily. In this last instance, it would be held that the lung was the source of the infection, the infection there having been induced either by direct transmission through the bronchi or by the blood stream. If, on the other hand, the first holds true, namely, that the lymph glands were the source, then the few positive blood cultures obtained (only fourteen out of 200) and the multiplicity of organisms found in lungs, may have its explanation. The assumption would be that the organisms were transmitted through the lymphatic system and arrested in the lungs, not enough escaping into the blood stream to produce a septicemia. It is a well known and widely accepted fact that the tubercle bacillus, not infrequently starting in the tonsils, passes down the cervical glands, thence through the mediastinal glands, the thoracic duct and right heart, finally invading the lung, through the lesser circulation. Why can this not be true of the pneumococcus, streptococcus or influenza bacillus?

Sections of lung stained for bacteria *in situ* have frequently shown pulmonary lymphatics full of organisms. This has recently been again corroborated by MacCallum (1) in his study of streptococcal lesions in influenzal pneumonia. It is evident, therefore, that an inflammatory process must be going on in the lymphatics and mediastinal glands as well as in the lungs where these same organisms are found.

If, on the other hand, the bacteria are secondary invaders of the lymph glands, then the next question which arises is, in case the patient gets well, what becomes of these? Does the inflammatory reaction which the organisms set up in the glands, as evidenced by their hyperemia and increased cellular infiltration, subside altogether with the inflammatory condition of the lungs, and the organism absorbed? Our x ray studies have answered this question only to a certain degree.

We have found in the twenty-six cases under

consideration that the root adenitis has remained to a greater or lesser extent thus far, from one week to three months, after complete recovery. If, therefore, the adenitis does not completely disappear, are the organisms still harbored in these glands? If so, are they responsible for the recurrent attacks of influenza and pneumonia; pneumonia irrespective of influenza which is so frequently encountered throughout the year in both civil and military life? Are the organisms the causes of persistent, productive pneumonia, and also perhaps accountable for the readiness with which the tubercle bacillus finds its way in certain instances into this prepared field? Again, are the glands, with the many organisms which they contain, similar to the tonsils, foci of infection, responsible for some of the acute arthritides and pleural infections which have occurred after the patient has presumably recovered from pneumonia? Occasionally an afebrile period of a week or more has been seen in pneumococcal empyemas, following pneumonia. It is difficult to establish all these points because, of necessity, the glands are inaccessible for cultural purposes *intra vitam*. Yet, if by subsequent history and the aid of the x ray, such things can be followed up valuable data can be adduced in support of this contention.

As corroborations of this hypothesis a number of type cases have been collected and described as follows:

CASE I.—W. J. H., No. 30116 and 16139. Patient was discharged with the diagnosis of bronchopneumonia of the right base. On July 13, 1918, the temperature was between 99° and 100° F.; pulse, 70 to 90; sputum, pneumococcus Type IV; x ray on discharge, negative for pulmonary involvement. On September 28th he was readmitted with the diagnosis of acute influenza. Temperature was 103.2° F. on admission, lasting for two days with a critical fall. An x ray on October 9th showed the mediastinal glands to be greatly enlarged. (Hereafter the term acute adenitis will be used.)

CASE II.—A. T. Admitted February 15, 1919, U. S. A. Hospital No. 1, Hoboken. The diagnosis on discharge was lobar pneumonia, lower and middle right and lower left, pneumococcus Type II. History: Illness began eight days previously on board S. S. *Leviathan* en route from France. On admission the patient was acutely ill with fever, cough, pain on respiration, and pain in both lungs. The crisis occurred February 17th. Blood count was February 16th, 12,400 white blood corpuscles; polynuclears, 76; small mononuclears, 24. On February 21st and again on the 26th the patient continued well. March 4th he experienced some pain in the right side but was otherwise well. He was transferred and on March 7th was admitted to Walter Reed General Hospital. On admission he felt well, complaining only of occasional pain in the right side when he took a deep breath. He coughed slightly but there was no sputum and no other symptoms. Physical examination proved absolutely negative. On March 11th his general condition was good and there were no complaints; the lungs showed no physical signs. On March 14th he did not feel well. He had been out the day previous

and had suddenly experienced a pain in the right chest; this morning the temperature was up to 100.2°, pulse 108, respiration 22. Physical examination revealed a patch of crepitating râles at the left base posteriorly. Diagnosis was bronchopneumonia, left base (J. H.); blood cultures were sterile. March 15th there was a patch of crepitating râles at the right angle of the scapula. March 16th temperature was 99.4° F. and there was no change in the physical signs. Note by ward surgeon. Patient was probably having a slight recurrence of the old pneumonia. White blood cells, 6,800; sputum negative for tubercle bacilli. General condition was good on March 22nd and the patient was up and about. Temperature, 98; chest clearing; white blood cells, 8,250; throat culture, streptococcus hemolyticus, three plus; x ray examination, root adenitis, acute; lungs negative.

TWO ATTACKS OF PNEUMONIA, ROOT ADENITIS, ACUTE ARTHRITIS.

CASE III.—E. D. W., 19745, 26181, admitted September 23rd with the diagnosis of acute influenza. September 27th the patient was very ill with acute bronchopneumonia, left lower base; chronic mitral regurgitation, existed prior to his enlistment. A serious illness slip was sent out. By November 14th he had improved and the lungs were clear. November 18th he went on furlough for fifteen days, and when he returned December 6th examination showed a very rapid heart and loud systolic murmur at the apex. He was transferred to the convalescent ward. January 13th disability papers were prepared and forwarded for action. February 2nd there were harsh breathing and signs of consolidation at the left base. X ray examination February 3rd showed early involvement of the upper portion of the left lower lobe, also distinct involvement of root glands on both sides. February 6th the râles over the left lower lobe were disappearing and temperature was 99.8° F., pulse, 88; respiration, 22. The x ray was practically clear of pulmonary involvement. X ray report on February 7th showed that except for root adenitis, the chest was practically clear. February 8th temperature was 100.4° F.; pulse, 84; respiration, 22; chest, negative. The patient complained of pains in the joints, especially in the knees and wrists. February 9th the chest was negative. Temperature was of low grade, probably due to joint involvement and adenitis. February 15th general condition had improved and patient was to be discharged from the hospital. Laboratory examination: September 28th—sputum rusty, mucopurulent, pneumococcus Type IV recovered. Blood culture, sterile; February 5, 1919—sputum showed pneumococcus Type II, irregular and hemolytic streptococcus isolated from mouse; blood culture sterile; throat and nasopharynx positive for hemolytic streptococcus.

TWO ATTACKS OF PNEUMONIA, ACUTE ADENITIS, MASTOIDITIS.

CASE IV.—L. C., private in French army, 21,500. Admitted October 16, 1918, with the diagnosis of influenza, bronchopneumonia, both bases (jaundice quite marked). November 10th he had recovered

and the chest x ray was negative except for adenitis. November 11th there was pain in the left ear and tenderness over the left mastoid. The left ear drum was punctured. November 13th left mastoidectomy was performed under gas oxygen anesthesia. Mastoid cells were filled with pus; culture positive for hemolytic streptococcus (pure). November 15th there were cough, bloody expectoration, dullness and râles over the right lower lobe. The diagnosis was recurrent pneumonia.

PNEUMONIA, UNRESOLVED WITH ADENITIS AND PERIBRONCHIAL FIBROSIS.

CASE V.—C. F., 25,902, admitted to Walter Reed General Hospital, February 3, 1919. History: Patient had meningitis on his way to France in September and pneumonia while convalescing. During the attack of pneumonia he became hoarse and had been so ever since. Diagnosis on admission, chronic catarrhal laryngitis, subacute gingivitis, convalescent from bronchopneumonia of right and left lower lobes. Laryngeal examination February 6th showed slight swelling of the false vocal cords; the patient was improving steadily. A medical consultation was held February 14th. There were diffuse râles over both lungs, coarse, medium sized, soft, moist, and resonance was diminished over upper lobe, right anterior and posterior. March 10th general condition showed improvement and the râles had for the greater part disappeared. The left lower lobe posteriorly still showed many subcrepitating râles, probably subsiding bronchopneumonia. There was increased whispered voice within the scapular region down to the seventh dorsal and bronchial breathing, probably due to adenitis. April 1st, râles, subcrepitant and crepitant, still persisted at the left base. General condition showed improvement. Seven sputum examinations thus far were negative for tubercle bacillus. X ray examination showed increased density over the middle and lower right, evidence of old right sided pneumonia, considerable fibrosis and adenitis. Sputum examination, mouse inoculation method, showed pneumococcus Type IV, hemolytic streptococcus and Micrococcus catarrhalis.

INFLUENZA FOLLOWED BY PNEUMONIA SUCCEEDED BY AN ARTHRITIS.

CASE VI.—24,716, B. F. K., admitted January 6, 1919, diagnosis on admission acute influenza with bronchopneumonia, both bases. January 9th the patient complained of pain and tenderness in the left knee and ankle. The left knee was swollen. There were no signs of pneumonia at either base. The knee and ankle were still swollen on January 10th, and there was an urticarial rash over the left ankle and left lower thigh. January 19th the ankle was still sore and stiff, heart normal, lungs clear. February 10th the pain was still present in the right shoulder. February 14th the heart was irritable, sitting 108, standing 120, and digitalis was administered; blood pressure 135-90. February 15th the left tonsil was inflamed and the patient complained of a sore throat. February 18th scarlatiniform rash appeared over the entire body, small, papular in character, discrete, at times confluent, especially in

folds of skin. The throat was still inflamed and a grayish exudate was present on the left tonsil. The cervical glands were enlarged. Temperature was still up. February 21st the general condition had improved, the temperature was coming down, the rash fading, and there was no desquamation. February 23rd the general condition was not so good, the temperature was up to 102°. The throat looked better and necrotic areas were clearing up. Examination of the chest showed scattered crepitating râles at the right base. The rash was disappearing. The left wrist was swollen, red and painful. The diagnosis was acute infectious arthritis, bronchopneumonia at the right base. February 26th there was skin desquamation and the left shoulder was painful. February 29th the left shoulder, wrist, and left third finger were swollen. March 2nd the general condition was good and temperature down. March 4th parapharyngeal cellulitis was present. March 7th the general condition was improved and the throat clearing. March 17th the general condition was good, joints cleared up, throat negative, but the patient was weak. March 21st he was greatly improved, and on March 23rd he received a furlough for fifteen days. Laboratory examinations: urine, negative throughout; blood count, March 17, 1919, white blood corpuscles, 16,430; March 19, 1919, blood culture, sterile, white blood corpuscles, 13,200; March 22, 1919, blood culture sterile, white blood corpuscles, 20,700; throat culture, hemolytic streptococcus, two plus; April 19, 1919, chest x ray showed marked adenitis, especially on right side.

PNEUMONIA ASSOCIATED WITH HEMOLYTIC STREPTOCOCCUS INFECTION.

In going over our x ray films in the later days of the epidemic, we find in certain films, a gradual replacement of the smoky appearance which we had learned to recognize as being due to hemorrhagic extravasation in the lung, by progressive discrete mottling. This mottling was observed to occur whenever an interstitial type of pneumonia was present at autopsy. In this group, three cases which demonstrated such a condition were associated with a hemolytic streptococcus infection. The question, therefore, arose whether it were possible that such an appearance could be associated with pneumonia due to certain particular organisms alone, or was it a question of organism associated with the response that the lung makes to infection dependent upon the individual's resistance.

Clinically, in these cases nothing new is found in physical signs. By this means, it is impossible to differentiate pneumonia associated with a hemolytic streptococcus infection from a hemorrhagic pneumonia with a pneumococcus complicating the situation. Moreover, during this epidemic it was not at all infrequent to find the so-called hemorrhagic pneumonitis in one lobe and an interstitial type of bronchopneumonia in another. Consequently, it was hazardous to make a clinical diagnosis of the type of pneumonia that one might expect pathologically. The sputum corroboration was insufficient, because too many organisms were found. The x ray was of supportive value. Of course, with the positive blood culture for hemolytic

streptococcus a probable diagnosis of that type of pneumonia was indicated. In one particular case, however, where this obtained, autopsy revealed a hemorrhagic pneumonia of the left lobe and an interstitial on the right, both demonstrable by the x ray.

SEQUELLE AND COMPLICATIONS.

Turning now to the various complications such as fluid in the chest, pericarditis, mediastinal empyema, and others, we find here too that our serial x ray studies were of great interest. Occasionally because of the great quantity of blood in the lungs, physical signs were equivocal. While dullness and bronchial breathing were present, the breath sounds were nevertheless distant and somewhat suggestive of fluid. This, probably because of the nature of the consolidation, outside of exploratory puncture, was frequently diagnosed by the x ray from the obscuration of the costophrenic angle which in ordinary hemorrhagic pneumonitis was strikingly free from involvement. This freedom also was seen in the apex of the lung and was invariably demonstrated in the plates, repeatedly corroborated by autopsies which showed areas of emphysema along the anterior borders, extreme base and true apices of the lung. The impression one got was that just before the bloody exudate had reached the peripheral portions of the lung, the patient died, and respiration was in the end carried on by the emphysematous lappets of the lung. Hypostasis presumably played a small part, if any. It seemed as if the interplay of vasomotor paresis, extensive hemorrhage, where the patient drowned in his own blood, and toxemia were largely responsible for rapidity of death.

REFERENCE.

1. MACCALLUM: Pathology of Pneumonia Following Influenza. *Journal A. M. A.*, March 8, 1919, p. 720.

GOITRE.

By J. CHRISTOPHER O'DAY, M. D., F. A. C. S.,
Honolulu, Hawaii.

Visiting Surgeon St. Vincent's Hospital, Honolulu, Hawaii.
Surgeon to St. Agnes Home for Children, Demonstrator of
Anatomy North Pacific College.

During the past ten years I have given the subject of goitre considerable detailed investigation. In my final review of the data from which this article was written I concluded to omit tabulations of case records, referring to them only in a general way. I shall endeavor to place the sum total of our entire research into a brief digest.

From my goitre clinics at the St. Vincent's and Good Samaritan Hospitals at Portland, Oregon, the variety of goitres enabled the classification of a varying pathology which, in turn, gave us a working basis upon which to classify the goitres themselves. From the latter we secured the means of comparison that gave us a method of differential diagnosis between the varying causes of thyroid enlargement. These classifications will later be recognized when we refer to the microscopic study of our specimens. Each phase of the subject will be dealt with so that each salient feature will be uncompromisingly presented. Let us begin by seeking answers to the following eight questions:

1. What is goitre?

2. What are the causes of goitre?
3. Why is it of endemic character?
4. Why is it of more frequent occurrence in the female?
5. In what number of types does it occur and can one type assume the character of another and if so, how?
6. Is hyperthyroidism or thyroid toxicosis the true cause of Graves's disease or so-called exophthalmic goitre, or is it the lack of some unknown neutralizing substance?
7. What is the cause of the exophthalmus?
8. Is goitre a water borne disease?

Seeking an answer to these questions from much available literature, brought us to the unwelcome conclusion that the subject of goitre, as a whole, is most unsatisfactorily understood, even by many who have essayed to give it exhaustive consideration. Many of the rules laid down by our best authorities failed to stand the test of experience. The preliminary ligation of the superior thyroid artery, for instance, as advocated by Woffler, in our hands yielded no better results than enforced rest. In fact, we convinced ourselves, from a large number of comparisons, that ligation of the superior poles accomplishes nothing unless rest follows. Drug induced rest should be the sole method of choice—in other words, weaken the thrust of the kinetic drive as taught by Crile.

Not until we had injected and studied the blood supply of a goodly number of thyroid glands could we realize the impossibility of depriving the gland of the least bit of its blood supply by ligating its superior arteries. Whatever benefit has been observed to follow was not the result of the ligation, but of the rest subsequently imposed. That the improvement was due to the strangulation of some imaginary nerve that paralleled the superior artery, as believed by some, made us impatient to say the least. The injections of boiling water directly into the gland substance as brought out, and advocated, by Professor Miles F. Porter, is a more rational method because it actually destroys the secreting cells of the follicles. From our type specimens sections were prepared, and from the microscopic findings a tabulation was made and filed with the clinical history obtained prior to the case going to operation. These, then, were regrouped in such a manner as to preclude all consideration of causes not found within the gland's histological and vascular structure. This enabled us to divide all goitres into two distinct classes, namely, the transitory and the permanent. Of the former we observed the cause to rest, primarily, with circulatory disturbances, usually venous stasis. This type of thyroid enlargement is most prevalent within the years of adolescence, affecting mostly girls or young women. These goitres, being transitory, give success to no end of goitre cures, from amber beads to faith cures. There is another variety of transitory goitre of which the cause is not so plain. I refer to the passing enlargement of the thyroid in association with puberty, pregnancy and the menopause. While we had the opportunity of observing five cases of this type, each had entirely vanished before any conclusion as to the cause could be

reached. We did, however, make the following note on our records. "Transitory goitre the result of pelvic disturbance may be differentiated from the transitory vascular type by the absence of a bruit." Irregularity of the menses together with dysmenorrhea was noted in three of the five cases.

When we first turned our attention to the water borne theory of goitre etiology it did not impress us. There really seemed no way in which to begin experiments that would throw any light upon the subject. That the disease was endemic to our particular locality, as well as many other places throughout the Pacific Coast we knew, and we also knew that the localities where the disease was endemic had the purest water supply, water that was quite free from inorganic substances. At the University of Washington, tabulating their students afflicted with goitre, the conclusion was drawn that mountainous districts furnished a greater number of cases but in reviewing their figures they failed to stand the test of the per capita population. While Hawaii is a mountainous country goitre is of infrequent occurrence and whether or not it is because of the mineral content of the drinking water is not known; however, this will be discussed later when the water borne theory of the etiology is treated.

We used to believe that focal infection was a cause. We believed it because no less an authority than Dr. Charles H. Mayo believed it, but during my last two years in Honolulu this has not been confirmed for I have observed more focal infections here than in any place I have ever been or known of and yet with practically no goitres. We encountered one case in our clinic that came so near leading us into serious error we will mention it here. What seemed to be either a thickened walled cyst or an actual hypertrophy of the isthmus, proved on exposure to be an anomalously placed thyroid, a globular mass of normal gland, without lateral lobes, immediately in front of the trachea. Luckily its character was discovered before we had had time to excise it. The deformity was corrected by so cutting into it that two lateral portions were hinged outward and backward into the space primarily intended for the lobes had they been present.

THE NORMAL THYROID.

To clearly understand those conditions that we have come to regard as factors in the mechanical causes of goitre, and to apprehend without confusion the forces that must be logically included if we are to view them as causes, and in justice to the conclusions we hope ultimately to draw, it will be necessary to familiarize ourselves with every phase of the thyroid gland under normal relations with adjacent structures. We are convinced that the study of the anatomy of the region of the thyroid can be simplified by first superimposing the gland as is normally seen in front of the trachea. By then adding the superimposing anatomical parts in their regular order from within out, a scheme is soon presented whereby their inevitable mechanical interference with the circulation of the gland becomes readily understood.

The blood supply of the thyroid is unique. The arteries do not, as at first thought might be supposed, plunge into the gland's substance. Instead

they crow foot over the surface in such fashion that troublesome hemorrhage is never met beneath its vascular cortex. The superior artery divides into anterior and posterior branches, spreading over their respective surfaces, the posterior branch, anastomosing freely with ascending branches from the inferior thyroid artery, while the one in front sends a continuation across the isthmus to meet the branches of its fellow of the opposite side. In considering the course of the inferior thyroid artery, it should be kept in mind that its path from the thyroid axis is not a straight one. Obstructed by the carotid sheath, it must tunnel obliquely beneath it before reaching the gland it is to supply.

Emerging, it is immediately back of the recurrent laryngeal nerve, where often it bifurcates so as to engage the nerve within the fork of its division. It is the possibility of the existence of this arrangement that should warn every surgeon against undue traction on the inferior artery during lobectomy. It is from this not unusual behavior of the inferior thyroid artery that the thyroid surgeon should keep in mind the warning of Charles H. Mayo when he says, "Keep in front of the posterior capsule." One of our patients died thirty hours after lobectomy. Three hours of a severe tetany preceded death and while consciousness was lost several hours prior to the onset of the tetany we, nevertheless, attributed the disaster to injury to the parathyroids. Examination of the removed portion revealed the presence of two distinct parathyroid bodies that had been situated between the parafacia or capsule and the trachea. From this unwelcome experience, and to insure against its recurrence, the following rule was made and rigidly adhered to—*"Once the free border of the gland has been lifted from its place against the carotid sheath, seek no line of cleavage within the tissues connecting it with the trachea, instead, reflect the capsule, including the veins that previously have been delicately ligated, to the line where free border and attached portions meet and then with knife or scissors so cut toward the median line that a thin slice of the gland will be left curved in front of the pretracheal fascia."* The divisions of the thyroid arteries which dip into the parenchymata and stomata of the gland break up into their plexiform arrangement just within the surface. Beyond this breaking up no greater hemorrhage than what may come from a capillary oozing need be feared, once the progress of the excision has carried the operator past the surface. If the arteries and veins have been systematically ligated before the actual cutting away of the gland has been undertaken a bloodless field will obtain throughout the steps of the excision.

Sections that had been made from glands of animals previously well injected, together with others from cadavers, did not reveal any definite scheme of intraglandular circulation. From the distal end of plaster within the terminal arteries to the secretive epithelium of the tubules we were unable to detect the slightest clue as to what the scheme might be. Of course we did recognize minute vessels adjacent to the acini, but that any definite mechanism, like that between afferent and efferent vessels of the kidney's glomeruli existed,

our efforts failed to reveal. We have then the speculative in the histology of the thyroid, yet when we came to the consideration of the pathological findings of the sections made from our various types of extirpated goitres a plan was formulated that, theoretically at least, closed the gap. Inability on the part of the lymphatics properly to drain the secretion of the follicles is the first cause of retentive goitre, and whether this is the result of hyperemia or actual strangulation from other intraglandular disturbances, retention will follow, and to whatever degree the pressure of the retention affects the secreting epithelium, the character of the content of the goitre will be determined. A certain number of thyroids have an additional artery, the thyroidea media. In the foregoing discussion of the blood supply of the thyroid, its consideration was purposely omitted. We will speak of it separately because it is unique. When present it usually arises from either the arch of the aorta or the common carotid, and while of infrequent occurrence the possibility of its being present should be kept in mind when lobectomy is undertaken. If the artery is present, no difficulty need be experienced in identifying and ligating it in its course along the front of the trachea. But there is another reason for considering it separately, for it has systematized the method of rendering the gland bloodless. Looking for this artery will inevitably force the attention of the operator upon the two great inferior thyroid veins that are always present in their descent into the left innominate vein, and like the thyroidea media when it is present, are pretracheal in their course where with surrounding tissues they may be ligated *en masse*.

Our attention will be directed from these to the middle thyroid veins which empty laterally into the deep jugular because of their becoming distinctively more prominent the moment the two inferior veins have been properly ligated. From the point where these two veins emerge from the carotid sheath they traverse a course that is rich in cellular and vascular tissue. To ligate these veins with their surrounding tissues *en masse* is courting the risk of including structures that are better left undisturbed. The superficial course taken after they have reached the gland should readily point out that the proper place for the application of the ligature is where the veins are seen to creep up and over the free edge of the lobe. The superior thyroid veins are always ligated with the corresponding artery. With our first question: "What is goitre?" the answer could be: "A partial or complete enlargement of the thyroid gland." Such an answer, however, would fail in conveying all that should be implied. Kocher would have it to mean immediate consideration of all thyroid disturbances, as an instance, hyperthyroidism without any perceptible enlargement of the gland. We had two such cases. Each was treated and cured by exposure, under local anesthesia (infiltration with a half of one per cent. solution of novacaine) and injections of boiling water directly under the guidance of the eye. Beginning at the superior pole, the injections were carried from above downward till each lobe was cooked white. The isthmus was not injected.

ELECTROTHERAPEUTICS AND THE
MEDICAL PROFESSION.*BY HENRY FINKELPEARL, M. D.,
Pittsburgh.

Permit me to quote from an editorial in a recent issue of the NEW YORK MEDICAL JOURNAL entitled *The Field of Physical Therapy*. It says, in part: "Medical and surgical procedures will be altered to a considerable extent by the experiences gained in the war. The past few years have demonstrated not only that physical therapy is of great value, but that its scope is wide. It is now conceded to be essential in surgery and applicable in all forms of rheumatism, neuritis, nervous conditions, synovitis, fibrous ankylosis of joints, post-operative adhesions, paralysis of nerves, conditions affecting local circulation, such as trench foot, frost bite, etc. Physical therapy comprises such methods as hydrology, electrotherapeutics, mechanical treatment, medical gymnastics, massage, and active and passive exercise. It is well to emphasize that in order to produce the best results physical therapy must be applied scientifically or else the treatment will do more harm than good and will fall into discredit. Medical men must be given the opportunity of gaining sufficient knowledge of the system to be able to supervise treatment efficiently . . . it would seem that the time is approaching or is even now ripe for this branch of therapeutics to be made a part of the medical curriculum . . . Physical therapy has proved to be well worth doing and every effort should be put forth to insure its being done well."

These remarks, although evidently inspired by the experiences gained during the war and the subsequent work of reconstruction, have been true for a number of years. Physical therapy has been making progress in the right direction for over three decades, and to be frank this progress has unfortunately not met with the hearty cooperation of the rank and file of the medical profession. I say unfortunately because the lack of cooperation has acted as a detriment to the medical profession as well as to the public for whose health we are in a measure responsible. The limited space at my disposal will not be sufficient for a complete discussion of all that physical therapy comprises and I shall therefore take up what is considered the most important part, namely, electrotherapy.

Electricity as a remedy for human ills has been used for over a hundred years but, like other remedies in former days, it was used empirically and it is only as a result of the labors of Morton, Snow, Massey, Brinkman and others that the physiological action and the therapeutic effects of the electric currents have been studied clinically and experimentally in the same manner as the action and effect of drugs and serums have been studied by Woods, Hare and others. In former years the strength of the currents could be measured only by the tolerance of the patients, but thanks to the cooperative labors of electrical engineers and the medical workers in electrotherapeutics, apparatuses have been produced

during recent years which make the application of the electric currents as precise as the giving of drugs and serums.

One of the unfortunate incidents in the history of the development of electrotherapy is that advertising quacks in all large cities bought electric apparatus and without any attempt to learn its proper and scientific application have exploited it in a manner that could only result in the discredit of this valuable work, with the result that outside of a few ardent workers in the field of physical therapy, the rank and file of the medical profession is lukewarm toward it and some physicians go out of their way to sneer at, or even openly discredit electricity in the treatment of disease. Let me apologize for those of us who sneer at electrotherapy by saying that we were not taught any better.

The writer remembers that when he was a medical student there was no electrical current in the medical school building, and all that our class heard about electricity was one lecture delivered by the professor of neurology. Another apology I can offer for those who sneer at medical electricity is the manner in which this branch of therapeutics is treated in most of the textbooks on medicine. Let us turn to one of the best of these, namely, Osler's, and look up the treatment of a very troublesome, frequently undiagnosed, and much exploited disease known as sciatica. Under *Treatment*, Osler writes: "In a few cases with pronounced rheumatic history salicylates seem to do good, in others they are quite useless. Hydrotherapy is sometimes satisfactory; antipyrine, antifebrine and quinine are of doubtful value. Electricity is an uncertain remedy, sometimes it gives prompt relief and in other cases it may be used for weeks without the slightest benefit. If the pain is unbearable morphine may be used, but as the disease is protracted the danger of contracting a morphine habit is very great."

What gloomy promises in such a painful disease, from such a great authority, and yet it is the experience of every worker in electrotherapy that the static current will relieve the pain of nearly all sciaticas as quickly as morphine, without the disagreeable aftereffects, and the danger of forming the habit. It is also known to workers in electrotherapy that every case of sciatica depending upon neuritis of inflammatory origin or upon arthritis can be cured by one or more properly selected forms of electricity.

But why does Osler call electricity in the treatment of sciatica an uncertain remedy? Why does he state that in some cases it gives prompt relief and in other cases it may be used for weeks without the slightest benefit? The only explanation I can offer is this: Textbooks are based not only on the clinical experiences of the authors but also on the collection of the reports of cases from various medical practitioners, and I venture to say that the cases reported as having been treated by electricity for weeks without the slightest benefit had either been incorrectly diagnosed, or had been treated by the unscientific application of electricity, or both.

For instance, the proper modality of electricity will relieve the pain of a luetic sciatic neuritis, but to cure it we must use antiluetic remedies. Elec-

*Read at the annual meeting of the American Electrotherapeutic Association, Philadelphia, November, 1910.

tricity will also relieve the pain of a sacroiliac luxation, but you cannot cure it without mechanical support. Electricity will also relieve the pain of a sciatic nerve dependent upon a diseased prostate or pelvic organ in the female, but the removal of the cause is of paramount importance. Certain forms of chronic constipation can be cured by electricity but constipation dependent upon chronic appendicitis and belonging properly to surgery may even be made worse by an improperly selected form of electric application. Another cause for failure in some cases may be found in the fact that some physicians in general practice, lured by the promise of financial returns, secure apparatus but are unable to devote sufficient time or sufficient space to produce results. I saw one physician giving his patients five minutes' treatment where thirty were necessary, and the results can only be compared to a dose of one twenty-fourth grain of morphine where a fourth of a grain should be given. Another reason for failure in the hands of physicians is the fact that they depend a great deal on the psychic effect and very little on the physiological effect of their electric armamentarium. I will admit that an electric apparatus does exert some psychic effects but so does a cheerful prognosis with a prescription from a physician possessing a pleasing personality, or other attributes.

Of the lessons derived from the war experiences I am particularly impressed with one which showed the medical profession that what was wanted was not only highly polished machinery but scientific and trained administrators. I have in mind a United States base hospital where there is fine electrical equipment in charge of medical officers who for several years have been doing this kind of work in private practice. At one base hospital where electrotherapy and other physical methods are in charge of a well trained medical officer, assisted by trained aids, fifty-three per cent. of the wounded soldiers are receiving physical treatment, or a total of about 2,000 treatments daily. The department of physical therapy is fully acquainted with the history and the clinical, x ray, and other laboratory data of the patients treated. As the result of this coordinated collaboration the surgeons of that hospital have learned that bone grafts grow more rapidly, joints limber up and infected wounds heal quicker when aided by suitable methods of physical therapeutics.

In conclusion I would say: 1. In electricity we have a powerful agent capable of producing very desirable therapeutic effects when scientifically applied in properly selected cases. 2. That, like powerful drugs and operative surgery, it is capable of doing harm where clinical findings and therapeutic indications are not coordinated and therefore electrotherapy should be administered by the physician or an assistant under his personal direction. 3. To attempt to discredit electrotherapy in the presence of the laity only results in driving them to quacks and pseudopractitioners because the laity do believe in the value of electricity as a curative agent, judging by what electricity has contributed to commerce, industry, and the comforts of life, and what it has done medically for their friends. 4. In

order to save electrotherapy from the hands of quacks and the so-called drugless therapists, the medical profession must familiarize itself with the progress of electrotherapy as they do with the progress of serum and drug therapy and new surgical measures and procedures, so that the lessons we have learned from this great war may be of lasting value to humanity and the medical profession.

1906 FIFTH AVENUE.

LONDON LETTER.

(From Our Own Correspondent)

General Meeting of the Fellowship of Medicine and Postgraduate Medical Association.—Importance of Vitamines in a Well Balanced Diet.

LONDON, March 3, 1920.

The first general meeting of the Fellowship of Medicine and Postgraduate Association was held at the house of the Royal Society of Medicine, on February 20th, Sir Humphrey Rolleston, K. C. B., chairman of the executive committee, was in the chair and called upon the honorary secretaries to present their report. The foundation of the Fellowship of Medicine and the main reasons therefor have been set forth in more than one previous London letter, but as the matter is one of great interest and importance to American medical men it will be quite in place to give the gist of this report.

The Fellowship of Medicine was founded on July 22, 1918, at a meeting convened by Lord Eustace Percy, when the possibility was considered of establishing an organization which might unite the British profession with their overseas brethren in closer bonds of sympathy. Its objects were defined as follows: 1. The coordination of all the resources of medical interest throughout Great Britain so as to make them readily available for demonstration and investigation. 2. The initiation of schemes of scientific entertainment, embracing the organization of facilities for visits to or courses of study in clinics, laboratories, museums and other medical institutions, and the preparation of specially arranged addresses, demonstrations and scientific visits. 3. The collection and distribution of information in relation to medical schools, meetings and congresses at home and abroad, and also acting as a centre by means of which the temporary occupation of professional chairs or the exchange of professorships might be arranged. 4. The promotion of personal friendly intercourse between the members of the profession in this country and their brethren from overseas.

Sir John Macalister and Sir St. Clair Thomson were appointed honorary secretaries and empowered to take all necessary steps to organize and develop the fellowship. So extended a program called for considerable preliminary discussion and organization. In the autumn of 1918 an office was opened in the house of the Royal Society of Medicine, by permission of the council of the society, and the honorary secretaries proceeded to deal with various suggestions which fell within the scope outlined by the promoters of the fellowship. The first effort of the fellowship in the important matter of hospitality was to entertain the Harvard Unit when

passing through London on its way from France to America, on January 15, 1919. The whole unit was invited to a banquet at the Connaught Rooms, which was presided over by Sir William Osler, and the leading British representatives of medicine offered a cordial welcome to Lieutenant Colonel Hugh Cabot and his colleagues. In December 1918 Sir Arbuthnot Lane learned that a large number of medical officers returning from the front, not only British but from America and the Dominions, were anxious to take the opportunity of their stay in London to obtain some postgraduate instruction, and asked the honorary secretaries to consider what the fellowship could do to help. They immediately communicated with the Postgraduate Medical Council, which, under the direction of Sir William Osler, had been engaged for a considerable time in elaborating a permanent scheme of postgraduate work in London. On learning, however, that the organization was not sufficiently advanced to deal with the situation, Sir John Macalister invited a few leading members of the fellowship to meet to discuss what could be done. They decided without delay to ask the medical schools and special hospitals to cooperate with the fellowship in providing for an emergency scheme. Mr. L. Bromley and Mr. Herbert J. Patterson undertook the duties of honorary secretaries of a subcommittee then and there appointed for the purpose, and threw themselves with enthusiasm into the work.

The council of the Royal Society of Medicine placed an office at the disposal of the secretaries and gave permission for lectures and other meetings to be held in its house. By the middle of January Miss Willis was appointed secretary and within a few weeks what became known as the Emergency Postgraduate Scheme for Medical Education was in full swing, for Mr. Bromley and Mr. Patterson had succeeded in securing the hearty cooperation of the medical schools and special hospitals. On the retirement through pressure of work of Mr. Bromley and Sir St. Clair Thomson as honorary secretaries, Mr. Philip Franklin, a surgeon of American birth resident in London, was enlisted as joint honorary secretary with Mr. Patterson, and took special charge of the American students, of whom 179 passed through the course. The course was officially recognized by the various military commands of the different units, who drafted men to the fellowship for the purpose of postgraduate study. The emergency course ran from January to the end of October 1919, when as members were steadily enrolling, although the bulk of the overseas men had finished their work, the committee decided to continue the scheme upon a permanent basis.

In the meantime the Postgraduate Council, formed in 1917, had developed into the Postgraduate Medical Association, for the purpose of organizing permanent postgraduate teaching in Great Britain. On the suggestion of Sir William Osler, who presided over both bodies, they agreed to amalgamate and to cooperate in continuing the emergency scheme as a permanent one. The London course was thus continued without a break. All the medical schools with one exception were affiliated with the course. Up to February 18, 1920, the follow-

ing postgraduates had been enrolled: United Kingdom 221; United States 179; Australia 144; Canada forty-five; India thirty; New Zealand fourteen; South Africa six; Denmark four; Switzerland four; Egypt three; Hong Kong three; France two; Italy two; Japan two; Rumania one; Holland one; Spain one; South America one; making a total of 663. During the year the fellowship organized a series of special lectures in the house of the Royal Society of Medicine. Nearly two hundred lectures were delivered, embracing every department of medicine and surgery.

At a joint meeting of the two associations which was held on October 24, 1919, for the purpose of formally inaugurating the amalgamation, with Sir Humphrey Rolleston in the chair, the terms of a constitution were considered and, subject to the approval of the general meeting, were adopted. This constitution has many defects but it was thought better to leave details until after the meeting when it was hoped the executive committee would revise the constitution, and elaborate it in such a way as to deal with all likely contingencies, and avoid all ambiguities. In April it was found necessary to issue a weekly program of the daily hospital appointments and lectures at the disposition of postgraduates, and as this involved a large amount of work necessarily done at great pressure Mr. Hugh Stokes was appointed to help in the work of arranging the courses of lectures, and to edit the weekly bulletin. This bulletin which has appeared regularly every week has been found of considerable assistance as an indication of the work offered in London, and its growth is some indication of the support given to the fellowship by the teaching authorities and members of the staffs of the hospitals. The first program published in April 1919 contained fifty-five appointments for the week. The issue of the bulletin for February 28th, gives information as to 888 clinics, demonstrations, and lectures opened to postgraduates at work in the London districts.

In concluding their report the secretaries said that it would not be fitting to bring it to a close without a reference to the loss of their late president, Sir William Osler. From the first he was president of both organizations. Some little time ago it was pointed out that there were two organizations formed to promote postgraduate work; and indeed it was Sir William Osler who suggested the amalgamation that took place later to his great satisfaction. Without his constant sympathy and help the history of the fellowship would have been very different. The work occupied his mind to the very last. Just before the end when Sir John Macalister went to Oxford to see him almost his first question was, "How goes the fellowship?" and his words when leaving were, "Keep on poking the fire." The Fellowship of Medicine is now established on a firm basis and provides facilities for postgraduate teaching in London which previously were woefully lacking. Your correspondent can tender his testimony as to the manner in which these opportunities were seized upon by Americans, Australians, and Canadians. As a prominent physician who has done more than his fair share of lecturing at

the house of the Royal Society of Medicine said to the writer the other day, "Since the Americans and overseas Britishers have gone, a good deal of zest has gone from lecturing. They were so keen and eager, and by their attendance in large numbers displayed their interest in so obvious a way that they bucked up the lecturer and impelled him to do his best." As a means of promoting and increasing good feeling between the various branches of the English speaking races they were, and it is hoped will continue to be, a conspicuous success. Sir John Macalister, Sir Arbuthnot Lane, Mr. Herbert Patterson, the late Sir William Osler and Sir St. Clair Thomson, were perhaps more especially pioneers of the movement. Mr. Philip Franklin has been a leading spirit, and since his acceptance of the post of joint honorary secretary has worked more energetically. It is the first long step in the direction of making London a great postgraduate medical centre, a European centre at any rate, for English speaking medical men and students. A good deal more organization is yet required, but with so favorable a beginning it looks as if success was predestined.

* * *

Sir James Cantlie, the well known authority on tropical diseases, speaking at St. Martin-in-the-Fields Church the other day, said that medicine rested on the law of Moses. He had never yet upset one of Moses's laws in regard to hygiene, sanitation or medical teaching. All that the scientists of today with their microscopes and textbooks did was to prove that the ancient law giver was right. There was not one page of the Bible that did not teach us a hygienic fact. A Ministry of Health had been started, and he hoped the minister in charge would see his way to take council with the church and see that they worked hand in hand, otherwise the department would come to grief. He had hitherto been trying to cure disease instead of preventing it as Moses did. Nowadays it was considered bad manners to speak of fleas or other disease carrying insects, but in ancient times every woman had the instinct to know the danger. Recently, we had been on the top of a volcano in regard to a possible plague epidemic, but it was being kept down, and every day rats caught at the docks were examined for the disease bacillus. Twenty-six years ago when he was a doctor at Hong Kong, there was an epidemic of bubonic plague, and he and others searched the *Encyclopædia Britannica* for information. Then a clergyman came to him and asked that he would read the fourth, fifth and sixth chapters of the Book of Samuel, where five forms of swellings and three golden images of rats were described as being offered to the God of Israel. "That's the cause of your plague, these rats," said the clergyman, and on that basis the medical authorities went to work. Tropical medicine came in only twenty years ago, but if we had read our Bible we would have known all about it before. Our wrong use of milk was the cause of indigestion and bad teeth. Moses laid down the salutary law that milk should not be drunk until at least two hours after eating fish, three after chicken, and four after meat, but we disregarded this and gave milk at meals.

The influence of the internal secretions on health seems to have been proved up to the hilt, although there is a great deal yet to be learned on the subject; also how what are known as the vitamins influence the action of the internal secretions for good or bad. However, our knowledge as to the relationship between the internal secretions and the vitamins, is not very far advanced. Still we do know that a certain vitamin content is essential in a well balanced diet, and that the lack of this content results in disease or in conditions of ill health. British medical men seem to have come to a full realization of the value of the accessory food factors or perhaps it may be more correct to say to a partial realization. If this were not so a memorial would not have been presented as it has been presented to the minister of health, signed by well known scientific men, calling attention to the fact that medical and scientific researches show that a properly selected diet will aid people to resist the attacks of influenza or, if the disease is contracted, to make a good fight and a better recovery. Of course this is true. If a person eats a well balanced nourishing diet which is assimilated properly his powers of resistance to disease are greatly increased and, as said before, to have a well balanced diet, which is as important as a nutritious one, the vitamin elements must be present in due proportion.

The report of the Medical Research Committee of the British National Health Insurance shows that to insure good health food should contain in addition to flesh, bone forming, and heat producing substances, the antiscorbutic vitamin found in salads, raw ripe fruit, and properly cooked vegetables and the antineuritic vitamin essential for the nourishment of the nervous system, situated principally in the germ and aleurone cells found in the whole wheat meal, oatmeal, and a household flour deprived of bran, but retaining about eighty-five per cent. of the wheat berry, advocated by an important deputation recently received by members of parliament. It should likewise be pointed out that proper cooking is necessary for the retention in adequate amounts of the vitamin element. Food can be and often is so cooked that it is deprived of its accessory food factors. This is the case with vegetables in particular. The satisfactory feature of the report to the minister of health is that medical and scientific men are beginning to grasp the fact that a diet to do the most good must be well balanced, and that to be well balanced it must not be lacking or deficient in vitamin content. It is obvious that if the body is well nourished it will resist disease better, and therefore it is quite in keeping with the gospel of preventive medicine, the medical gospel of the day, that the importance of a proper diet should be urged on the attention of the minister of health. It is further an encouraging precedent that a report of the nature referred to above should be made public promptly. The British housewife is not a very good caterer and is a notoriously bad cook, but if she can be taught that disease can be avoided by eating certain food in certain proportions and properly cooked she will doubtless mend her ways, for the sake of the race and the future generations.

Editorial Notes and Comments

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THE RARE CASE.

That which is rare always arouses our curiosity and hence often assumes importance in our eyes which is not warranted. We always take pleasure in reporting the unusual case to our fellow workers, although often the pleasure is mostly on the side of the discoverer of the curiosity. On the other hand, the supposedly rare case may not be so uncommon as we suppose, but, on the contrary, may prove to be the key which unlocks the riddle of many common disorders.

An example in point is the case of acromegaly, which certainly can be called uncommon and which was once considered most unusual. The striking disease picture pointed to a new origin of signs and symptoms, and signs and symptoms hitherto unexplained began to arrange themselves in the light of a new pathological meaning. In fact, one of the most common conditions had an illuminating ray thrown upon it. We refer to headache. If acromegaly is accompanied by headache, why may not a lesser and a fleeting disturbance of the pituitary body be a cause of headache? At least we have one more possible cause to be examined into in explaining this too common symptom.

The pituitary is a complex organ. Its disturbance may infrequently be accompanied by marked sexual changes. If so, it may also be at fault in, or associated with, minor and passing common sexual disturbances. If it undergoes changes at menstruation, why may it not be mixed up with abnormal menstruation, and if it has to do with

the contraction of the uterus, may it not be functioning abnormally in some miscarriages?

Similarly, to take another example from the endocrine bodies, typical exophthalmic goitre is not an every day affair, though it is evidently more common than formerly, but a too rapid heart is common, and the study of the less common (or the more evident) disease pointed the way to explanation of an ordinary affection. The rare case deserves more than passing attention, for it may prove the key to the most common disturbance.

DROPSY OF THE GALLBLADDER AND CHOLECYSTECTOMY.

Dropsy of the gallbladder is one of the forms of cholecystitis which urgently requires removal of the organ. These cholecystitides are due to a calculus lodged in the cystic duct and causing complete occlusion. The bile pent up in the gallbladder becomes transformed; the pigments become absorbed and the liquid fluidifies. The vesical glands continue to secrete, the fluid increases in amount and becomes thinner. All this applies to those cases where the contents of the gallbladder have remained sterile. But it often happens that infection follows and then a large gallbladder, with thin walls, containing a cloudy, purulent and occasionally fetid fluid, is the result.

Clinically, the history of these patients reveals a lithiasic past. Usually the first paroxysm of hepatic colic dates back many years and then, after a long lapse of time, acute pain occurs in the region of the gallbladder, followed by temporary lameness and later more or less marked digestive disturbance which causes the patient to fear another attack of biliary lithiasis. Then slowly a tumefaction occurs in the infrahepatic region and at the same time a dull pain appears in the right hypochondrium. Icterus is rarely noted except at the onset of the process, at a time when a cure was expected from treatment at Vichy or Carlsbad. Finally, when such a patient is examined, an oval tumor, the size of a closed fist or larger, resistant, slightly painful on pressure, can be felt and which the patient can sometimes feel displacing itself when a change in position is made.

Some physicians do not advise operation in this form of biliary lithiasis, at least when pain is not marked and the general state of health not too much involved. They hope that such a gallbladder will decrease in size by spontaneous disappearance of the fluid content and that recovery will follow.

What is known of the state of the walls of the gallbladder in these cases should lead to the rejection of such opinions. Gangrene of the walls is always to be feared upon the slightest infection taking place, but on the other hand it cannot be denied that a dropsical gallbladder may not decrease in size, although physicians do not tell us what becomes of the calculus occluding the lumen of the cystic duct, which must remain and will continue to ulcerate the walls of the duct and thus favor the development of infection of the gallbladder.

Kehr has shown that in exceptional cases in which a sterile dropsy of the gallbladder gives rise to few symptoms, the patient may keep his gallbladder until pain appears and becomes prolonged. Why should these patients be allowed to run the risk of pericholecystitis, gangrene of the gallbladder, or even to be exposed to long suffering when they can be completely relieved, particularly so when at this phase of the process the operation is very simple. There are no adhesions, the distended vesicle protrudes as soon as the abdomen is opened, so that cholecystectomy in these circumstances is simple and gives excellent results.

If the liquid content of the gallbladder becomes infected, the clinical picture changes. An irregular temperature with high oscillations, or one with a cyclical character develops, the pulse rises and the patients soon shows symptoms of evident infection. Pain in the region of the gallbladder becomes severe and if the infection is due to the colon bacillus—which is usually the case—it extends to the peritoneum, accidents of pericholecystitis ensue, due to the migration of the infecting agent through the walls of the gallbladder. Finally, rupture of this empyema into the peritoneal cavity is to be feared. In sterile or infected dropsy of the gallbladder cholecystectomy is unquestionably the operation of choice, unless the patient is too weak to withstand the interference, in which case a rapidly performed cholecystotomy, followed by drainage of the organ, must be done.

THE PSYCHANALYTICAL INTERPRETATION OF HISTORY.

History was interpreted by Carlyle in terms of the great personalities; a more realistic generation finds incumbent upon it the interpretation of the great personalities. Prof. Harry E. Barnes, writing in the *American Journal of Psychology* (October, 1919) says that the modern psychological historian who accepts the Carlylian interpretation of history will need to revise the famous phrase that history is "collective biography" to read that history is the record of the "collective sublimation of the neuroses and psychoses" of the great personalities. The his-

torical student who is well grounded in the new psychology can, he says, bring out clearly the general character types and in many cases disclose at least the major determining complexes of the leading individuals in history concerning whose personal life, thoughts, and activities any considerable body of evidence exists.

Professor Clark warns us that the search for complexes "is normally branded as scandalmongering and stigmatized as evidence of gross bad taste, except when utilized by some noble patriot for partisan purposes in a presidential campaign." But the student of modern dynamic psychology must vigorously oppose this conventional procedure, for it is these tabooed private experiences that must be learned if we are to have some comprehension of the individual's complexes. George Washington's complexes, he points out, cannot be gleaned from the story of the cherry tree incident. "Our history furnishes ample evidence of the pressing need for a reconsideration of the traits of our leading personalities in the light of the newer psychology: Washington with his interesting "Jehovah complex," combining Olympic detachment with a Jacksonian temper; the utterly abnormal love of Hamilton for an authoritative political system and his accompanying fear of anarchy, which was in its intensity almost comparable to the well known phobia of open places; the violent antiauthority complex of Jefferson and its attendant feeling of inferiority, both of which were elaborated and defended in ten thick volumes of letters and public documents; the remarkable development of a "spotless soul" in James Monroe after his part in many questionable episodes, such as the violation of his word in the publication of the Reynolds letters; the sadism and the "Jehovah complex" of Andrew Jackson, who was so intolerant of opposition as to be unable to complete a sentence in public debate without choking with anger.

However, there are limitations to this field of research. Professor Clark thinks few historians will take the time necessary to acquire any reliable knowledge of the newer psychology and even fewer psychologists will care to master the detailed facts of history. Further, it is only concerning personalities of recent times that we possess sufficient intimate information to make possible an analysis of their unconscious motives. Augustine's "impurity complex" furnished fruitful material for such study, but Petrarch "would probably be regarded as the first remarkable case for study by psychoanalysis." The invention of printing stimulated the recording of evidence dealing with historic personalities, but the printing press alone could not bring to light sub-

conscious motives. "It must be remembered that it is difficult for the most skillful practising psychiatrist to get far enough into the patient's unconscious to secure enough data to effect a cure without from fifty to one hundred hours of personal questioning, and it is not to be supposed that the most complete biography, diary, or autobiography would present anything like that amount of direct personal information."

Notwithstanding these direful warnings, Professor Clark is hopeful enough of the new interpretation of history to suggest that a century hence a knowledge of psychoanalysis may be regarded as an indispensable tool of the historian. One is tempted to be slightly more optimistic on the score that one of the disadvantages alleged by him seems to us irrelevant. We may not have a great amount of information about historical personalities, but is that necessary? What about the "scandal of Euclid"?

THE SURGICAL TREATMENT OF TUBERCULOUS STENOSIS OF THE LARYNX.

In the majority of cases, laryngeal stenosis is not a complication, but rather a clinical manifestation occurring during the ordinary evolution of tuberculosis of the larynx. The stenosis almost invariably progresses slowly and it is only at the ultimate phase of the process that a rapid progress of the lesion occurs which ends fatally. From the viewpoint of treatment, tuberculosis of the larynx is no longer a fatal affection. Unquestionably, local medical treatment may be very useful in certain cases and inhalations, fumigations and sprays are precious adjuvants to the general antituberculous treatment. The same may be said of rest cures, climatotherapy and heliotherapy. But these therapeutic measures are often unsuccessful.

The galvanocautery and the curette can be employed without danger in tuberculous lesions of the larynx and thyrotomy has been resorted to in order better to reach the stenosing lesions with these instruments. In a certain number of instances the results obtained have been good, but occasionally success has not been as favorable as might have been expected for the reason that complications have ensued. It seems necessary to determine the indications for other surgical procedures in tuberculous laryngeal stenosis. When the patient's general health is good or satisfactory, when the pulmonary lesions are limited in extent and follow a slow evolution, removal of the tuberculous granulations with the curette, cautery or cutting forceps by the endolaryngeal route may be attempted.

In a certain number of extremely favorable cases,

a kind of radical cure may be essayed by the exolaryngeal route. By this technic tracheotomy, laryngectomy, laryngo fissure or laryngostomy can be resorted to. The three latter operations have undoubtedly resulted successfully, but they have also been followed by numerous unsuccessful results in that cicatricial recurrence has taken place and for this reason considerable reserve should be maintained in regard to their real value.

Tracheotomy alone is especially indicated in cases of stenosis of the larynx, the low operation being preferable, because it does not involve division of the cartilages and also because it will not compromise the success of further operations on the larynx. When the case is urgent epiglottectomy should be done to relieve the dyspnea.

AN ELECTROPROOF DOCTOR.

It has been recently shown that radiotheraputists cannot afford to despise the safety precautions taken by the ordinary electrician. Many doctors have died slowly, sometimes painfully, as the result of radiodermatitis, but, for the first time, a radiographer has been suddenly killed while working.

Dr. F. Jaugeas, of the Maitre Béchère Hospital, Paris, was preparing his apparatus for a patient. While putting on the full current to the Coolidge tube, there was a sudden conflagration and Doctor Jaugeas was electrocuted.

This death gives reflection on the danger to those working in medical electricity. Until recently they only used currents which rarely exceeded some hectowatts, but, since the war, apparatus similar to that used in ordinary electric plants has made its way into hospitals. It is not uncommon to come across transformers of three to four kilowatts, some of even more power and the end is not yet seen. Of course, many doctors have received violent shocks while working but suffered only a slight syncope, arrested respiration, a loss of feeling in half of the body, or a slight paralysis in one arm or leg and soon recuperated, but using high potentials is another matter. We have learned of the dangers, and, having the lesson from Death himself, we should not scorn to take the ordinary precautions used in any electric plant. The manipulation of high currents should be done automatically and at a distance. Isolated platforms, and rubber-soled shoes are essential. Tiled floors frequently damp from washing are dangerous, and so are cement ones when laid on iron girders. The ideal floor is a polished one covered with linoleum. The operating bed should have around it a platform, supported on porcelain feet. The electrician's

rubber top coat should be used instead of the ordinary operating one, but it is hard to urge the wearing of rubber gloves: they are often a hindrance, though one wise precaution might be taken, i. e. when touching the wires with the right hand—or inversely—put the other behind the back: this averts a bipolar discharge, and that is something.

Some will urge that a medicoelectric period of twenty-five years has seen only one doctor electrocuted. But this one was an excellent electrician and understood his apparatus. What of the less learned who are called on to manage a power yearly increasing in force.

TROPICAL MEDICINE.

To peruse, not merely read, the Indian medical journals, gives a much wider view of all which is being done in a land whose immensity we cannot grasp and one we are content to dub mysterious and leave its mysteries still veiled. The January number of the *Calcutta Journal of Medicine* starts off with an excellent article on rabies by Sir David Semple, M. D., who worked with Pasteur in 1902.

There is a suppressed thunder discussion on underpaid government doctors, also criticism of refusals to take precautions against epidemics because they are not yet raging. The Indian babies seem in as great a hurry to leave the world as the European ones. They expected milk and are fed with reports bawling the failure to overcome social and economic conditions, so naturally, they prefer emigration until the Association of Medical Women in India is heartened by more support. Reports on various diseases furnish a useful monthly supplement to the existent classics, and the University News section is a tremendous revelation to those who hardly knew such places existed.

THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF TORONTO.

The announcement a few weeks ago that the Rockefeller Foundation was to set apart some five million dollars for medical education in Canada; and the recent visit of the president of the foundation—Doctor Vincent—to Toronto, has centred medical talk upon the reorganization of the medical department of the University of Toronto. The faculty of medicine appointed a committee to meet the representatives of the Foundation with Dr. Alexander Primrose, C. B., as chairman. That committee prepared a reorganization scheme whereby it was set forth that three hundred and forty-three thousand dollars per annum, or two hundred thousand dollars in excess of present day expenditures, which would represent at five per cent. an outlay of four million dollars, would meet the requirements of the medical department, and they hope to secure that amount from the Rockefeller Foundation, or failing that, sufficient to initiate the scheme.

Medicine, surgery, obstetrics and gynecology are to have whole time professors as heads, possessing

full control and devoting all their time to professional duties, except about three hours a day for private work. Salaries to the extent of ten thousand dollars a year each are proposed for these professional heads. There are to be full time assistants for each of these departments, devoting their duties to laboratory and research work. Then for the staffs of the various clinical departments other men will be engaged who are busy most of the time with their own private practices.

It is proposed that extensive additions will be made to all the staffs of each and every department of the medical faculty. These, of course, are to come from the profession outside university life at the present time, but whether they are all to be selected from the profession in Toronto, or drafts made from outside the city, has not so far been determined or even hinted at. It is understood that there are many capable men in Toronto who, for one reason or another, have severed their connection with clinical work in the past few years; but whether it is the intention of the powers that be to comb Toronto for the purposes of a superior medical staff, and again attach these capable men to university life, is a question upon which graduates of the medical department await enlightenment. Perhaps, however, graduates are to be entirely ignored as, in the published list of representatives to meet the Rockefeller officials, graduates other than professors or associate professors are conspicuous by their entire absence.

DANGERS OF TRAVEL.

When the dangers of travel are mentioned—thoughts of accident, of collision of trains and sinking of steamers, are at once conjured. But there are other dangers, which probably total more in the long run, if there is as much mischief in the transfer of bacteria by certain means as the sanitarians would have us believe. We have spoken of the unspeakable vileness, and undoubted danger, in connection with the toilet rooms of railway stations. To these may be added the condition of the toilets in the cars. Where these are kept fairly well in appearance and odor, the door knobs, handled by all manner of folk, must be a fertile means of transfer of germs of all sorts from one passenger to another. Some attempt is made to provide means of washing the toilet, inside and outside, but usually neither water nor towel is available.

The arms of the seats are handled by a hundred hands within a few hours, and are smeared with as many contributions of bacteria. So too are the seats and the stair rails of stations. The water served in cars is often far from clean, the ice being thrown into the tanks by hands which have not been washed for their task. The best protection against the diseases spread by travel would seem to be to wear gloves, and certainly this would be an excellent practice, especially for children. But the ventilation (if we can use the word) of cars is another danger, which gloves would increase, for cars are invariably superheated. Not only does the superheating forbid the wearing of gloves, but it renders the nose and throat especially good soil for the sowing of bacteria.

News Items.

American Hospital Ward in London.—The Washington Ward for American women has been opened at the Royal Free Hospital, London.

Personal.—Dr. Charles Winfield Perkins has removed his office from 104 East Fortieth Street to 180 West Fifty-ninth Street, New York.

Child Labor Conference.—The National Child Labor Committee will hold the fifteenth national conference on child labor on April 14th in New Orleans.

Chair of Gynecology at Pennsylvania University.—The University of Pennsylvania, Philadelphia, has received a gift of \$50,000 from the estate of William C. Godell for the establishment of a chair of gynecology.

United States General Hospital Discontinued.—United States General Hospital No. 43, at Hampton, Va., is to be discontinued and the property returned to the board of managers of the National Home for Disabled Volunteer Soldiers.

International Congress of Monaco.—The forthcoming International Congress of Monaco will open on April 15th, under the presidency of Prince Albert I of Monaco. It amalgamates the following scientific congresses: 1, Medical hydrology and geology; 2, hygiene and climatology; 3, spas and thalassotherapy. It is expected to last ten days.

Mexican Child Welfare Congress.—The first child welfare congress in Mexico is to be held in September, 1920. Physicians and all persons interested in matters pertaining to child welfare are invited to participate. The congress will be divided into sections devoted to eugenics, infant hygiene, medical and surgical pediatrics, pedagogy, and legislation.

Red Cross to Vaccinate 400,000.—More than 400,000 persons in Russia will be vaccinated in the next few weeks by the Red Cross, in an effort to prevent the spread of smallpox through the province of Latvia. Arrangements have been made with the local authorities for vaccinating the entire population, and at the same time steps are being taken against the spread of typhus and influenza.

International Surgical Congress.—The fifth meeting of the International Society of Surgery will be held July 19th to 23d, in Paris, under the presidency of Dr. W. W. Keen, of Philadelphia. The following subjects will be discussed: Surgery of the heart and great vessels, treatment of tumors by x rays and radium, analysis of the blood and biological reactions in surgical affections, treatment of fractures of the thigh, and prophylaxis and treatment of tetanus.

Woman's Medical College Raises Fund.—The campaign of the Woman's Medical College, of Philadelphia, for an extension fund of \$250,000 came to a successful close on March 11th, when a joint celebration was held to mark the end of the drive and the seventieth anniversary of the founding of the college. The establishment of a department of preventive medicine is assured by a gift of \$30,000 from the National American Women's Suffrage Association in honor of Dr. Anna Howard Shaw.

South Carolina Medical Meeting.—The annual meeting of the South Carolina State Medical Association will be held on April 20th and 21st at Greenville, under the presidency of Dr. Ebenezer W. Pressly.

Oxford Ophthalmological Congress.—The next meeting of the Oxford Ophthalmological Congress will be held on July 15th and 16th, at Keble College, Oxford. A discussion on perimetric methods will be opened by Doctor Luther C. Peter, of Philadelphia.

Military Surgeons Meet.—The twenty-eighth annual meeting of the Association of Military Surgeons of the United States will be held April 22nd to 24th at New Orleans, under the presidency of Colonel Joseph A. Hall, Medical Corps, National Guard, Ohio.

Speedway Hospital Taken by Government.—The Federal government has taken over the Speedway Hospital, Chicago, for the use of disabled soldiers. The hospital, which has accommodations for 2500 patients, is to be enlarged and will be known as Broadview Hospital.

Insane Patients Escape Fire.—The lives of twelve hundred insane patients on Ward's Island were endangered when fire broke out in the entertainment hall, where they were attending a motion picture show. The patients marched out in perfect order and unharmed, but the building was destroyed.

Kentucky Health Board Appointments.—The following medical men have been appointed members of the Kentucky State Board of Health: Dr. Isaac A. Shirley, of Winchester; Dr. William W. Richmond, of Clinton; Dr. Joseph E. Wells, of Cynthiana; Dr. John G. South, of Frankfort, and Dr. George S. Coon, of Louisville.

Public Health Congress at Brussels.—The Royal Institute of Public Health, of England, will hold its annual congress for 1920 on May 19th to 24th, in the University of Brussels, under the presidency of Viscount Sandhurst, Lord Chamberlain. During the congress the Harben lectures of the institute will be delivered by Professor Maurice Nicolle, M. D., of the Pasteur Institute, Paris.

New York Charities Department Renamed.—In order to afford less embarrassment to women who are bearing children in hospitals under the supervision of the New York City Department of Charities, the name of the department has been changed to Department of Public Welfare. It was explained by Commissioner of Charities Bird S. Coler that the department had been compelled to go to the rescue of numerous women about to become mothers who could not afford the ordinary cost of childbirth.

Postgraduate Course in Radiology.—The Postgraduate Medical School and Hospital has announced the formation of a course in radiology, the first of its kind in this country. The course will be open to graduate physicians from all over the world. In order to provide facilities for the course and for research work, a part of the \$2,000,000 endowment which the hospital is now seeking will be applied in this department. It will not be necessary to procure a larger supply of radium, but larger clinical space and more equipment are needed.

Meteorologists to Fight Influenza.—An appeal has been made by Professor Detruss, head of the medical faculty of Budapest University, to meteorologists of America and Europe to organize a system of notifying the world during influenza epidemics of the direction of air currents, so that endangered districts in the supposed path of the bacilli may take adequate precautions to prevent infection. He asserts that the influenza germ is the smallest encountered by scientists and that because of its light weight it is caught up by air currents and carried hundreds of miles to other districts.

American Posture League.—At the annual business meeting of this association on March 13th, the following officers were elected: President, Miss Jessie H. Bancroft; vice-president, Dr. Frederick R. Green, of Chicago; secretary, Dr. Henry L. Taylor, of Montclair, N. J.; treasurer, Dr. George J. Fisher, of Brooklyn; executive committee, Miss Jessie H. Bancroft, Doctor Green, Dr. Eliza M. Mosher, of Brooklyn, Doctor Fisher, and Doctor Taylor. The annual public meeting of the league will be held in New York the week of April 5th, at which time the American Physical Education Association holds its annual meeting.

Committee to Standardize Practice of Psychology.—The American Psychological Association has appointed a committee to formulate standards for the qualifications and certification of practicing psychologists. The committee consists of Professor Bird T. Baldwin, State University of Iowa, chairman; Professor Walter F. Dearborn, Harvard University; Professor Leta S. Hollingworth, Columbia University; Doctor Helen T. Wooley, Vocational Bureau, Cincinnati, and Doctor Beardsley Ruml, Philadelphia. New York, Wisconsin, New Jersey, and California are reported to have recently legalized the practice of psychology.

Meetings of Local Medical Societies.—The following societies will meet during the coming week:

Tuesday, March 23rd: New York Academy of Medicine (Section in Obstetrics and Gynecology), New York Dermatological Society, New York Medical Union, Metropolitan Medical Society of New York City, New York Otological Society, New York Psychoanalytic Society, New York City Riverside Practitioners' Society, Therapeutic Club, Valentine Mott Society, Washington Heights Medical Society, Clinical Society of the Hospital and Dispensary for Deformities and Joint Diseases.

Wednesday, March 24th: New York Academy of Medicine (Section in Laryngology and Rhinology), New York Society of Internal Medicine, New York Surgical Society, Brooklyn Pediatric Society.

Thursday, March 25th: Hospital Graduates' Club, New York Physicians' Association, Ex-Interne Society of Methodist Episcopal Hospital, Brooklyn.

Friday, March 26th: Academy of Pathological Science, Audubon Medical Society, New York Clinical Society, Society of New York German Physicians, Society of Alumni of Sloane Hospital for Women, Brooklyn Society of Internal Medicine.

Saturday, March 27th: Lenox Medical and Surgical Society, New York Medical and Surgical Society, West End Medical Society.

Government Sale of Medicine and Hospital Supplies.—A quantity of surplus drugs and medical supplies is being sold by the Surplus Property Division, Office of the Quartermaster General of the Army, from March 5th to April 5th. No official forms are required. Orders, which can be made by letter or telegram, should be accompanied by full shipping instructions. No deposit will be necessary on orders amounting to less than \$1,000. Further information may be obtained from the Zone Supply Officer, 461 Eighth Avenue, New York, or the Surplus Property Division, Medical and Hospital Section, Munitions Building, Washington, D. C.

New Medical Publications.—The *British Journal of Experimental Pathology*, a new publication designed to aid the growth of pathological science, has just issued its first number. The editors propose to disseminate knowledge gained by the experimental method, whether in bacteriology, physiology, or biochemistry. The *Revue de la Tuberculose*, discontinued since 1917, will reappear bimonthly, under the editorship of Doctor Courcoux and a managing committee of twenty-six distinguished colleagues. It is the official organ of the *Oeuvre de la Tuberculose*. *Gynécologie et Obstétrique*, a new monthly journal, made its first appearance with the February issue. It replaces three journals, the *Revue Pozzi*, the *Archives*, and the *Annales*.

Anesthesia Conference.—The annual convention of the National Anesthesia Research Society will be held during the week of October 4th in Pittsburgh, the meeting to be in conjunction with the Interstate Anesthetists Association and the Pennsylvania Medical Society. It is possible that the Western Pennsylvania Dental Association also will join in the meeting. Prizes amounting to \$200 will be apportioned for the best papers on research in anesthesia read at the national meeting. This offer is open to all students, surgical, medical, and dental practitioners in the United States. A committee of three was appointed by the society to prepare a uniform anesthesia chart for hospitals. The committee consists of Dr. A. F. Erdman, of Brooklyn; Dr. A. H. Miller, of Providence, and Dr. E. I. McKesson, of Toledo. It was also decided to prepare and publish at the earliest moment possible a monograph on the best practices in anesthesia in obstetrics. Announcement is made of the acceptance of the following physicians, dentists, and anesthetists as members of the research committee: Dr. F. C. Mann, of Rochester, N. Y.; Dr. John Evans, of Buffalo, N. Y.; Dr. A. E. Guedell, of Indianapolis, Ind.; Dr. William Harper DeFord, of Des Moines; Dr. W. E. Burge, of the University of Illinois; Dr. William Hamilton Long, of Louisville, Ky.; Dr. J. Griffith Davis, of Baltimore, Md.; Dr. J. J. Buettner, of Syracuse, N. Y.; Dr. Tyler, of Philadelphia; Dr. Isabella C. Herb, of Chicago; Dr. A. F. Erdman, of Brooklyn; Dr. A. H. Miller, of Providence; Dr. W. B. Howell, of Montreal, Canada; Dr. R. S. Hopkinson, of Milwaukee; Dr. Oel E. Lamphear, of Kalamazoo; Dr. W. I. Jones, of Columbus; Dr. Theodore Casto, of Philadelphia; Dr. S. P. Reimann, of Philadelphia; Dr. John Osborne Polak, of Brooklyn, N. Y.

Book Reviews

DENTAL CONDITIONS AMONG THE MAORIS.

The Prevention of Dental Caries and Oral Sepsis. By H. P. PICKERILL, M.D., Ch.B., M.D.S., L.D.S., Professor of Dentistry and Director of the Dental School in the University of Otago. Second Edition. Illustrated. New York: Paul B. Hoeber, 1919. Pp. vii-374.

In the additional chapters included in the second edition of Pickerill's *Prevention of Dental Caries and Oral Sepsis* we find a sincere effort on the part of the author to show the influence civilization has had in the production of disease within the buccal cavity. During the past few years Doctor Pickerill has had the envied opportunity of carrying on experimental work with a group of Maori children, the remains of a tribe of aborigines in New Zealand. Their special advantage as subjects for observation is the fact that a comparative state of immunity against caries exists within the mouths of these almost extinct people. The result of the keen observations and experiments obtained by the author, including a careful analysis of the bacteriology of their mouths; detailed information regarding their dietaries and habits, and their influence in establishing the condition of immunity within these peoples, are all recorded. We find an enumeration of the various existing theories of the causation of caries, concluding with the present accepted chemical parasitic theory of Miller, which is a fermentive reaction process between the microorganisms of the mouth and carbohydrate foods, producing lactic and subsidiary acids which dissolve enameled structure, permitting the microorganisms to permeate the deeper structures of the tooth. This theory is accepted by the author, who continues to disprove the importance of the later theory of Black regarding the so-called bacterial plaques. We do not think that Black ever regarded the observation of his bacterial plaques as definitely producing caries but rather as the initial phase of decay production.

Doctor Pickerill demonstrates the existence of the same bacterial types in the mouths of the Maori children that are responsible for the scourge in the mouths of our civilized peoples. What, then, is responsible for the state of immunity prevalent among New Zealand tribes? The theory advanced is an elaborate and intricate way of attempting to prove the departure from the primitive dietaries as the cause for our civilized retrogression. In an exhaustive study of the action of the muscles of mastication upon the jaws, Doctor Pickerill classifies these muscles into two groups, those which have an expanding influence upon the mandible, and those which have a restraining influence upon the mandible tending to arrest its development. The first group of muscles is brought into play by the processes of incision and crushing of foods, the second group by the remaining steps in the process of mastication, trituration and deglutition. The author then proceeds to show that the nature of the primitive foods and their preparation are such as to bring the muscles of

incision and crushing into play, explaining away the necessity of swallowing their food by the convenient arrangement and the habitat of the Maori, which is to eat but once a day. By contrast the author shows the habits of our civilized races which have made the forces tending to expand the mandible practically extinct by the nature of our foods and manner of eating, and attempts to show that our foods bring the acts of trituration and swallowing more prominently into play, all of which, in the mind of the author, is to merely account for the proportion of irregularities of dental arches. This condition would be more likely to cause the lodging of food and the resultant production of caries. The theory is elaborate but somewhat farfetched and not very far-reaching. Pickerill unwittingly refutes his own theory when he states: "Some mouths with crowded and irregular teeth are comparatively free from caries and, conversely, many dentures perfectly symmetrical are often rapidly destroyed by disease."

In reviewing the dietaries of the North and Central American Indians, aboriginal tribes, the author admits that they use meat extensively. It might be well to cite the case of Buffalo Bill, who, it is known, led a rather primitive existence, eating the venison which he shot and roasted in the woods. At the age of fifty, when his mouth was examined, he had a full complement of teeth in apparent proper alignment, worn down practically to the gingiva, but without a sign of caries. He had given proper play to all the acts of mastication that nature endowed him with—apprehension, incision, crushing, trituration, and deglutition. The stress that is laid on the value of acid foods as a preventive measure against the production of caries is quite in accord with the conclusions of Professor Gies, who beside recommending the increased use of citrates and other acid foods in our dietary, recommends the daily use of mild acetic acid as a dentifrice and mouth wash.

Doctor Pickerill continues to place a great deal of emphasis upon the increased use of acid sweets when he attempts to show by a series of experiments that there is a much greater stimulation of alimentary secretions with acid sweet foods than with carbohydrates and proteins and introduces an experiment to demonstrate the inhibition of alimentary secretions by the use of carbohydrate and alkaline foods. His experiment was as follows: He selected a boiled sodium carbonate as the sole food to be administered to a number of rabbits. His observations showed an inhibition of alimentary secretions and resultant death of the rabbits.

Doctor Pickerill strikes an interesting note with his experiments on thyroidectomy when he demonstrates a deficiency of calcium salts within tooth structure, necessarily lowering the resistance to the ingress of decay. The influence of the thyroid upon tooth structure is extremely interesting and leads us into the study of a large subject. We wonder what influence the other endocrine organs have upon the teeth; the future should reveal additional material of value in this field of research.

THE MAINTENANCE OF GOOD HEALTH

The High Road to Health. By Dr. JAMES E. KELLY. Illustrated. New York: Dodd, Mead & Co., 1919. Pp. xi-254.

This book is evidently written for elderly and obese persons who have to be lured to health by a quantity of language. Doctor Kelly focuses his attention on six main points which he calls "factors governing our relative stability to the Universe, every potency of which tends to disturb our status." The six cosmic factors are perseverance, air, water, exercise, diet, and sleep. Chapters are also devoted to such topics as obesity, selfmassage and appearance. A number of bedroom exercises are described in detail, with illustrations; there is also a rigorous pruning of the dietary regimen. While not wishing to deprecate anything which may lead elderly and obese persons to become fit, it must be said that everything of value in this book could have been compressed into a third of the space.

SELFANALYSIS.

The Story of a Lover. ANONYMOUS. New York: Boni & Liveright, 1919.

Upon reading this book the thought that is uppermost in the mind is that it is to be regretted that more books are not written without the burden of the author's name, and then it seems deplorable that the author did not, or, perhaps, due to his limitations could not, make better use of his opportunity. He has expressed in a superficial way the actions and reactions of his own lone life. No attempt is made to seek an explanation, but the author makes every effort to analyze honestly his feelings and tries to find a reason for his thoughts which he at times thinks are abnormal, but he immediately tries to rationalize them and has the courage to give advice to others who may find themselves in the same situation. It might be more profitable if he would try and probe more deeply into his own psychic state and search out the causative factors of his own shortcomings in various situations. It seems that the nearest adjustment came when the erstwhile lover falls quite naturally into the position of one of his own children, and when his love object looks upon him with a maternal eye, a calm contentment comes over him, which is their adjustment of a trying situation—a compromise at best; a settling down into the groove of an infantile state without an effort to climb out of it all and make a more adult adjustment.

The predominant note throughout is one of a sadistic strain. In this it resembles Lawrence's more artistic, if more symbolic, portrayal of brute sadism as a sex expression. The disharmony which occurs throughout the relationship may be due to a psychical or physical disharmony between the two but this may be somewhat exaggerated in an attempt at justification. Undoubtedly a better understanding could have been reached if the lover and his mate had made a more intelligent effort at adjustment based on a better understanding of the underlying factors. With a knowledge of this no doubt the union would have been more harmonious and they would have been able to do work of a greater creative import. Children living in an atmosphere of the constant struggle which took place

under the conditions described, would no doubt have certain psychic trauma inflicted upon them that they would have some difficulty in overcoming in later years. The honesty with which they met each other, telling of their proposed or actual infidelities, conventional and otherwise, was only another phase of masochism and not an endeavor to find out what the controlling factors were. As a pathological study the book has interest. The physician who reads the book will undoubtedly find many occurrences, which he will recognize as having seen before among his patients.

The author fears that the reader will not be stirred sufficiently by the text, so he fills the book to overflowing with repetitions of the word sensuous and with hysterical exclamation marks which attempt to add to the dramatic height of the passages by peering at the reader like startled eyes. Did the author think he was throwing cones at the reader?

New Publications Received.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

The Outlaw. By MAURICE HEWLETT. Author of "The Forest Lovers," etc. New York: Dodd, Mead and Co., 1920. Pp. iii-254.

The Aftertreatment of Surgical Patients. By WILLARD BARTLETT, A. M., M. D., F. A. C. S., and Collaborators. In two volumes. Illustrated. St. Louis: C. V. Mosby Company, 1920. Pp. ix-1066.

Practical Organotherapy. The Internal Secretions in General Practice. By HENRY R. HARROWER, M. D., F. R. S. M. (Lond.). Glendale, Calif.: The Harrower Laboratory, 1920. Pp. v-268.

Arithmetic of Pharmacy. By A. B. STEVENS, Ph. D., Ph. C.; College of Pharmacy, University of Michigan. Fourth Edition. Revised and Enlarged. New York: D. Van Nostrand Company, 1920. Pp. i-100.

The Life of Pasteur. By RÉNE VALLERY-RADOT. Translated from the French by Mrs. R. L. Devonshire. With an introduction by SIR WILLIAM OSLER, M. D., Regius Professor of Medicine, Oxford University. Illustrated. New York: Doubleday, Page & Company, 1919. Pp. i-484.

The Opium Monopoly. By ELLEN N. LA MOTTE. Author of "Backwash of War," "Peking Dust," etc. Illustrated. New York: The Macmillan Company, 1920. Pp. i-84.

Publications of the United States Public Health Service. April, 1919. Prepared under direction of the Surgeon General. Washington: Government Printing Office, 1919. Pp. iii-94.

Mortality Statistics. 1918. Washington: Government Printing Office, 1920. Pp. iii-92.

Fourth Annual Report of the Ministry of the Interior, Egypt. Department of Public Health, Ophthalmic Section, 1915 and 1916. By A. F. MACCALLAN; Director of Ophthalmic Hospitals. Cairo: Government Press, 1919. Pp. ii-30.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

TREATMENT OF ACUTE BRONCHITIS IN CHILDREN.

BY CHARLES GREENE CUMSTON, M. D.,
Geneva, Switzerland.

Every case of bronchitis in children requires attentive care and severe hygienic measures in order to avoid the advent of bronchopneumonia which is so frequently a consequence. In the mild forms rest in bed or in a room with a temperature of from 64° to 66° F., hot sweetened infusions of linden flowers or orange blossoms, also calendula flowers, the application of poultices very mildly infused with mustard three or four times daily for a few minutes, will be enough to cure the affection. Quinine may be given in suppositories.

The following potion, which is devoid of an unpleasant taste, may be prescribed:

Euquinin.,	15 cgm.
Syr. rub. idali,	30 c. c.
Cognac,	10 c. c.
Aq. dest.,	60 c. c.

S. A dessertspoonful every hour.

Respiration is disturbed or difficult on account of mucus. Syrup of ipecac is indicated and antisepsis of the nasopharynx will be obtained with ointments of menthol, or gomenol. Should the temperature reach 102.5° F., if there is dyspnea, baths at a temperature of from 97° to 99° F. should be given every three hours. As long as the temperature is at 102.5° F. cold packs may be applied to the thorax, the towels being wrung out in water at 68° F., placed on the chest, and covered with some waterproof material. They are to be changed every three hours.

Hot alcoholic drinks are also indicated as they exercise a useful stimulating action. As much as three cc. of brandy may be given a day for each year of age in sweetened water. Here are a few formulæ in current use:

Ammon. hydrochlorat.,	30 cgm.
Sodii benzoat.,	30 cgm.
Syr. polygalæ,	20 c. c.
Aq. melissæ,	20 c. c.
Aq. dest.,	50 c. c.

S. A dessertspoonful every hour for children from two to five years of age.

Ammon. acetat.,	10 cgm.
Sodii benzoat.,	30 cgm.
Syr. polygalæ,	30 c. c.
Aq. tilisæ,	60 c. c.

S. To be taken in twenty-four hours by dessertspoonfuls for children from two to five years old.

Terpin. hydrat., }	30 cgm.
Sodii benzoat., }	
Cognac,	15 c. c.
Aq. tilisæ,	15 c. c.

S. A dessertspoonful every hour for a child of four

The French physicians sometimes give the syrup of turpentine of the French *Codex*, which is composed of one part turpentine in one hundred parts of syrup of sugar. General antiseptic medication with collargol or injections of colloidal silver may be indicated in the severer forms of acute bronchitis.

RECENT GLEANINGS IN DIPHTHERIA PROPHYLAXIS.

BY LOUIS T. DE M. SAJOUS, M. D.,
Philadelphia.

(Continued from page 174)

Repeated examinations of pharyngeal or nasal secretions from persons recently ill with diphtheria or from carriers of the infection show a progressive diminution of the number of colonies of diphtheria organisms on culture media as the time elapsed since the onset of the disease increases or the carrier state is being overcome. In a very large proportion of instances one month's time is sufficient for complete disappearance of the infection. During this time, not only do the germs present decrease in number, but their virulence likewise diminishes, as shown by a longer period of survival of guinea-pigs into which the organisms are injected or, ultimately, by failure of the inoculation to kill the animal at all. At the same time, germs other than the diphtheria bacillus appear in increasing numbers in the discharges, in particular the staphylococci, which, according to L. Martin, 1918, are to be found in the discharges for several days before the diphtheria organism finally disappears.

A peculiar feature attending the disappearance of the diphtheria germ from carriers, whether previously ill with the disease or healthy, is that the infection seemingly may return after having been absent for one or more days. Where a culture taken one day shows none of the organisms, another taken a few days later may unexpectedly yield a positive result. Hence the stress generally laid upon having at least two successive negative cultures before discharging a carrier as free of the infection. According to some, six days should elapse between successive negatives before a case can be considered uninfected. The return of infection after a single apparently reliable negative result occurs in a relatively large proportion of cases. Persistence of the germs in the upper respiratory and oral passages is favored by diseased or infective conditions in these passages, e. g., by adenoid growths, other varieties of chronic nasopharyngeal involvement, enlarged tonsils, and affections of the teeth or gums. Recurrence of the infection after primary disappearance may also readily occur in the event of some evanescent nondiphtheritic involvement of the pharynx; when this involvement subsides, the diphtheritic infection is likely to disappear within a short time.

The advisability, from the prophylactic viewpoint, of taking cultures even in relatively mild conditions of the throat or nose where there is the least suggestion of a possible diphtheritic infection is clear, when it is realized that broadcast dissemination of the disease may occur from association with cases of mild sore throat or nasal discharge presenting only a remote resemblance to typical diphtheria. While the bacteria in such instances are not likely to

be as virulent as in the frank diphtheria case, the danger of transmission is all the greater from the fact that the cause of the condition often remains undiscovered and no measures toward isolation of the affected individual are taken, whereas in established severe diphtheria early diagnosis is usual and at least partial isolation often instituted by the patient's mother herself in the effort to spare other children from the disease. The mildest cases show little or no constitutional disturbance, yet harbor diphtheria bacilli of sufficient virulence to induce more severe attacks among subjects whose natural immunity to the infection is of a lower order. C. W. Schaeffer, 1917, was able to trace a number of cases of frank diphtheria to slight attacks of sore throat—tonsillitis—which had occurred several days before in other members of the same families; when cultured these slight sore throats yielded virulent diphtheria bacilli. Presence of an actual pseudo-membrane is not a necessary accompaniment in such cases, a mere swelling and reddening of the tonsils constituting the sole pathological evidence of the diphtheritic infection present.

Transmission of the disease seems very frequently to occur from patients with a nasal discharge. The material issuing may be of a dirty white or yellowish color, and is to some extent characterized by its irritant properties, which tend to induce hyperemia of the nostrils or upper lip. A rather sticky consistency of the discharge, which favors its distention into bubbles at the nasal outlet, is in some degrees an indication of the diphtheritic nature of the disturbance. The rapid spread of the infection which sometimes results from delayed recognition of a nasal case is well illustrated in the account of a small epidemic published by Schaeffer, 1916. A school child had been ill five days with a mild case of nasal diphtheria, giving a positive culture. Nine days later, four friends of the family, all attending the same school as the patient, were stricken with diphtheria. Two days later another child in the same class became ill, and after a further interval of twelve days a child residing across the street from the first patient, and also attending the same school, contracted diphtheria. Subsequently additional cases were reported, bringing up the total number of cases traceable to the original mild nasal diphtheria to fifteen.

(To be continued.)

Cedar Oil Poisoning in a Pregnant Woman.—D. D. DeNeen (*American Journal of Surgery*, November, 1919) reports a case of cedar oil poisoning in a woman of twenty-five who had taken the oil the night before to induce an abortion. It was thought that a tablespoonful had been taken. Shortly after the oil was taken the patient was seized with convulsions and, when first seen, she was in clonic convulsions with the head thrown back. It was agreed to empty the uterus by Cæsarean section. The patient was relieved of the pregnancy which had advanced to about the sixth month. The postoperative treatment consisted of Fisher's solution by Murphy drip. The temperature fell to below 100° F., and there were no convulsions after the operation.

Delivery by the Natural Passages Following Cæsarean Section.—John T. Williams (*American Journal of Obstetrics*, October, 1919), from personal experience and a review of recorded cases, believes enough evidence has accumulated to show that the presence of a Cæsarean scar in the uterus is not sufficient reason for repetition of Cæsarean section in a subsequent pregnancy in the absence of any other indication. Patients in whom the operation had been carried out for conditions no longer present in the later pregnancy, such as eclampsia, placenta prævia, abnormal presentations, undilatable contraction ring, inertia uteri, etc., may be allowed with safety to pass into labor providing the uterine wound of the earlier Cæsarean section has healed without sepsis. Such patients should, however, be delivered in a hospital where equipment for abdominal section is accessible if needed. Use of forceps, if delivery does not progress with reasonable speed, is probably safer than pituitary extract or version. In patients in whom Cæsarean section has previously been performed for a relative indication after the test of labor has demonstrated failure of the natural forces, the fact should be borne in mind that occasionally a rapid, normal labor occurs by reason of a smaller fetus, better uterine contractions, or both. In such cases, the patient may be allowed to choose between repetition of the Cæsarean section and the test of labor. Cases of sepsis following a previous Cæsarean section should likewise have an elective section. In all Cæsarean wounds the entire thickness of the uterine wall should be most carefully approximated, as the inner fibres have a tendency to retract beneath the outer. Attention must also be paid to keeping up cervical drainage, as filling of the uterus with blood and clot would tend to hinder perfect healing.

Cæsarean Section.—George S. Foster (*American Journal of Surgery*, November, 1919) states that Cæsarean section is no longer considered a hazardous operation. It was necessary to educate the public in order to bring about a realization of the simplicity of the operation. Each year hundreds of lives were sacrificed on account of protracted labor, or delayed labor, deformities of the mother remaining unrecognized until too late. The physical unfitness of the mother to endure the strain of delivery by the natural route brought about intercurrent diseases such as involvement of the kidney tissue or heart muscle. It is stated that eighty per cent of these deaths could have been avoided by a Cæsarean section done at the proper time. The indications given for Cæsarean section are as follows:

1. Brow presentation, where no progress has been made for six hours and version is contra-indicated because of the physical condition of the mother;
- 2, concealed hemorrhage;
- 3, contracted pelvis;
- 4, eclamptic coma;
- 5, flat pelvis;
- 6, labor complicated by small flat pelvis;
- 7, well developed myoma complicating pregnancy;
- 8, cases of extreme cervical rigidity;
- 9, accidental hemorrhage;
- 10, pernicious vomiting after the seventh month;
- 11, marked chorea;
- 12, advanced cardiac or pulmonary disease;
- 13, extreme muscular atrophy of

the abdominal wall after a six hour period has failed to advance the child; 14, sudden death of the mother after the fifth month; 15, any intercurrent disease after the sixth month where the continued viability of the child is a factor, providing the life of the mother is not subjected to unwarranted hazard; 16, where miscarriages have occurred in previous pregnancies after the sixth month, standard precautions being taken to extend the time of election to as near full term as reasonable; 17, in any case of questionable safe delivery of a viable child following a consultation of obstetricians and surgeons to at least the number of two each, the majority favoring; 18, protracted labor over a three hour period and no progress even though cause be undetermined; 19, delayed labor where months of pregnancy have been definitely determined; 20, any physical unfitness of the mother to withstand labor after proper consultation has proved the fact, medical, obstetrical, and surgical men to the number of three to determine this fact and the majority rule; 21, extreme kidney involvement, the time of election to be heeded; 22, inertia uteri covering a three hour period and other efforts failing to reestablish proper muscular activity; 23, in cases where women avoid pregnancy because of the dread of pain of delivery, but are desirous of having a family, if Cæsarean section can be done at the time of election, this conclusion being drawn after proper free consultation and explanation to the family.

Local Injections of Antigonococcic Serum in Gonorrheal Rheumatism.—R. Debré and J. Paraf (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, November 6, 1919) note that antimeningococcic serum has been found beneficial only when brought in direct contact with the diseased tissues. Meningococci and gonococci are very similar not only morphologically and culturally, but also in mode of action, causing harm not by means of a diffusible toxin, but through the direct effect of the germ itself, which sets free its endotoxins. This suggests the local use of antigonococcic serum, and the authors were able to show in rabbits that intraocular injection of antigonococcic serum one day after injection of gonococci into the same tissues causes pronounced benefit, while a subcutaneous or intravenous injection of serum is quite ineffectual. Clinically, intraarticular injections of serum proved capable of procuring prompt and complete recovery even in the most severe forms of gonorrheal joint. The serum used had been prepared at the Institute Pasteur by Nicolle, and was administered in fifteen cases of well marked, though recent, arthritis, with much pain, pronounced effusion, and constitutional disturbance—cases which, untreated, would probably have terminated in ankylosis after weeks of suffering. In fourteen cases favorable results were obtained, six patients recovering within a week and the other eight within two weeks. In all these cases joint motion was completely restored. In one case, that of a debilitated pregnant woman, the treatment failed and the patient subsequently died. In applying the treatment the diseased joint was first evacuated by puncture and an equal or some-

what smaller amount of the serum at once injected into the joint cavity. The procedure was repeated two or three times, either daily or every two or three days. In six patients two or more joints were affected and simultaneously treated. In four patients a local reaction of a few hours' duration followed the injection. Intramuscular serum injections may with advantage be combined with the intraarticular, or, in cases with severe constitutional symptoms, intravenous injections, administered very slowly. The intraarticular treatment is most readily applied in knee involvement, less easily in the case of the wrist, elbow, ankle, and shoulder. It is not feasible in involvement of the joints of the fingers, toes, tarsus, or carpus.

Arsenical Treatment of Contractures and Spastic States.—Sicard (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, November 13, 1919) points out that the new organic arsenical compounds can be made to act powerfully on muscular tonicity and employed advantageously to reduce contracture and spasticity in such conditions as hemiplegia, paraplegia, paralysis agitans, syringomyelia, and disseminated sclerosis, both in nonsyphilitic and syphilitic subjects. The inhibiting effect of arsenic ranges from a mere sedation to abolition of the Achilles reflex and even of all reflex action in the lower extremities. The degree of inhibition varies in accordance with the total amount of arsenicals injected, the period in which the total dose is given, and the mode of injection, intravenous injection of small amounts daily or on alternate days proving far more active in this direction than the customary weekly injections. In the first stage after intravenous administration of four or five grams of an arsenical in five or six weeks, beginning muscular sedation is witnessed in cases of contracture, in chorea, and even in paralysis agitans. In the second stage, after seven to ten grams have been administered, the Achilles reflex is lost, though the knee jerk and motor power are unaffected.

There may occur slight evidences of acroparesis and a numb feeling in the plantar regions. Diminished excitability of the muscles to the faradic or galvanic current is noted. In the third stage, where ten or eleven grams are exceeded, there is complete loss of reflexes in the lower limbs, with more or less marked motor paresis and more pronounced changes in the electric reactions. The inhibitory action of arsenic, which can be regulated by proper doses, seems to persist indefinitely after discontinuance of treatment, the Achilles reflex having uniformly failed to return in the authors' cases, even after fifteen months. Care should be taken not to confound loss of the Achilles reflex, due to intensive novarsenobenzol treatment, with beginning tabes or extension of the syphilitic process to the sacral nerve roots. The differential diagnosis of arsenical pseudotabes is reached from the normality of the cerebrospinal fluid, the findings on electrical examination, and the unimpaired knee jerks and pupillary reactions. Treatment along the lines suggested should be carefully controlled by observation of the cutaneous, nervous and azotemic reactions.

Immediate Capsulotomy in the Extraction of Senile Cataract.—Arthur G. Bennett (*American Journal of Ophthalmology*, December, 1919) instills a drop of a one per cent. solution of atropine sulphate two hours before operation in order to dilate and paralyze the iris, and secures perfect local anesthesia by the subconjunctival injection of cocaine and epinephrine after the usual instillation of cocaine into the conjunctival sac. He incises the anterior capsule of the lens with the point of the knife with which he makes the corneal section, removes the speculum, and expresses the lens with his thumbs, one on the upper lid, the other on the lower. The eye is then inspected to see if any cortex remains and if the iris is in place. If the iris is entangled in the wound a few strokes of the spatula will free it, and, although he does not say so, a little more manipulation may be needed to express remains of cortex. Atropine is instilled again, mercuric chloride ointment, one in 3,000, is inserted between the lids, and the eyes are bandaged for forty-eight hours.

The reviewer remembers very well the performance of immediate capsulotomy in exactly the same manner, by the point of the Graefe knife during its passage through the anterior chamber to make the counteropening for the section, and also the expression of the lens by means of the thumbs on the lids, back in the early nineties. On several occasions since that time he has seen this operation advocated, but it has not met with general acceptance as having a technic to be preferred. A discussion of its advantages and disadvantages is futile. Doubtless in the hands of the writer it has given and will give him better results than perhaps any other, but its technic is not one to be recommended to the tyro, nor is it likely to be adopted by an operator skillful in another method.

Peripheral Vasoconstriction in Shock.—R. Ducastaing (*Press médicale*, December 20, 1919) refers to the conditions of so-called "arterial stupor" or "segmental inhibition of the arteries" recorded during the war, in which arterial spasm simulated more or less closely an organic arterial lesion. In so-called shock, on the other hand, some, with Crile, recognize an exhausted condition of the vasomotor centres and others, with Cannon, believe in an at least partial preservation of vascular toxicity. In two cases of shock the author was able, by administration of amyl nitrite, to demonstrate the presence of vasoconstriction. The first case was that of an extensively wounded artilleryman who was brought in in a shocked state, with earthcolored facies but with consciousness preserved. The pulse rate clashed with the general picture of shock, being forty a minute. The wound was dealt with surgically under ethyl chloride anesthesia, and two hours later the pulse rate was still forty and the patient conscious, with dilated and normally reacting pupils. The systolic blood pressure—Pachon instrument—was seventy-five and the diastolic, fifty-five. Upon inhalation of amyl nitrite, some color reappeared in the face and the pulse rate rose to eighty; a few minutes later, however, it had fallen back to forty-five or fifty. Two hours after, the pulse was sixty and the blood pressure had somewhat im-

proved. Next day, the general condition grew worse, the temperature rising to 40° C. though the pulse rate remained at sixty. The patient died and large areas of gas gangrene were found about the wound. The existence of peripheral vasoconstriction in this case is considered to have been clearly shown by the effects of the amyl nitrite. In the second patient, with a shell wound of the arm and marked shock, there was absence of radial pulse, though the carotid was beating 130 times to the minute. Under amyl nitrite, the radial pulse returned temporarily. One half hour after amputation of the injured arm the radial pulse returned, at the 130 rate. Later, anuria set in, and the patient died in coma. In this case spasm existed of the brachial artery, partially torn yet empty, and there was also a generalized peripheral vascular spasm resulting in complete absence of the radial pulse on the opposite side. This general spasm was shown by the temporary return of the pulse under the vasodilator influence of amyl nitrite. The condition is apparently due to an attempt on the part of the body, through activity of the vasoconstrictor centres, to make up for heart weakness and raise the blood pressure. During the war the author met with many instances of suppression of the radial pulse for twelve hours or longer, followed by recovery.

Prostatism.—Edward L. Keyes, Jr. (*Boston Medical and Surgical Journal*, January 22, 1920) distinguishes three types of cases: 1. The frankly adenomatous type with involvement of all the lobes; 2, the adenomatous type with partial involvement, one of the lateral lobes being apparently not enlarged, or with complicating sclerosis so that one may question whether the obstruction is due to the sclerosis or to the enlargement of the lateral lobes; 3, the frankly sclerotic prostate and the adenomatous bar due to enlargement of Albarran's glands. He believes that the frankly adenomatous prostate is curable by the ordinary suprapubic prostatectomy on condition that the mucous membrane of the bladder neck is spared at the superior commissure, and that the fistula is left at a point as far as possible from the bladder neck. The mucosa is spared so as to prevent postoperative stricture of the bladder neck, and the fistula is placed high so as to encourage its early closure. In the intermediate class of cases patients need to be operated upon according to the same principle. If one of the lateral lobes seems not to be enlarged, the finger must nevertheless be introduced into the urethra, the mucosa torn open over this lobe, and such fragments of it as can be enucleated should be torn away. This procedure may seem futile at the time, but if it is not carried out the patient is doomed to suffer a relapse. Under the best circumstances he will be relieved of his symptoms for from four to ten years and then they will recur, due to the adenomatous enlargement of the lobe which was not enucleated. He has apparently permanently relieved the retention in a number of cases, but the presence of sclerosis leads him to fear relapse. The problem of the frankly sclerotic prostate has not yet been solved.

Miscellany from Home and Foreign Journals

Disease of the Articular Portions of the Bones in Multiple Gonococcic Arthritis.—H. Dufour, Gaillard, and Ravina (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, November 6, 1919) comment upon the difficulty attending, in some instances, a differentiation of multiple gonococcic arthritis from rheumatic fever. In some cases the urethral discharge has almost ceased when the joint affection appears; in some women it is hard to demonstrate the presence of a discharge, or, again, supervention of rheumatic fever in a gonorrheal patient may be suspected. An important differential sign of gonococcic disease is tenderness of certain points over intraarticular bone extremities. In three recent cases the authors were able to secure x ray evidence of bony or cartilaginous changes corresponding to the areas of tenderness. Thus, in one patient with arthritis of the left wrist, marked tenderness was elicited at the lower end of the radius, and x ray examination showed an area of decalcification in this bone, near the articular surface. In the second patient, with swollen knee, tenderness elicited over the external condyle of the femur was accounted for radiographically by an apparent erosion of the surface of this condyle. In the third patient, with severe multiple arthritis, the distal articular surface of the first phalanx of the right middle finger seemed transparent and abnormal under the x rays, and the whole phalanx was swollen when compared with those of other fingers. All three patients made a perfect recovery. Participation of the resulting local tenderness in bones as of diagnostic value in gonococcal arthritis is thus shown in the doubtful cases. Control plates in prolonged cases of multiple rheumatic arthritis failed to show bone changes such as those noted in gonococcal cases.

Chronic Intestinal Stasis in Children.—G. Taunton (*British Medical Journal*, December 20, 1919) considers that intestinal stasis, instead of being almost exclusively a disease of adults as is usually thought, is often found beginning in childhood. He emphasizes that children with the condition, in a large proportion of cases, assume the symmetrical posture of rest, with the lumbar curve diminished and the dorsal curve accentuated. The lower ribs are less prominent and the xiphisternal notch is long and narrow, while the upper half of the abdomen is constricted and the lower half is protruding. This position frequently results from mouth breathing and it tends so to displace the viscera that changes resulting in stasis follow.

The cardinal manifestations of stasis are given as: 1. Skin changes, as loosening and loss of elasticity, marked pigmentation at the usual places, and often a downlike growth of hair over the whole body. The skin is often clammy and an offensive perspiration is common. 2. Loss of fat so that the subcutaneous tissues contain scarcely any and the buttocks, breasts and pubic pads very little. The loss of intraabdominal fats results in visceroptosis with consequent exaggeration of the stasis. 3. Im-

pairment of circulation with pale, white, cold extremities and high tension pulse or livid cyanotic extremities and low tension pulse. 4. Nervous manifestations as moodiness and depression alternating with excitability. Headaches, vomiting and poor sleep are common. The chief complications are pyorrhea, infection of the gallbladder and pancreas, and infection of the appendix. Then there is the important factor of reduced resistance to other infections as tuberculosis, infectious arthritis and so on. An important method of confirming the diagnosis of stasis is the use of the bismuth meal with the x ray. Treatment should aim at prevention in children and every effort should be made to correct faulty postures. Rest, diet, tonics, exercises, and thorough explanation to the child of the need for a correct posture must be employed. All causes of mouth breathing should be treated and the habit broken where it exists. Surgical procedures should be employed early when indicated. Liquid paraffin must be used before each meal and cathartics of different action should be used only rarely. Agaragar with semisolid food is occasionally useful. Abdominal support is of the greatest use and rest in the reclining position in the middle of the day often allows the passage of the retained infected material past the obstructing constriction with relief from the intoxication due to absorption.

Some War Diseases.—H. Davy (*British Medical Journal*, December 27, 1919) discusses the more important lessons of the war as regards the various diseases which the war made common. He points out that trench fever was the only true new disease developed during the war.

Psychoneuroses.—Shell shock is a condition similar to that brought about by carbon monoxide gas or by concussion, and the pathology has been shown in some cases to be a congestion and a series of punctate hemorrhages in the small vessels on the surface of the brain. The most satisfactory treatment as it was eventually worked out was as follows: 1, To place the patients together in an institution where the atmosphere was one of expectant care; 2, suggestion, usually without hypnosis; 3, graduated employment and reeducation; 4, stay in the institutions sufficiently long for the individual to stabilize his nervous system; 5, recognition that after a decided nervous breakdown the man would never again be fit for front line work.

Disordered action of the heart.—This condition, the writer feels, was in a large proportion of the cases due to excessive cigarette smoking and in the remainder of the cases was a pure neurosis. The treatment of this condition which gave satisfactory results was a system of graduated exercises, usually walking for varying distances on a level and then up different slopes after the method of Oertel.

Diseases of the lungs.—The fact which most impressed the writer in this connection was that no matter how clear the signs of tuberculosis in the lungs might be, if the sputum failed to reveal the tubercle bacillus it was quite likely that the infect-

ing organism was another, as pneumococcus, streptococcus, or staphylococcus.

War nephritis.—There was very little agreement as to the cause of this disease. The writer considers that it was not an entity, but that in the hurry of war conditions all types of nephritis were grouped under one head and then it was hoped that a specific cause might be found for so heterogeneous a condition. The treatment usually agreed upon was rest in bed and a diet of milk and farinaceous foods with such medication as the symptoms called for. Hot packs were not found useful and in convulsions were positively harmful.

Lethargic encephalitis.—In this disease, with its symptoms of drowsiness, headache, transient paralysees, altered reflexes, and opthalmoplegias, the point which the writer wishes to emphasize is the fact that the patient may be readily aroused to answer questions, perform movements, and so on, no matter how profound his stupor appears to superficial examination.

Normal Histology of the Conjunctiva.—Kazuo Hiwatari (*Archives of Ophthalmology*, January, 1920) comes to the following conclusions: 1. The substantia propria of the conjunctiva consists of a connective tissue layer permeated with histiocytes of Kiyono, and to a less degree with plasma cells of Marschalko and lymphocytes. Contrary to the widely accepted theory it has no adenoid nature. 2. Lymph nodules do not exist in the normal conjunctiva; they are always a reaction product of the tissue to some external irritation, which may vary in duration and strength. 3. Two other factors which take part in the formation of follicles in the conjunctiva are the general bodily constitution and a local predisposition. 4. These two factors are connected with the age of the person and with the anatomical structure of different parts of the conjunctiva. Sometimes the varying richness of cells in the subepithelial layer and the form of the epithelium, whether cylindrical or flat, are of special importance. 5. In addition to the formation of lymph nodules and the increase of histiocytes, lymphocytes, and plasma cells, a proliferation of fibroblasts takes place early in trachoma, so that a peculiar granulation tissue is formed in the subepithelial layer. Trachoma is, therefore, a sort of chronic granulating inflammation. 6. The proliferation of granulations and the formation of lymph nodules are both important in the pathology of trachoma, as both are reaction products of the tissue to the trachoma virus. 7. The latter is less important than the former; for wherever trachoma breeds harm the proliferation of granulations occurs with consecutive cicatrization, while follicles are absent where the local predisposition is lacking, as in the bulbar conjunctiva and pannus. 8. Follicles do occur in pannus, but this does not mean that trachoma as such and by itself is able to produce follicles. The rarity of such an occurrence contraindicates this. It is only when an anatomical variation at the limbus gives a favorable condition that follicles are formed. 9. Such a variation may sometimes be due to the presence of cylindrical epithelium in the epithelial layer.

Museum and Art Service of the A. E. F.—Louis B. Wilson (*Military Surgeon*, February, 1920) states that in plans for future expeditionary forces of the U. S. Army it is suggested that the collecting of the material for the Army Medical Museum be made a part of the duties of the division of laboratories. This division should also be charged with the duty of making, collecting, and forwarding moving pictures, photographs, drawings, paintings, and models, representing the administrative, general, and technical activities of the medical department in all its aspects. These photographs, if collected by previously prepared personnel and their supervision made the definite duty of every laboratory officer, would be of inestimable value from both the historical and scientific viewpoints. Restrictions on photography, such as operated early in the history of the A. E. F. so greatly to hamper the activities of the medical department, would seem unnecessary for safeguarding information, the laboratory division no doubt being as trustworthy as the signal corps. Preparation should be made in peace time for the selection of trained personnel for the various highly specialized functions which must necessarily be performed. Provisions should also be made for a standard photographic equipment to be supplied to the laboratories of various types. Special attention should be paid to photographs of methods of handling the wounded and of the appearance and treatment of battle injuries in forward areas, an adequate knowledge of the conditions of which is so essential and yet so difficult to convey to the inexperienced medical officer.

Early Diagnosis of Pulmonary Tuberculosis.—T. Beattie (*British Medical Journal*, January 24, 1920) reminds us that a large proportion of apparently normal individuals have healed pulmonary lesions which may give signs in the lungs readily mistaken for active processes. It is important to recognize such lesions as well as the early signs of a true active process. In making the diagnosis the previous history is of the greatest importance, especially a history of hemorrhage or pleurisy which may have caused the patient to take such precautions as would lead to a healing of the process. The subjective symptoms, aside from the classic symptoms, which arouse one's suspicions, are loss of flesh, increasing languor, lassitude, tiredness, gastric symptoms, anemia, evening pyrexia, and so on. Of chief importance among the physical signs are slight impairment of resonance, enfeeblement of breath sounds, and crepitations over localized areas. These crepitations, which are the most important of all symptoms, are best elicited after a cough at the end of expiration followed by a deep inspiration. Examination of the sputum is of great importance but in most cases the positive finding here ought not to be awaited for a diagnosis. X ray examination is of the greatest importance in early diagnosis and in tuberculosis at the hilus it is often the only means we have of making a certain diagnosis. The tuberculin test is of importance in increasing the audibility of the crepitations at the suspected site if the process is tuberculous. The family history is important. If several members of the family have succumbed to the infection the prognosis is bad.

Dextrocardia, Complete and Incomplete.—B. Parsons-Smith (*Lancet*, December 13, 1919) reports four cases of dextrocardia seen in soldiers of the British Army, in two of which there was complete transposition of stomach and liver, as well as of the heart. These two men showed few symptoms and apparently suffered no inconvenience. The two men in whom the liver and stomach were in their normal positions while the heart was well over on the right side were in poor physical condition, complained of pain in the chest during rest or exercise, showed poor reaction to exercise in terms of blood pressure, pulse rate and so on, and were generally not up to standard. It is stated that this incomplete transposition of organs is frequently accompanied by congenital malformation of the heart and vessels. In one of these it was believed that there was a perforate interventricular septum.

Clinical Aspects of Abdominal Tuberculosis.—K. W. Monsarrat (*British Medical Journal*, January 3, 1920) describes several cases of abdominal tuberculosis with the treatment and gives his opinions on the indications for surgical intervention. Obstruction due to tuberculosis of the gut is considered at length. This condition is most frequently met with in the ileum and next in the cecum or near the sigmoid. Involvement of the rectum and mesenteric nodes are also considered. It is concluded that intestinal obstruction is the indication for operation. In acute cases simple anastomosis is the best procedure, while in subacute cases anastomosis with removal of the diseased gut is preferable if the disease is limited in extent. If there is only slight obstruction, operation may be performed unless there is evidence of a tuberculous focus elsewhere. In disease of the rectum colostomy is not advised as a curative measure and should be practised only to relieve obstruction. In definitely localized disease of the mesenteric nodes, operation gives good results. This should be either enucleation of the nodes or excision of the mesentery involved, together with the attached gut.

Sphenoidal Empyema and Epidemic Cerebrospinal Fever.—D. Embleton (*British Medical Journal*, January 3, 1920) reports the results of an investigation of the condition of the sphenoidal sinuses in a series of cerebrospinal fever cases, including the necropsy findings in thirty-four cases. Of these thirty-four, thirty-two showed empyema of the sphenoidal sinus. In ten cases of hydrocephalus following cerebrospinal fever, empyema of the sinus was found in every case. In forty-seven cases of cerebrospinal fever, in which all the patients had recovered, no empyema of the sphenoidal sinus was present. In the cases which came to section, meningococcus was recovered from the pus in the sinuses twenty times. Pointing out that the meningococcus is frequently found in carriers who never show symptoms of meningitis, it is suggested that the development of a sphenoidal empyema may be the determining factor in the onset of the meningitic form of the disease. The various routes by which the meningococcus may invade the meninges are discussed but no definite conclusions are drawn as to which is the actual route.

Seasonal Hay Fever.—W. C. Williams (*Military Surgeon*, February, 1920) has observed that out of twenty-seven cases of hay fever diagnosed, eighty-one and four-tenths per cent. were due to a sensitiveness to the pollen of the ragweed, while eighteen and five-tenths per cent. were due to a similar sensitiveness to golden rod pollen. The diagnostic cutaneous reaction offers a simple and clear cut method of determining sensitiveness to pollen proteins. Treatment with the extract of the ragweed pollen did not appear to have any favorable influence upon the course of the disease or the severity of the symptoms in twelve cases treated. Treatment with the golden rod pollen extracts in three cases was apparently beneficial in two cases and markedly so in one particular case. Any method of diagnosis or treatment that will offer a suggestion of relief to the vast army of sufferers from this really serious condition should be given a thorough and conscientious trial. It is hoped that we will be able to try the effects of early desensitization upon many of the same patients before the commencement of the autumnal hay fever season this year.

Anaphylactoid Phenomena from Thromboplastic Agents.—Hanzlik, Karsner, and Fetterman (*Journal of Pharmacology and Experimental Therapeutics*, November, 1919) found the thromboplastic agents rich in protein, viz., the thromboplastin and hemostatic serum, distinctly harmful when injected intravenously and subcutaneously in guinea pigs, producing anaphylactoid symptoms and injury to the circulation. Death occurred when large doses of thromboplastin were injected intravenously. Coagulen produced pronounced anaphylactoid symptoms and also injured the circulation, although it contained only traces of native protein. The injurious effect of the thromboplastin and hemostatic serum may be accounted for in part by trikresol—used as preservative—and to a greater extent by the protein fraction. This does not appear, however, to be true of coagulen, which contains neither trikresol nor native protein. Caution is thus necessary when one employs these agents intravenously and subcutaneously. Kephalin appeared to be relatively harmless as compared with the other thromboplastic agents studied.

Abdominal Emergencies.—D. J. Twohig (*Illinois Medical Journal*, December, 1919) gives the following general suggestions in acute abdominal conditions. Be moderate in the use of morphine or better still, use none at all until the diagnosis is made and a plan of treatment devised. Persistent pain is the most important single symptom indicating that surgical interference is needed. A clear, concise, and accurate clinical history is necessary for an accurate diagnosis. Severe cathartics aggravate the condition and should not be given. In gangrenous conditions there is a quiescent stage between the first acute symptoms and the later symptoms of general peritonitis which must be considered in making a diagnosis. A blood count should be made early in all cases. An absolute diagnosis is frequently very difficult and sometimes impossible, but a surgical diagnosis can always be made and proper treatment instituted.

Psychoses Accompanying Influenza.—Egbert W. Fell (*Boston Medical and Surgical Journal*, January 29, 1920) thus summarizes his paper: A psychosis first noticed after influenza may have been preexistent and not be influenced in its course by the infection. Influenza may alter the aspect and course of an existing psychosis by hastening it or adding new features. It may precipitate an impending psychosis, as paresis, or it may aggravate some organic condition and bring on the mental symptoms usual to that condition. Manic depressive psychoses showed marked predisposition and a tendency to early recovery. The infective type of psychosis usually runs an even course and improves with the physical condition with a slight tendency to relapse. Cases, apparently deliria with præcox features, or præcox with deliria features, should be treated with considerable consideration prognostically, since recovery may occur when not expected, or *vice versa*. Dementia præcox cases may begin as such, or with distinctly manic depressive features, or with confusion and disorientation. They run a rather rapid course and quickly assume, as a rule, the hebephrenic picture. About one third of the cases are of this class.

The Sponge Forceps Method of Treating Incomplete Abortion.—E. L. King (*New Orleans Medical and Surgical Journal*, March, 1920) shows the diversity of opinion as regards the treatment of infected cases by quoting the report of a committee of the A. M. A. in 1913, based on replies to questionnaires. The majority advocated cleaning out the uterus if secundines were retained, and then no further intrauterine treatment. About half of those who answered tried to distinguish between infected and noninfected cases, but there seemed to be no reliable method for doing this. The curette should never be used in infected cases, and King has reached the conclusion that its use is inadvisable, and often productive of harmful results, even in clean cases. The method he has adopted is as follows: The patient is anesthetized, carefully prepared with green soap and water followed by alcohol, a speculum is introduced, the cervix is grasped by a volsellum and gently dilated if necessary. Usually no dilatation is needed. An ordinary sponge forceps is introduced and with it the retained secundines are seized and withdrawn. The forceps are reintroduced two or three times until no more remnants are found, and then it is introduced with a sponge in its grasp, which is twisted around inside the uterus in order to remove any small particles that may be left. Finally, if the cervix is sufficiently dilated, the finger is introduced and the cavity carefully palpated to make sure that all particles have been removed. The last step is not essential and is often omitted, as the cessation of bleeding is a reliable indication that the cavity is empty. The uterus is not irrigated, no chemicals are used in its interior, and no pack except in the rare case in which rather free bleeding persists in spite of complete evacuation. The after treatment is simply rest, local and general, for three to six days. The patient is allowed up as soon as the uterus has involuted well, and she is discharged two or three days later.

The Relation of Pfeiffer's Bacillus to Influenza. S. Wyard (*British Medical Journal*, December 27, 1919) reports observations and bacteriological investigations in a number of influenza cases of the epidemic of 1918. In sputum cultures in seventy-three cases taken on blood agar or Levinthal's or Fleming's medium, *Bacillus influenzae* was recovered only seventeen times. Serological tests gave even less evidence in favor of *Bacillus influenzae* as the cause of the disease. The writer concludes that some other organism or a virus is the cause of influenza.

Pemphigus and Polyendocrine Syndrome in a Congenital Syphilitic.—Hudelo and Montlaur (*Presse médicale*, December 24, 1919) report the case of a child with inherited syphilis who had had attacks of pemphigus, which were unaffected by antisiphilitic treatment but were greatly improved by four months' combined opotherapy with ovarian, adrenal, thyroid, and pituitary preparations. Under this treatment the blebs disappeared, and with them the preexisting hypertrichosis and dark pigmentation of the skin. Simultaneously the menstruation reappeared. The treatment was not kept up, and fifteen months later the child returned with a marked bullous eruption, pigmentation, and hypertrichosis. Six weeks of adrenal and pituitary opotherapy sufficed to remove all these manifestations again, the only remaining disturbance being a reddish discoloration of the urine due to a pigment allied to methemoglobin. The case is reported as directing attention anew to the endocrine disturbances due to congenital syphilitic infection.

Conditions of the Endocrine Functions.—H. Claude and S. Bernard (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, December 25, 1919) found that among acromegalic patients injections of pituitary extract are without effect, even with large doses. In typical cases of exophthalmic goitre, subcutaneous injection of posterior pituitary lobe extract distinctly lowers the heart rate for a time and markedly reduces the systolic blood pressure, whereas in normal individuals or persons with tachycardia independent of thyroid disturbance, reduction of systolic pressure is but slight and the pulse rate is not lowered. In subjects with thyroid insufficiency or myxedema, subcutaneous injection of pituitary extract causes pulse acceleration and the blood pressure is reduced. If such subjects, however, be made hyperthyroid by thyroid medication, they then react like cases of exophthalmic goitre, viz., with a reduced pulse rate and general manifestations more pronounced than before thyroid preparations had been injected. Similar results occur after injection of adrenalin. In subjects rendered hyperthyroid artificially, as well as in cases of exophthalmic goitre, pulse acceleration and general reaction are much more marked than in normal individuals. Thus the nature of the cardiovascular reactions following injection of certain ductless gland products varies according to the functional condition of certain of these glands existing at the time. These reactions, which show qualitative differences according to endocrine conditions in the individual, may be studied for diagnostic purposes.

Proceedings of National and Local Societies

WESTERN SURGICAL ASSOCIATION.

Twenty-ninth Annual Meeting, Held at Kansas City, Mo., December 5 and 6, 1919.

The President, Dr. ROLAND HILL, of St. Louis, in the Chair.

(Concluded from page 484)

Diaphragmatic Hernia.—Dr. T. F. RIGGS, of Pierre, S. D., said that according to Giffin, about 650 cases of diaphragmatic hernia had been reported in the literature up to 1912, and eighteen articles on this subject, from the point of view of the radiologist or surgeon, had appeared during the past two years. According to the authorities, the great majority of the diaphragmatic hernias occurred to the left of the midline. The case reported by him he believed to have been a true traumatic hernia on the right of the median line. If it was true that the profession was not making as high a percentage of correct diagnoses in diaphragmatic hernia as in other more frequent abdominal conditions, the failure was probably due to lack of a sufficiently definite symptomatology. It was reasonable to expect the traumatic hernia to be more easily diagnosed than the nontraumatic form, but one must remember that the severity of the symptoms was not necessarily in keeping with the size of the hernia. The possibility of a diaphragmatic hernia should be most often considered.

A Congenital Anomaly of the Duodenum and Its Surgical Significance.—Dr. LEONARD FREEMAN, of Denver, Colo., said the surgical treatment might be difficult because of certain more or less awkward complications. 1. The lesion was deeply situated, being due to a firm adhesion pulling the gut down to the root of the colonic mesentery, the embarrassment often being further increased by the location of the incision, which was usually to the right of the spine, while the kink was to the left. 2. The inferior mesenteric vein and left colic artery lay just external to the kink and might be injured if care was not exercised; hence, one should cautiously strip the peritoneum bluntly from the surface of the bowel, rather than attempt to divide the ligament with knife or scissors, taking care that the gut was not perforated during the manipulation. 3. The completion of the procedure exposed a raw intestinal surface which might be quite large, and required attention in order to prevent troublesome adhesions. Sometimes the edges of the torn peritoneum could be stitched together so as to cover the denuded area without compromising the lumen of the bowel, but occasionally it might be desirable to employ a free omental graft, as he had done in one instance. Since his attention had been called to this subject, he had operated upon six of these duodenal obstructions. In no one of them was the diagnosis made previous to the operation, the real trouble being discovered only after a lesion near the pylorus had been excluded.

Partial occlusion of the duodenum at the duodenojejunal angle, simulating pyloric obstruction,

occasionally occurred from the persistence of a condition normally existing in fetal life. In this, the duodenum, instead of appearing in the abdominal cavity from beneath the transverse mesocolon to the left of the spine, as it should, emerged to the right, its transverse and ascending portions possessing a peritoneal covering and mesentery of their own, similar to the rest of the small intestine, instead of being fixed in fibrous tissue, as was normally the case. At the duodenojejunal angle, however, the bowel was hung up to the root of the colonic mesentery by a firm adhesion, the kink thus produced being intensified by the downward pull of the free duodenal loop. This kink was deeply situated and in freeing it care must be taken not to injure the bowel, the inferior mesenteric veins or the left colic artery. A considerable denudation of the gut might be necessary, which should be covered either by reuniting the peritoneum or by means of a free omental graft.

Abdominal Drainage.—Dr. D. W. BASHAM, of Wichita, Kans., stated that we should avoid indiscriminate drainage. The drain should be placed in a careful manner so as to conduct the products of infection away from the field of operation to the outside of the abdomen. All sorts of manipulations of the abdomen for the purpose of facilitating the outward flow of pus should be avoided. When the drain had completed its function, it should be removed and one should not try to replace it; the remaining sinus especially should not be plugged up with gauze which would serve but to obstruct the escape of the serous flow which must follow.

The Surgical Treatment of Empyema.—Dr. W. W. GRANT, of Denver, Colo., confined his remarks to his personal experience based upon the two epidemics of 1917-18 and 1918-19, at the Recruiting Depot, Fort Logan, Colo. In the epidemic of 1917 and spring of 1918, he operated in twenty-eight cases of empyema, with a mortality of six patients, and in the winter of 1918 and 1919 he operated in three cases only with no mortality.

There were 300 or 400 cases of influenza and as many cases of pneumonia as in the former epidemic, but it was much more fatal and fewer cases reached the surgeon for operation. A detailed report of twenty-eight cases was made to the Surgeon General's Office. In all cases, twenty minutes before the operation, an ounce of whiskey was administered to the patient and a hypodermic injection of one sixth grain of morphine with one two hundredth grain of atropine and one half grain of spartein. One to one and a half inches of rib were resected, on the right side the eighth rib and on the left the ninth or tenth, usually in the posterior axillary line, the aim being to secure the most dependent drainage. A rubber drainage tube, sometimes double, was immediately introduced and the tissues sutured snugly around it, the tube fixed primarily with a stitch and a safety pin, and the long outer tube dropped into a bottle of water beneath the bed as in certain cases of

gallbladder drainage. The quantity of pus varied from two to four quarts. The discharge diminished rapidly, and on the second or third day the patients were taken to the dressing room twice daily and the cavity irrigated with a five per cent. bicarbonate of soda solution, adding boric acid and immediately followed by a solution of iodine. The shortest period in which any patient returned to duty after operation was seventeen days, while the convalescent period with most was from two to three months.

Empyema was not cured by aspiration nor by the immediate closure of the wound after operation. It was recognized that in the influenza and pneumonia epidemics the character of the infection was more intense and varied, and the mortality in consequence greater under any treatment than we had been accustomed to experience in sporadic cases under ordinary conditions of life.

Malignant and Benign Tumors of the Breast.

—DR. BYRON B. DAVIS, of Omaha, Neb., said that his private records of operation for diseases of the breast contained the histories of 166 persons suffering from malignant tumors, and forty-four from benign. In this series no patients had been included who were operated upon during the last three years, and the records covered his private work from 1898 to December, 1916. The records of many other cases operated in were inaccessible or so incomplete as to be valueless. The cases included had practically all of them been verified by the microscope in the hands of a trained pathologist. Of the 166 cases of malignant disease in which an effort had been made to trace the patients, there was one operative death, the remaining 165 having left the hospital apparently in good condition; 165 were diagnosed as carcinoma, and only one sarcoma was found. All but one occurred in women.

His study of these cases and the results obtained were encouraging rather than discouraging. Operations for cancer saved lives. The very early operation, so early that the microscope was necessary to make the diagnosis, was bound to produce better results than the operation done after the disease was easily diagnosed. The radical operation should be directed in such a way as to remove as thoroughly as possible the highways along which the disease was disseminated. The campaign of education of the public with reference to the signs of early cancer and its curability, when operated upon early, should be continued and kept up unceasingly. Finally, the fact should be more thoroughly appreciated that every woman operated upon for cancer of the breast, who remained free from the disease, furnished more powerful propaganda in the community in which she lived than all the facts that could be written.

Cancer Involving the Mouth.—DR. GEORGE NOBLE KREIDER, of Springfield, Ill., stated that the radiograms of the chest always should be included in the preliminary examination of patients showing evidences of cancer in the mouth or breast. This had been his invariable procedure for the last two years. Many times such conditions would be found in the chest picture that the surgeon must

hesitate to operate. In several of his cases the patients had insisted on operations even though it was explained that there was little hope.

Cancer involving the mouth had always seemed to him to be the most frightful form of malignant disease. When the disease attacked other parts of the body, the patient might have considerable periods of mental and physical relief. But in the mouth, and especially when the tongue was affected, there were few moments of the waking hours that were devoid of pain and mental distress. These cases, therefore, deserved particular study. Between April and October, 1919, four mouth cases came under his observation. The first man appeared on May 19th; in August he was still living, but his condition was reported very bad. The upper maxilla was involved. The tongue was involved in the second man, who appeared on April 9th; he died on June 29th, surviving eighty days. The third man appeared on June 17th and died on December 10th, surviving 168 days. The fourth man appeared on August 6th, and died on September 21st, surviving forty-five days. In civilized countries, the disease was much more frequent in men than in women. The teeth were found diseased and irritated the growth in every case. The teeth should always be removed before any treatment was attempted. The men, without exception, had been large consumers of alcohol; they were also excessive users of tobacco. Some day the medical profession and the public would wake up to the dangers of nicotine poisoning. It was not possible to operate on any of these patients because the disease was too far advanced.

The Operative Treatment of Vesicovaginal

Fistulas.—DR. E. S. Judd, of Rochester, Minn., stated that in former years vesicovaginal fistulas were found, for the most part, after difficult parturition. At present they occurred frequently from procedures for the radical removal of carcinoma of the cervix uteri, whether by operation, cautery or radium. Sixty-one per cent. of cases of vesicovaginal fistula operated in at the Mayo Clinic since 1908 had resulted from some operative procedure for the removal of tumors of the uterus; and only thirty-nine per cent. followed childbirth. Of five cases in the series referred to above the fistulas followed the use of radium alone. Radium was of undoubted value in inoperable carcinoma of the cervix, but should not be used if the malignancy was not eradicated and fistulas resulted. The scar resulting from the cautery and radium rendered the technic of the operation much more difficult than in the cases of fistula which followed childbirth.

The first essential in the treatment consisted in destroying the communication between the vagina and the bladder and the best manner of accomplishing this was to completely dissect the bladder away from the vagina as was done in the operation for the relief of cystocele. If the mucous membrane of the fistulous tract was not freed so that it could be turned into the bladder on the one side and into the vagina on the other the communication would almost certainly reform. Undoubtedly a certain proportion of these patients re-

quired more than one operation and repeated attempts should be advised to close the fistula, if the sphincter muscle of the bladder had not been destroyed. If the sphincter muscle was injured it should be repaired and the fistula closed. If it was impossible to secure function of the sphincter a communication between the vagina and rectum just above the anal sphincter could be made and the vaginal outlet closed. This procedure as advocated by Keen was probably the best in these unfortunate cases. Peterson collected forty-one cases in which this operation was performed with comparative success.

In seventy-eight cases of vesicovaginal fistula operation had been performed in the clinic since 1908. In fifty-four of these it was possible to close the fistula with one operation; in sixteen two operations were performed, and in one six operations failed completely to close the fistula. The size of the fistulous opening in these cases varied from that of a small pin point to complete eversion and prolapse of the bladder. In three of the cases there was more than one opening. A large incision in the vaginal wall included all the openings and converted the operation into a single closure after the openings into the bladder had been separately closed.

The bladder sphincter was involved in ten cases, but it was destroyed in only three; it was repaired quite satisfactorily in the seven cases. One of the ureters was involved with the vesical fistula in six cases. The position of the ureter should always be determined and in some cases where it was involved in the fistula the suprapubic operation was the one of choice.

Legueu had recently advocated the transperitoneal vesical route for vesicovaginal fistula. This operation had some advantages in the cases in which the fistulous tract became attached to the pubic bone and was thus held in a most inaccessible position for the vaginal route. If the fistulous opening was small the fistula might be inverted into the bladder and held there by tension on the pursestring suture which was pulled out through the urethra. This procedure was described by Dr. Charles H. Mayo.

In a number of cases small vesicovaginal fistulas had been closed by the high frequency current. Before operation the tissues should be made as near normal as possible. A cystoscopic examination should be performed to determine the position of the ureters, the presence or absence of a sphincter muscle, and whether or not the bladder had been completely severed from the urethra. Where the injury was near the neck of the bladder the vaginal operation was the one of choice. Where the opening was high in the vaginal fornix and there was much scar tissue the suprapubic operation might be of service, but more room might be secured for the vaginal exposure by incision of the perineum. A long incision was made in the vaginal wall down to the bladder, beginning below the sphincter muscle and extending to and through the fistulous opening. The bladder was then separated from the vagina, beginning near the cervix and bringing it forward toward the

urethra. If the cervix had been removed and the fistula was high in the vagina the peritoneum might be opened, as advocated by Kelly. A small, curved hemostat passed through the urethra and into the vagina through the fistula helped to bring the fistulous tract downward into the dissection. After the bladder had been loosened and its edges could be easily approximated, the opening should be closed with catgut and the edges of the mucous membrane inverted. The vaginal incision might then be closed with chromic catgut and all dead space obliterated. If the sphincter had been repaired it was best to use fine silk sutures in addition to the catgut, being careful not to penetrate the mucous membrane with the silk. A retention catheter was left in the bladder for from eight to ten days. The patient should be kept quiet for from twelve days to two weeks. There was no mortality in this series. Of fifty-six patients heard from four had derived no benefit from the operation; six were considerably improved, and the remaining were completely relieved.

Births, Marriages, and Deaths.

Died.

BLACKBURN.—In Steubenville, Ohio, on Friday, March 5th, Dr. Abram Markle Blackburn, aged seventy-eight years.

BURNHAM.—In Manchester, New Hampshire, on Sunday, February 29th, Dr. Hosea Ballow Burnham, aged ninety-one years.

CARR.—In Holden, Mass., on Saturday, March 6th, Dr. Frank Fletcher Carr, aged fifty years.

FREYMANN.—In Kansas City, Missouri, on Friday, February 13th, Dr. Jokshan Freymann, aged seventy-four years.

FORSYTH.—In Kirkwood, Mo., on Sunday, February 8th, Dr. Robert C. Forsyth, aged forty years.

HARRIS.—In Parkersburg, West Virginia, on Friday, February 27th, Dr. Thomas A. Harris, aged eighty-nine years.

HARTWIG.—In St. Louis, Missouri, on Wednesday, February 4th, Dr. Otto A. Hartwig, aged seventy-seven years.

LOEWENTHAL.—In Brooklyn, New York, on Saturday, March 13th, Dr. H. Murray Loewenthal, aged forty-seven years.

MACKENZIE.—In Portland, Oregon, on Monday, March 15th, Dr. Kenneth Alexander J. Mackenzie, aged sixty years.

NEWBOLD.—In Philadelphia, Pa., on Wednesday, March 3rd, Dr. Harry Austle Newbold, aged seventy-four years.

SENIGAGLIA.—In Nyack, N. Y., on Tuesday, February 24th, Dr. Giacomo Abraham Senigaglia, aged thirty-two years.

WHITNEY.—In New Bedford, Mass., on Friday, February 27th, Dr. Edward Melville Whitney, aged sixty-five years.

WILSON.—In Woodbury, N. J., on Saturday, February 21st, Dr. Howard A. Wilson, aged sixty years.

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Original Communications

PREGNANCY COMPLICATED BY A LARGE FIBROID TUMOR.*

By J. C. APPLEGATE, M. D.,
Philadelphia,

Professor of Obstetrics, Medical Department, Temple University;
Obstetrician, Samaritan and Garretson Hospitals.

The specimen which I present (Fig. 1) represents a type a little out of the ordinary, if it is a fact that fibroids of the uterus in general are a common cause of sterility, as is stated by many writers. Fibroids can, without doubt, prevent conception by mechanical obstruction as well as by some of the pathological changes that occur with an advanced growth. In this instance sterility preceded the growth by eight or nine years in an otherwise perfectly healthy married woman, and the point I wish to make in connection with the report is, that sterility may be a factor in the production of fibroids and certainly is a predisposing cause.

An average taken of the available statistics, including those of Pinard, Shauta, Giles and others, indicates that between two tenths and three tenths of one per cent. of women in labor have coexisting fibroids, and that seventy-five per cent. of these did not marry or did not become pregnant until they were over thirty years of age and many of them past forty. A statistical study by Tracy shows that about twenty-eight per cent. of married women with fibroids have been permanently sterile; they do not become pregnant, and of the seventy-two per cent. who have borne children, a very large proportion of them either married late in life, are widowed, or have not had a child for ten or more years.

In view of these facts and with the greater tendency to the development of fibroids in the unmarried, or the woman who has not borne children until late during her reproductive period, or for a number of years, it is apparent that sterility from any of the well known causes, including abnormalities of position or construction of the uterus, tubes or ovaries, faulty internal secretions, and hyperacidity of the vaginal secretions, may be regarded at least as a predisposing cause of fibroids of the uterus. In other words absence of the child-bearing functions favors hyperplasia of the loosely constructed involuntary muscle fibres and con-

nective tissue cells of the uterus, the primary origin of the fibroid, and in which the circulation and vessel walls play an important part. The uterus is an organ capable of enormous expansion and equal contraction and retraction, specifically created and constructed for the purpose of reproduction.

Of the three types, from my personal observation, the submucous tumor is seen least frequently as a complication of pregnancy by reason of the disturbed endometrium and rather constant metrorrhagia and menorrhagia incident to the intrauterine growth. Abortion, from encroachment by the rapid growth and hemorrhage, is the rule, unless the tumor is pedunculated and protrudes from the cervix, when abortion is less likely to occur. The tumor that remains as a strictly interstitial growth is also a rare complication of pregnancy, but is encountered more frequently than the former, while the subserous growth, large or small, with the endometrium undisturbed, is not a barrier to conception except when the size or location by mechanical obstruction will prevent union of the reproductive elements.

With the patient in question nothing existed in the history to indicate the cause of her sterility. It is safe to assume, however, that with hard work at dressmaking for twenty years, there probably was some abnormality of position of the uterus and if so, it was corrected by the growth; at any rate the uterus was in a favorable position for conception with the growth at the time of the first examination. She had been married ten years, had apparently enjoyed good health from girlhood, was desirous of having children, therefore took no precautions to avoid pregnancy, then conceived for the first time after the existence of the fibroid. The size of the growth and the length of time it had been in existence at the time of conception is problematical, as there were but two subjective and no objective symptoms until four days prior to operation. Pain in the right iliac region, no doubt due to the growth, had occurred at intervals for a year and a half, which she attributed to a mild appendiceal disturbance. At no time was the pain sufficiently severe to require the services of a physician. The other subjective symptom was a large lump in the abdomen, as she described it, detected about the time of her first missed period, which enlarged rapidly during the four succeeding weeks.

With practically no discomfort nor any symptoms other than cessation of menstruation, it was

*Presented at the Philadelphia Obstetrical Society, November 6, 1919.

assumed that the enlargement was incident to pregnancy and no physician was consulted until her second missed period, when I was called upon to relieve her from intense pain in the right iliac region, which had developed suddenly, and also for the purpose of making arrangements for her anticipated confinement. It goes without saying that the growth of the average fibroid tumor is very rapid after conception, by reason of the free blood supply to the genitalia during pregnancy. This tumor was evidently large at the time of conception as only seven weeks elapsed between that date and the date of operation, besides the sac, which was still intact, and the outline of the embryo visible, would indicate that it was not more than a seven or eight weeks' gestation. Character-



FIG. 1.—Uterine fibromyoma complicating pregnancy at two months; weight of tumor 2,000 grams.

istic of the subserous fibromyomata, there had been no metrorrhagia or menorrhagia, nor any irregularities of menstruation.

HISTORY.

CASE.—Mrs. L., aged thirty-seven. Admitted to the Samaritan Hospital September 23, 1919. Race, white; American; married ten years; occupation, dressmaker, from the age of sixteen.

Family history.—Father died at the age of twenty-one from acute tuberculosis; mother living and well, aged fifty-seven; brother died at eleven from some spinal trouble.

Past history.—Common diseases of childhood, otherwise negative. Menstruation began at thirteen, always regular twenty-eight day type and lasting from four to five days, with no pain; last menstrual period July 22, 1919. There was no nausea nor any symptoms of pregnancy except the

absence of menstruation in August and September. Physical findings: Negative, except abdomen.

Present condition.—Four days prior to admission to the hospital, the patient began to suffer from pain in the right iliac region, suggestive of appendicitis to the patient. On former occasions for one and a half years this pain in same location had existed but gradually disappeared without medical aid. Since the present onset the pain had grown more severe in character, extending over the right half of the abdomen, requiring sedatives for relief. Upon external examination the presence of a large irregular, hard, and inelastic mass could be palpated, apparently an outgrowth from the body of the uterus near the right cornu and extending to the costal margin in the medium line and filling the right hypochondrium. By vaginal examination it was found that the cervix had undergone a change in consistency; had softened and was slightly dilated. The uterus was in the anterior position, to the left of the medium line, with no bleeding—a favorable position for conception—and the endometrium apparently undisturbed except from the changes incident to pregnancy. The vaginal signs of pregnancy were present.

Diagnosis.—The tentative diagnosis was multiple fibromyomata of the uterus complicating pregnancy and the intense pain due to pressure and torsion of the rapidly growing tumor. Immediate operation was advised and supravaginal hysterectomy by the usual technic was performed September 25, 1919. There were no adhesions. The insertion of the left uterine appendages were drawn well toward the medium line anteriorly by torsion. Appendix tubes and ovaries were slightly congested from pressure, otherwise were normal.

Pathologist's report.—Multiple fibromyomata of the uterus; weight 2,000 grams. The patient had an uninterrupted recovery and left the hospital in two weeks, October 8, 1919.

Treatment.—Briefly, the plan of treatment for this complication, from the obstetrical viewpoint, to my mind, should be the expectant, and interference, would depend upon the type, the size, the location and activity of the growth. Before the age of viability of the child with pronounced pressure symptoms or symptoms of impaction, section is indicated; myomectomy if the tumor is single and not too large to make the operation practicable; if multiple, and this applies especially to the interstitial variety, hysterectomy regardless of the pregnant state, when it is clearly evident to the operator that the uterus must be sacrificed. After the age of viability the same expectant plan should prevail; the nearer to term the better before interference.

Over sixty per cent. of the women are delivered at term or near term and the majority of them spontaneously. This includes the small, inactive tumor that may not be detected until near term or in labor, also the larger tumor that is above the pelvis and gives rise to no complications in pregnancy or in labor when section may be deferred until after delivery and may not then be required by reason of atrophic changes. The indications for late laparotomy are obstructed labor from fibroids of the cervical area or impactions from descent of

the tumor into the pelvic cavity. Also for placenta previa, premature separation of the placenta and malposition, with a cervix made rigid and unyielding by the growth. The same rule applies with regard to the choice between myomectomy and hysterectomy as in the early gestations, preceded by Cæsarean section, then excision of the subserous type and enucleation of the interstitial variety if a single growth; and hysterectomy if the growths are multiple.

Montgomery recently reported myomectomy by enucleation on six patients at various stages of pregnancy, without abortion and all went to full term. The Mayos in 1911 reported fourteen consecutive successful myomectomies on pregnant women, the majority of whom had threatened abortion at the time. The abortive symptoms subsided; all passed to the age of viability and four of the number to full term. In no instance is the type, size or location of the growths stated. With such results, however, it is safe to assume that the larger proportion of the tumors were of the subserous variety. With such reports and many similar ones, it is clearly evident that the field of application for myomectomy on the pregnant uterus is much broader than heretofore anticipated and a decidedly smaller number of uteri need be sacrificed. To tumors of the size and character of the specimen presented, there is but one answer, supravaginal amputation or complete hysterectomy.

3540 NORTH BROAD STREET.

ENCEPHALITIS LETHARGICA.

With Report of a Case of Korsakoff's Syndrome.

BY HYMAN CLIMENKO, M. D.,
New York.

The nervous complications of influenza during the previous epidemics were so well defined that Leichtenstern (1) calls them the nervous symptoms of influenza. In his description, Leichtenstern enumerates almost every part of the nervous system that has been found to be involved during attacks of influenza. He points out that in true influenzal lesions of the nervous system there is softening due to thrombi and abscesses formed by the Pfeiffer bacilli. Leichtenstern mentions that such diseases as paralysis agitans and multiple sclerosis have been reported to follow influenza; he remarks, however, that in a pandemic which affects fifty per cent. of the population, it is difficult to say what syndromes are really caused by influenza, unless the same etiological factor can be proved.

In the last two pandemics, the first of which was world wide, a disease of the nervous system was found running parallel with the influenza. This disease, now known as encephalitis lethargica, has a definite clinical entity, a definite pathology, and, as pointed out by Loewe and Strauss, a definite etiology. Whether influenza is in any way responsible for this other disease is indeed difficult to say. Most of the patients gave the history of an attack of influenza preceding the encephalitis lethargica. Again, in a good many cases no history of influenza could be obtained. A significant fact, however, is

that in the majority of cases a history of some catarrhal affection of the upper respiratory tract is found.

To v. Economo (2) belongs the honor of christening the disease encephalitis lethargica. This is an ill adapted name, not only because it is grammatically wrong, as Wilson (3) points out, but the term conveys also a wrong idea as to the clinical symptoms and the pathology of the disease. Somnolence is not the only characteristic of this disease; many of the patients cannot sleep at all. On the other hand, insomnia is almost a constant symptom at a certain stage of the disease. Besides that, the brain is not the only part of the nervous system to be considered in naming the disease. MacNalty's (4) cases, as well as some of our own, show a distinct polioneuritic onset, while changes in the spinal cord were reported postmortem by many observers. In fact, some of our cases did not progress, at least clinically, further than the polioneuritic stage. It is, therefore, a misnomer to call a disease encephalitis where the peripheral neuron is also affected.

In a monograph v. Economo gives a full description of thirteen cases of encephalitis lethargica. Postmortem findings are reported and critically studied in five of these cases. The author is of the opinion that encephalitis lethargica is pathologically a parenchymatous inflammation of the brain, complicated by a secondary small cell infiltration of the blood vessels. He then proceeds to show that the pathology of this disease differs from that of poliomyelitis, dementia paralytica, rabies, sleeping sickness, and acute multiple sclerosis.

Strauss and Loewe of the New York Mt. Sinai Hospital give the following summary of their pathological findings:

1. Meningitis localized, at times diffused, especially marked over the sulci with infiltration of mononuclear cells.
2. Perivascular and adventitious infiltration with round cells. This is not as universally marked as found in poliomyelitis. These pathological lesions are most marked and at times exclusively found in the midbrain, pons and bulb.
3. Punctuate hemorrhages throughout cortex and midbrain and at times a gross hemorrhage may be the only pathological lesion.
4. Neuronophagia, when other lesions are most marked.
5. Focal and parenchymatous infiltration with round cells.
6. Edema and congestion of the brain. This lesion may be present in part or in entirety in a given case.

The pathological findings described by Tilney and Riley (5), McIntosh (6), Sainton (7), Marinesco (8), and Kennedy (9), are practically the same as those found at the Mt. Sinai laboratory by Loewe and Strauss.

It is hardly necessary to point out here again that encephalitis lethargica is an epidemic disease. The question, however, often arises, are we dealing here with a disease *sui generis*, or is encephalitis a form of epidemic influenza. Sainton and a number of others believe that the virus is the same as that of

influenza, and advance the following reasons for their belief:

1. The coincidence of influenza and lethargic encephalitis.
2. The existence of a purulent posterior rhinopharyngitis and ulcerations in the patient as in grippe.
3. The mode of onset, clinically very similar to that of influenza.
4. The long period of asthenia which follows lethargic encephalitis.

Under these conditions lethargic encephalitis would be merely a localization of influenza in the nervous system. Besides it is pointed out by Bassoe (10) that during previous epidemics a disease similar to the present encephalitis was described: In 1718 Camerius described an epidemic in Turingen mentioning a sleeping (*Schlafkrankheit*) in connec-

what preceding the latter; it would be safe to assume that the influenza prepares the soil for the germ described by Loewe and Strauss. In other words, that encephalitis is a sequel to influenza.

An analysis of thirty-four cases treated at Mt. Sinai Hospital, as well as over twenty cases in private practice, shows that both sexes were equally involved. The highest age was sixty, the youngest patient was fourteen. The writer has seen a patient aged sixty-eight, and a child seven weeks old, both giving typical symptoms of encephalitis lethargica. While we saw a good many children with encephalitis, by far the greatest number of patients were adults. It seems that no age is exempt; in this paper is reported the case of an infant seven weeks old suffering from typical symptoms of encephalitis. As to seasonal incidence, at Mt. Sinai cases of encephalitis were observed almost throughout the entire past year. It is true that, in the midwinter and early spring months the disease, during the past and the present year, has assumed the character of an epidemic.

Regarding symptomatology, a careful history almost always shows that the patient for some time prior to the onset of this disease was suffering from some acute catarrhal condition of the upper respiratory tract. This acute condition almost always corresponds in time to the influenza epidemic. The patient usually states that three or four weeks previously he had a cold, grippe, or even pneumonia. In other cases the catarrhal condition referred to immediately precedes the encephalitis. During the early symptoms, long before the patient gets to the hospital or even thinks of calling a physician, there is usually a stage of euphoria. The patient feels buoyed up, he is cheerful, works more and is in general in a more optimistic frame of mind than usual. During this stage insomnia sets in; this may be the first symptom for which the patient consults his physician. At this time a rise of temperature and an acceleration of the pulse are found. The euphoria may soon pass into a real hypomania, with temporary illusions and hallucinations. These illusions are characteristic in that the patient is able to correct them; i. e., when his attention is called to realities he is able to correct the illusion or hallucinations or both. Probably these are not true illusions and hallucinations, but are wrong images received by a diseased brain; a condition that is found sometimes in psychic blindness. There may be a complete disorientation as to time and place, but this too is corrected when the patient's attention is called to the mistake. The memory for past events is good in all cases with the exception of those suffering from severe manias.

In the majority of cases the hypomania does not advance beyond this stage. In others, a true mania develops. The patient may become violent, attempt to jump out of his bed, or tear his clothes. Often at this stage forcible restraint must be used. A curious thing is that flight of ideas is never seen in these patients. Another fact worth while registering is that lucid intervals occur even in the most severe cases.

Instead of a hypomania an excitable depression may also be present. In a girl aged twenty, seen



FIG. 1.—Mild form of somnolence.

tion with the grippe; in 1768, Lepecq de la Cloture described a *coma somnolentum* after the grippe. Several similar observations were made by other men of good repute. Leichtenstern (1), writing on the nervous symptoms of influenza, points out that almost every part of that system is likely to be involved in influenza. Barrett (11) also reported a case of prolonged somnolence after influenza in a child one year old.

The findings of Loewe and Strauss (12) have thrown new light on the etiology of encephalitis. These authors have demonstrated an organism which they hold responsible for this disease. They were able to reproduce the disease in several generations of monkeys and rabbits. They also showed clearly that the portal of entrance of the germ is through the nasopharynx. If we now take into consideration the fact that clinically we find most of the patients give a previous history of an acute illness suggestive of grippe and that influenza and encephalitis almost run parallel, the former some-

with Dr. A. Schwarz, the disease first manifested itself in a fear of death, restlessness, and, paradoxically, a desire to jump through the window. The depression coincided in this patient with diplopia and blurred vision. In a large number of cases the mental symptoms may be a negligible factor and the disease sets in with ocular symptoms. Of these diplopia is by far the most frequent. Blurred vision is another frequent initial symptom.

In many patients, at about this stage, choreiform twitchings are observed. These may be general or local. In one fatal case, the twitchings were confined to one side of the abdomen only and amounted to a spasm. In a girl of sixteen, also a fatal case, the twitchings were so marked that a diagnosis of chorea was originally made. The next day, however, diplopia developed, and the real nature of the disease was at once understood. She died a few days later from bulbar paralysis. It should, however, not be inferred that cases with twitchings are necessarily fatal. Both the diplopia and the twitchings last anywhere from a few hours to a few days. They usually disappear with the onset of the stage of somnolence. In one patient, the twitchings lasted all through the disease.

One of the early symptoms that may be encountered is pain. It is usually sharp, lancinating in character and radiating along the distribution of a peripheral nerve. A favorable seat is one or both crural nerves, the pain beginning in the groins; in some cases the pain follows the ulnar distribution. Trifacial, brachial, suboccipital neuralgia, and sciatica have all been seen to figure as incipient symptoms. Vomiting, drowsiness, and severe headaches with all the other symptoms of an acute meningitis may at times usher in the disease.

In a number of cases all these premonitory symptoms may be absent and the disease starts in with a lethargia preceded perhaps for a few days by diplopia to which the patient pays little or no attention. In one instance, the patient woke up in the morning with all the symptoms of a classical paralysis agitans. As a rule, however, the above named premonitory symptoms are present.

The salient symptoms in the vast majority of cases are the drooping eyelids, the somnolence, the masked facies, and the rigid semiflexed extremities accompanied by a paralysis agitans tremor. These symptoms may be present in part, in their entirety, or in a varied degree. In severe cases, the patient lies with eyes closed, motionless face, and open mouth from which saliva dribbles. The response to questions is often in a monotonous, unintelligible voice. Food is taken only when it is put into the mouth, and when bulbar symptoms are present, there is an inability to swallow food. The bladder is distended; the patient either forgets or is unable to void, and catheterization must be employed. Inability or inattention to urinate is one of the usual symptoms of the incipient stage and may continue all through the disease.

In the milder cases the patient, while having lost all initiative, responds to questions in an intelligent manner, is able to take his food and to attend to his body needs. When spoken to, he opens his eyes, only to close them again, as if begging to be let

alone. In some patients, a muttering delirium may be present even at this stage.

Skin eruptions are at times seen. House (13) speaks of a petechial eruption. In one case seen with Doctor Rubinstein an eruption of a macular type very much resembling that of typhus was seen. The eruption appeared during the fourth week and was preceded by a rise of temperature. It was accompanied by a slight itching. It lasted for about forty-eight hours and disappeared without scaling. Hyperemia with blotching of the skin is frequently observed. In many instances, a typical Sergeant white line was observed.

Paralysis of one or more of the eye muscles is usually detected. A genuine lateral nystagmus can often be seen. In many cases the writer has noticed, instead of a true nystagmus, a cogwheel motion of the eyeballs; i. e., instead of moving in a sliding even manner, the eyeballs jump in their lateral or upward excursions.

Varied degrees of pupillary light reaction are present. In some cases the pupils are absolutely stiff, in others sluggish reaction is seen, and in still others prompt light reaction is found. The degree of accommodation cannot always be clearly determined. This is partly due to the drooping eyelids, and partly to the patient's inability to cooperate.

The optic nerves usually show no changes as seen through the ophthalmoscope. Naturally correct periscopic examinations cannot be made. Only in the severe cases with bulbar signs was there an absence of the corneal reflex. All forms of objective sensory disturbances may be found.

Facial paralysis, both central and peripheral, was encountered. In one case the only objective symptom present was a unilateral peripheral facial palsy. Yet the patient had many of the other subjective symptoms, including drowsiness.

Disturbance of hearing may express itself in the subjective symptoms of tinnitus and auditory hallucinations.

Tremors of the tongue are of frequent occurrence; deviation of and inability to protrude the tongue are present in the grave cases with bulbar signs. Here a paralysis of the soft palate is present with or without deviation of the uvula. Hiccoughing is an annoying symptom and denotes bulbar involvement. One of the earliest signs of involvement of the medulla oblongata is a nasal twang in the voice. In one of the patients this was one of the initial symptoms. A grave prognosis was given, and forty-eight hours later the patient died from bulbar paralysis.

The degree of somnolence varies. In the majority of cases the patient lies with eyes closed and sleeps continually as long as he is not disturbed. He is easily awakened, answers questions properly, but immediately falls asleep again. In a few cases the sleep is so deep that the patient cannot be aroused, and appears to be in a state of coma. All the patients take nourishment. In the milder cases the patients may sit up for their meals, and go back to sleep as soon as they have taken their scanty nourishment. In the grave cases, the food must be put into the patient's mouth; he reflexly swallows it if the oblongata is not diseased.

Von Economo attributes the somnolence to an involvement of the optic thalamus. Cushing (14), however, showed that somnolence is a frequent symptom of a diseased pituitary. If we now remember that Loewe and Strauss showed that the portal of infection is the nasopharynx, it is safe to assume that the pituitary may be held responsible for the hibernating state of these individuals. It will not be amiss to state here that studies on hibernation in animals have shown changes in the pituitary gland.

All sorts of symptoms reveal themselves on examination of the extremities. They are usually held in a semiflexed position and tremors may or may not be present. We must remember that we are dealing here with a multilocal disease and that



FIG. 2. Profound form of somnolence.

while the most frequent seat of the lesion is the mesencephalon, any part of the nervous system may be attacked. Indeed, the same patient may have various parts of his nervous system diseased. A multitude of symptoms and combinations of syndromes are found. This explains why each author has a number of types that are not found elsewhere. During the last epidemic neurologists were baffled with the situation. They saw such old acquaintances as paralysis agitans and multiple sclerosis, develop almost overnight. It is therefore useless to speak of types. One thing may be said with some certainty, and that is that in the majority of cases the mesencephalon is diseased. An important point for the general practitioner to remember is that whenever dysarthria, difficulty in swallowing, paralysis of the palate, with shallow breathing, and cyanosis are present danger must and should be anticipated. It by no means follows that all cases

with bulbar signs are necessarily dangerous. In the wards of the Mt. Sinai Hospital I saw patients with bulbar involvement make a good recovery.

During the course of this study, I had opportunity to observe one case that deserves special mention, for so far I have not seen this type described. The patient presented a typical syndrome of Korsakoff's disease together with diplopia and ptosis. Alcohol was ruled out, temperature was high, and there was a history of preceding respiratory disease. The patient made a complete recovery.

On closer consideration, the pathological physiology of this case can be easily understood. As far back as 1898, Jolly (15) and a number of others objected to the specificity of Korsakoff's disease. It was clearly demonstrated that the psychosis of Korsakoff's disease is due to an interference with the function of the left temporal lobe. Giliarovski after citing the literature on the subject, reports his own case with an autopsy, where during life a typical Korsakoff amnesia was present. Post-mortem, a degenerative condition of the left temporal lobe, was found.

It is highly probable that in my case, besides a polioneuritis and mesencephalon involvement there was also an involvement of the left temporal lobe.

At the onset the temperature is anywhere between 101° and 104° F. The usual temperature is about 102° and continues at this point until the onset of the lethargic state when it may drop to normal and even subnormal. A sudden rise of temperature within the course of the disease may mean an exacerbation with an involvement of a new area of the brain. The pulse is usually in proportion to the temperature. A bradycardia of fifty and even forty may be present during the height of the lethargia. There is nothing unusual about the respirations as long as the bulb remains free. Should there be bulbar symptoms the respirations become shallow, less in number, and cyanosis may occur.

Lumbar puncture frequently, but not always, shows the cerebrospinal fluid to be under increased pressure. In the cerebrospinal fluid an increase in cells is almost uniformly found. As high as forty lymphocytes were seen in some specimens. From ten to twenty is the usual number found. The blood count is either negative or shows an increase in lymphocytes. Nothing characteristic in the urine was found.

A number of abortive cases were observed during the last epidemic. After an attack of what is commonly called gripe the patient would be nervous for a few days, complain of headaches, or neuralgic pains. This might, or might not, be followed by a slight drowsiness lasting a day or two. In one instance, the patient, while still attending to his work, complained that suddenly he began to be drowsy, and for two days always felt sleepy. His rectal temperature was 100.5° F. Following this, for two days he slept continuously, the third day he was back at his desk, perfectly well.

Many of the patients came for treatment complaining of double vision. They are surprised when ordered to bed. Some of the milder cases of somnolence attribute this departure from the normal state to some immediately preceding excitement. In

one case the symptoms were attributed to a love affair; in another case to a fright. Both patients walked into the office after a day's work. They both suffered from diplopia and it was only the onset of the twitchings that made them consult a nerve specialist. The two patients recovered without any degree of lethargica developing that really amounted to much. The rectal temperature was respectively 101° and 100.5° F.

Diagnosis.—The clear cut picture of the onset, particularly during an epidemic, the well defined mesencephalon symptoms, beginning with third nuclei changes and followed by lethargia, should present no difficulty in making a diagnosis encephalitis lethargica. The characteristic psychic disturbances in the presence of a temperature and diplopia would distinguish the disease from the acute manias of other infectious diseases. In those cases where the onset is of the meningeal type, epidemic cerebrospinal meningitis may at times be suspected, but the laboratory tests will help to exclude that disease. In those patients where an ear abscess preceded the disease, a brain abscess may be suspected, but the absence of choked disc, the condition of the cerebrospinal fluid and the blood picture will rule out cerebral abscess.

During the first epidemic in England in 1917, ptomaine poisoning, particularly botulism, was suspected. The fact that others who partook of the same food were not affected, as well as examination of the food itself, helped to dispel this suspicion. Tuberculous meningitis is another condition that must be ruled out. In tuberculous meningitis the parietic symptoms are a late manifestation, and the cerebrospinal fluid may show the presence of tubercle bacilli.

Prognosis.—The majority of patients recover completely within a few weeks. In some cases the recovery is more prolonged. In the Montefiore Hospital we have at present a case from last year's epidemic, whose symptoms have not yet cleared up, although even this case is progressively improving. In the fatal cases the patients usually die from bulbar paralysis and rarely from hypostatic pneumonia. As mentioned above, it does not follow that each case with bulbar symptom is necessarily fatal. Death due to hypostatic pneumonia is rather a rare occurrence. I saw only one patient die from extreme toxicity.

Treatment.—The treatment is entirely symptomatic. During the stage of excitement, when insomnia and delirium are present, small doses of hyoscine hydrobromide gave good results. It should, however, be given sparingly. Sodium bicarbonate to counteract the possible acidosis may be employed. In many of these cases a Sergeant white line was observed; adrenalin is therefore given on the supposition that a hypoadrenalism may have been present. Special attention should be paid to the bladder; catheterization may be employed for a long time; suppression of micturition is one of the earliest signs in a good many of these cases. In the bulbar types, the feeding should be very carefully done as these patients do not swallow well and may choke with the food. I have never had occasion to

use tube feeding in these patients. It seems that in those who cannot swallow at all, death sets in prior to the stage where the patients cannot swallow. Where the respiration becomes shallow, and the patient begins to look cyanotic, flexion and extension of the head at the rate of twenty a minute should be practised. For the relief of the severe headaches, lumbar puncture is the best remedy. This procedure should, however, be omitted where bulbar symptoms are present.

CASE I.—Female, forty years of age, married. Family history as well as previous personal history negative. Present illness dates back two weeks. At that time she had what the family called a slight attack of the gripe and was confined to bed only for two or three days. Two days later she became somewhat nervous, complained of dull supraorbital pain and suffered from insomnia. Her temperature was not taken at that time. The nervousness increased to such an extent that the family became alarmed and a consultation being requested, I was called in. For a few days previous to this she had complained of dizziness and double vision. At the time of examination the patient was in a state of marked excitability, reaching the point of mania. While talkative there really was no flight of ideas. On the other hand she had distinct illusions and hallucinations.

A striking feature was choreiform twitchings confined to the right upper extremity, to both shoulders, all over the torso and on right side of abdomen. When the extremities and the trunk were forcibly controlled, the twitchings of the right side of the abdomen became even more pronounced. The eyelids were drooping. The lateral movements of the eyes were of the cogwheel character. One could almost number the jumps the eye made before it reached the extreme lateral position. There was a distinct divergent strabismus of the right eye. The pupils did not react and the right was larger than the left. The right side of the face was weaker at its lower two thirds than the left, but there was no distinct paralysis. The tongue was protruded straight and the uvula was in the middle line. Swallowing was easy; there was no defect in voice, nor in speech. The right upper extremity was distinctly weaker than the left as evidenced by sagging and by grip. Abdominal reflexes were obtained with difficulty. On testing for the abdominal reflexes a distinct Sergeant white line was obtained. The right lower extremity was weaker than the left. Right knee jerk was greater than the left; both ankle jerks were present; no clonus; no Babinski. Apparently no sensory disturbances were present.

Ophthalmoscopic examination showed that the discs were red and congested but there was no sign of choking. The urinary bladder was over distended and tender. Temperature 103.1° , 103.5° F., pulse 120, respiration 30. The respiration was even and easy. Heart negative. Lungs showed a few râles posteriorly. On lumbar puncture the fluid came under increased pressure; clear in color. Examination showed 20 lymphoids; increased globulin; Wassermann negative; Fehling reaction normal. Patient was given thirty grains of bicarbonate of soda every three hours, and hyoscine hydrobromide

one one-hundred and fiftieth grain once to control the restlessness.

The following day the picture was greatly changed. The patient was lying powerless. While she was still excitable her voice became hardly perceptible, with a distinct nasal twang. Swallowing was difficult. There was a distinct right Babinski. The face began to be cyanotic; the respiration was shallow. Temperature 104° F., pulse 86. During the entire day patient had to be catheterized. Due to the patient's condition extensive examination was impossible. The tongue could not be protruded and the palate hung motionless, when stimulated by the tongue depressor. Four hours later the patient suddenly stopped breathing and expired.

CASE II.—Male patient, forty-six years old, married. His habits were good, no alcoholic history, gonorrhea and syphilis denied. Wife gave birth to



FIG. 3.—Bulbar form of paralysis.

six healthy children; no miscarriages. Four weeks ago he took sick with influenza and suffered from a mild attack of bronchopneumonia from which he made a good recovery. Six days later he began to complain of sharp shooting pains along the anterior surfaces of both lower extremities; he suffered from insomnia, and became nervous. Next day he, as the wife said, was not right in his mind and could no longer walk. Temperature could not be ascertained. A history of diplopia was obtained.

Patient lay flat on his back complaining at the top of his voice of severe pain in both lower extremities. There was a complete flaccid paralysis of both lower extremities. Both knee jerks were absent. The muscles were tender to the touch; there was distinct analgesia along both crural nerves. The sensory distribution along the sciatics was intact. The muscles over the back of the extremities were also tender. There was a distinct double drop foot and the toes could not be moved voluntarily. The lower abdominal reflexes were absent on both sides. The upper reflexes were easily

obtainable. Testing for the abdominal reflexes a Sergeant white line was seen. The upper extremities showed no abnormality. The pupils were sluggish. All the other cranial nerve tests were negative.

Orientation as to time and space was bad. The patient knew where he lived but placed his residence at another end of the city from where he actually was. Questioned as to time he felt that he was giving wrong answers and made several futile attempts to correct himself. He had distinct illusions: "You see, there he stands at the window." "Who?" "Why my partner." When the examiner walked over to the window and showed the patient that nobody was really at the window, "Well, I must have made a mistake." The next minute he saw somebody stealing his horse which he sold long ago. When that was recalled to the patient, he again corrected himself. His illusions were not fixed; he forgot them in a few minutes only to express new ones, which in turn were again either corrected or immediately forgotten. When the examiner attempted to reproduce the illusions, by repeating them to the patient, he absolutely denied making such statements, "Hello, George, my boy." The son was at the time in a distant city. "Why your son is in Chicago on a business tour." "Right, you are. I must be seeing things." Questioned a few minutes later, "Did you see your son just now?" he replied, "Why, no, my son is out of town." With his wife he continuously quarreled about what took place soon after their marriage, at which time jealousy was the leading cause.

Examination.—Heart negative, blood pressure 120/80, pulse 100, temperature 101.2° F., respiration 30. The lungs showed posteriorly a number of râles. The bladder was overdistended and the patient had to be catheterized for a number of days. A lumbar puncture showed no increase in pressure; the fluid was clear, the Wassermann reaction was negative; six lymphoid cells were present. The urine, save for a trace of albumin, was negative.

The patient was given bicarbonate of soda, thirty grains every four hours. Five drops of adrenalin chloride (1:1000) were given every six hours. His lower extremities were wrapped in cotton. His pains were controlled by codeine suppositories. Within four weeks this patient made a complete recovery, as far as his psyche and pains were concerned. His motor power, while steadily improving, was still not fully established. Somnolence in this case was a negligible factor. The patient slept a good deal of the time; but it was difficult to say as to whether this was not due to the drugs that were given to him for the relief of the pain.

CASE III.—H. H., male, forty years of age, was seen on February 16, 1919. About ten days prior to examination, patient suffered from sore throat, eight days later began to feel drowsy, and had been in the same state ever since. Examination showed ptosis of both eyelids, paralysis of soft palate, difficulty in swallowing, dysarthria, tongue protruded with difficulty, masked facies, diminished reflexes in all the four extremities. Pulse normal; temperature 102° F., which rose the next day to 105° F. Sensory reflexes could not be tested owing to the patient's state. The following day the patient died.

CASE IV.—I. G., male, single, aged thirty-seven, seen on November 3, 1919. Personal history: Some trouble with left ear seven years ago, gonorrhea twenty years ago. Present illness began about two weeks ago, after some severe nervous strain due to business worries. Patient complained of blurred vision, diplopia, unsteadiness of gait, insomnia, hesitancy in speech, and for the past few days, difficulty in urination.

Physical examination.—Right pupil larger than left, slight weakness of both external recti muscles with sluggish reaction of both pupils. Ptosis of both eyelids and parkinsonian facies; large prostate; hypertonia in all four extremities with cogwheel and fine tremor in hands. The gait shows a distinct tendency to retropulsion.

Lumbar puncture shows normal pressure and ten lymphocytes. All other tests negative. On the twenty-fifth day almost all the organic signs disappeared. At present, four months after onset, patient still complains of insomnia. A special feature of this case is that temperature or pulse never rose above normal.

CASE V.—E. S., female, twenty-six years old, married. Was seen on October 17, 1919. Three weeks previously patient had some infectious disease. This was followed by frontal headaches and projectile vomiting. A few days later diplopia developed. For one week patient was drowsy and sleepy all the time. Left pupil was larger than right; both were irregular; left reacted sluggishly to light; nasal twang in voice; slight tremor of left upper extremity; bilateral partial ptosis, right more marked than left; masked facies, tongue protruded well but deviated to the left. There was a slight tremor of head; knee jerks present; ankle jerks diminished; no Babinski. The urine was negative. Blood, hemoglobin, eighty-three per cent; white blood corpuscles, 11,500; polymorphonuclears, eighty-three per cent; lymphocytes, twenty-seven per cent. Lumbar puncture: Fluid under normal pressure shows eighteen cells, all lymphocytes; otherwise negative. Patient made a good recovery after five weeks from onset of the disease.

CASE VI.—N. F., male, twenty-one years old, single. Personal history shows patient suffered from frequent nosebleeds. About eight months ago patient suffered from a typical attack of influenza. Three weeks ago patient had a profuse nosebleed followed by heaviness in the head and dizziness. Then followed sharp pain in his left eye, accompanied by marked twitchings of both eyelids. A few days later diplopia developed which lasted for about three days and was followed by drowsiness which passed into a deep sleep. During this time the patient found it difficult to pass urine. Patient presented the picture of a well developed man who looked acutely ill and was markedly lethargic. He awakened to respond intelligently to questions but lapsed again into sleep. Slept throughout examination except when he was requested to cooperate. Left pupil was larger than the right; both were regular and reacted completely to light and accommodation; inability to hold eyes in extreme position, with consequent coarse nystagmus. The left ocular aperture was greater than right; ptosis of both lids.

Fundi showed hyperemia of both discs, with slight engorgement of veins. No corneal anesthesia. There was a tremor of the tongue, congestion of throat, edema of uvula, both tonsils inflamed, tremor of facial muscles. Upper extremities were in a state of hypertonia with bilateral cogwheel motion. On the left side there was a moderate ataxia with asynergia. Slight intentional tremor was present on both sides. Lower extremities showed a hypertonia with hyperactive and contralateral reflexes on both sides; moderate ataxia on both sides; no clonus and no Babinski. Lumbar puncture: ten cc. of fluid withdrawn under normal pressure; twenty-four lymphocytes counted; normal blood count. The highest temperature was 100° F., lowest 97°. Pulse varied from 100 to 60. After six weeks of illness patient felt practically well.

CASE VII.—S. L., male, aged twenty-one, single, was seen on February 19, 1920. Personal history: usual diseases of childhood and several operations on the nose. Present illness began about six weeks ago after a prolonged cold. Patient came home complaining of severe bitemporal headaches, vomiting and profuse perspiration. Insomnia for two days followed by deep sleep, lasting a few days. At present patient still complains of headaches and profuse perspiration, with occasional twitchings on the right side. Examination shows a right slight hemiplegia with a Babinski and right facial paralysis, but only impaired movements; ptosis of both eyelids; pupils react and discs are negative.

CASE VIII.—R. K., female, thirty-two years old, was first seen on October 30, 1919. Complained of pain in left ear, diplopia and drowsiness for one week. Previous to that, she suffered for about ten days from headaches, nausea, vomiting, noises in the ears, and vertigo.

Physical examination.—Drowsy, ptosis of both eyelids, pupils were slightly irregular, with sluggish reaction to light and good reaction to accommodation; weakness of left external rectus muscle. The fundi were normal. The caloric reaction was negative. Upper extremities: right grip stronger than left; postural sense and active movements on left side poor. All the tendon reflexes were present. Left abdominal reflexes were diminished. Marked facial weakness on the left side. Double Babinski; knee and ankle jerks were active. Lumbar puncture showed fluid under high pressure; sixty lymphocytes, otherwise negative. Patient felt well on November 14th.

CASE IX.—L. D., male, twenty-four years old, single, actor, was seen February 24, 1920. Personal history: contracted syphilis a year ago. The present illness began five days prior to the examination, with sudden onset. He was irrational, had general twitchings, insomnia, difficulty in passing urine, and finally diplopia. At present he has a temperature of 102.3° F., pulse is 64, respiration 24. Patient sleeps, is easily awakened, answers questions with eyes closed. Poorly oriented as to place and time. Knows year and month, but not day of month. Co-operation with examiner poor, but apparently left sixth cranial nerve paralyzed; both eyelids drooping. The tongue protrudes straight with marked tremor; pupils react promptly; divergent strabismus on

right; accommodation of pupils difficult to obtain because of ptosis; facies masked with paresis of right face; palate normal. On opening the mouth, the lower jaw is drawn to left, and mouth cannot be opened fully. No sensory changes of fifth nerve; no rigidity of neck; movements of head normal; Sergeant white line well pronounced. Following slight stimulation with a dull instrument, a white line appears about a half inch in width, persists, and subsequently widens to a full inch. In places where two lines are drawn, they concur, and one white area is formed. Within about three fifths of a minute, the white lines disappear completely. Paralysis of face becomes more apparent during laughing, patient appreciating a witty remark. During examination, his psyche clears up, and he is able to correct himself. The paralysis of the face is of a central type. The knee jerks are lively; rigidity amounting almost to a Kernig; cremasterics more marked on left; no Babinski; ankle jerks present.

CASE X.—L. D., single, seen February 21, 1920. Family history: Father suffering from periodic insanity. Personal history: Patient has always suffered from nervousness, and has been very excitable. The present illness had existed for seven weeks, the case having been diagnosed as pleurisy. He was first confined to bed for a few days; two weeks later there suddenly developed a high temperature; he became very nervous, and then the twitchings all over the body made their appearance. Diplopia was the next in sequence; simultaneously with that mental symptoms appeared; patient complained that he saw things which in reality were not there. The next day he became drowsy and had to be catheterized. He was then sent to a hospital where he remained for four weeks. He kept on sleeping for three weeks. At present he complains of severe lancinating pains along the anterior surfaces of both lower extremities, frequent desire for urination, but has difficulty in starting the stream. He has had at times severe headaches, and suffered from insomnia. The following signs were found: Partial ptosis of both eyelids. Pupils were irregular and unequal; left pupil did not react to light. Paralysis of left face was present; the knee reflexes were lively; the ankle jerks were present with a tendency to a clonus on the left side. A band of hyperalgesia along the tenth and twelfth dorsal distribution; this is followed by analgesia for about two inches in width. Along the anterior surfaces of both thighs there was a dissociation of the pain and temperature sense; touch is present. Along the posterior surfaces the sensory changes were not so marked; some weakness and spasticity of both lower extremities.

CASE XI.—H. K., male, twenty-nine years old. Present illness began five days prior to examination. He was very nervous, excitable, had slight headaches, dizziness, and diplopia. General twitching developed and for the last two days the patient has been drowsy and slept a good deal. There was partial ptosis of both eyelids, immobile facies, and paralysis of right external rectus muscle. Pupils were unequal, right larger than left; right reacted sluggishly to light. Abdominal reflexes were present. A distinct Sergeant white line was obtained.

The knee jerks were unequal, right greater than left. General twitchings of choreiform nature confined to upper right extremity. Bladder distended, (complain of difficulty in passing water). Temperature 102° F., pulse 84, respiration 24.

February 20, 1920, still somnolent; rectal temperature 98, pulse 65. The bladder was distended but catheterization was no longer necessary.

CASE XII.—Mrs. S. F., twenty-five years old. Present illness began two weeks prior to examination on February 23, 1920. Insomnia, dizziness, diplopia, slight headaches. Apparently no mental symptoms. Has slept for the last eight days, getting up only at intervals to take food. No difficulty in urination. Partial ptosis of both eyelids; left pupil did not react to light; paralysis of left external rectus. Paresis of left facial nerve. The left knee jerk was less than the right. Temperature 102° F., respiration 24, pulse 90.

CASE XIII.—Female, twenty-two years old, seen February 16, 1920. Three months ago she was suffering from influenza; was sick for five days and then was able to return to work. Had some nervous strain due to a love affair. For the past five days patient had been nervous, restless, complains of insomnia, dizziness, and nervous twitchings. Diplopia had existed for the past twenty-four hours; psyche clear; choreiform twitching confined mainly to right upper extremity; retropulsion; parkinsonian facies; ptosis and left divergent strabismus; knee jerks and ankle jerks were lively; no Babinski; pupils reacted; Sergeant white line present. Temperature 100.5°, pulse 66, respiration 24.

February 23, 1920. Insomnia still continued.

February 25, 1920. Condition of the patient improved, diplopia, dimness of vision, dizziness were negative.

February 26, 1920. Patient's condition improved, diplopia disappeared; was able to raise eyelids. Real somnolence was never present.

CASE XIV.—Female, twenty-one years old, seen February 16, 1920. Family history: Mother is a neurotic woman. Personal history: Two years ago patient had an operation on nose, nature unknown. For one month prior to present illness the patient suffered from some nasopharyngeal trouble. Two weeks later dizziness and headaches set in. Three days ago while going from work noticed diplopia which had persisted ever since. The next day she complained of pain along both ulnar nerves. For the last three days she had suffered from insomnia. Temperature 102° F., pulse 110, respiration 30. Ptosis of both eyelids, masked facies, no Babinski, sixth nerve paralysis on right side. The knee jerks were diminished; ankle jerks were not elicitable; abdominal reflexes were present. Two days later slight bulbar symptoms developed, and in the same evening patient became drowsy. She did not void urine during the whole day and her bladder was very markedly distended. The next day there was paralysis of the palate; the uvula was drawn to the left, the speech was indistinct—dysarthric; there was difficulty in swallowing. Patient had to be catheterized. Temperature 102° F., pulse 80, respiration 30. On February 23rd, the patient died from bulbar paralysis.

CASE XV.—Infant, seven weeks old, normal birth, breast fed, was seen on February 15, 1920. Two weeks ago child was suffering from a cold; a week ago was restless, did not sleep, and cried greatly. For the last five days had slept constantly day and night; for the last three days she had made no attempt to suckle the breast, but swallowed the milk when put into the mouth with a spoon. She passed urine freely, but was constipated; drooping of both eyelids. The child was aroused with difficulty; opened eyes and immediately closed them again; masked facies. When the mouth was opened forcibly child did not cry. The pupils were pinpoint and reacted to light poorly; no rigidity of neck; knee and ankle reflexes were elicitable; double Babinski. Pulse 130, temperature 103° F., respiration 30. February 16, 1920. Same condition. Temperature 104° F. February 22, 1920. Report of Doctor Bernstein: Child is gradually improving.

CASE XVI.—Male, eleven years old, seen February 19, 1920. Personal history: always fidgety. About two weeks ago the child had chills and coughed. About five days later he became excitable and irrational; twitchings all over body; complained of double vision. This continued for three days, and the boy then became dizzy and ever since had been in deep sleep. Took food, but fell asleep while eating; eyelids drooped; parkinsonian facies; pupils were rigid; right sixth paralysis; cogwheel movements in upper extremities; knee reflexes were not obtainable; typical parkinsonian tremor; bladder distended; temperature 100° F., pulse 65, respiration 18.

CASE XVII.—Female, thirty-eight years old. Chief complaint: hiccuping, spasms of upper extremities; irrational; walks at night; muttering delirium; sees everything upside down. The present illness dates back six weeks; began with influenza, for which she stayed in bed four weeks. For the last two weeks spasms, cardiac palpitation, insomnia, inverted vision, and diplopia when looking sideways have been present. The eyes were closed; twitchings of right abdominal muscles. The speech was dysarthric and hardly intelligible; paralysis of right face of the peripheral type; right aperture of eye larger than left; ptosis of both eyelids; pupils sluggish. Slight touching on the skin produces blotching; tongue was not fully protruded; uvula turned to left; pharynx congested; no tremors; grip of both hands weak; sensory disturbances difficult to ascertain; knee jerks not elicitable; no Kernig on either side; right side more hypotonic; no Babinski; patient had to be catheterized; sixty ounces were obtained on the first catheterization. February 22, 1920. Twitchings were still present but less severe; answered questions more promptly. Otherwise the condition was the same.

February 29, 1920. Continued to improve; somnolence set in; passed urine voluntarily; took nourishment. Temperature 90.4°, pulse 112. February 24, 1920. Pulse 108, respiration 24.

CASE XVIII.—Male, seen January 30, 1920. Present illness began three weeks ago with cough and pain in chest, and was diagnosed as pleurisy. Three days later neuralgic pains appeared in left upper extremity and right calf muscles. A few

hours later there were shooting pains along both anterior crural nerves, and in back of head. Four days later twitchings all over the body appeared. The next day the patient became irrational, and talked to himself continuously. He recognized his relatives, but after talking for a few minutes began to wander in his speech. He had illusions and spoke of past experiences. He was brought into the Beth David Hospital in a state of delirium with twitchings all over the body. Patient was in state of muttering delirium; was disoriented both as to time and place. Continued to speak incoherently without any tendency to flight of ideas; ptosis of both eyelids; pupillary reaction as to light good. The accommodation could not be tested as patient could not cooperate; masked facies, paralysis of right sixth cranial nerve; tongue deviated to right; central paralysis of left facial nerve; deviation of tongue to right; many mucous râles at the back of chest over both lungs. The bladder was distended above pubes; incontinence of urine. There was no paralysis of the upper extremities that could be detected; elbow and wrist reflexes were absent. The lower extremities could not be raised for more than six inches above the bed. Both knee jerks were absent; ankle jerks could not be ascertained; double Babinski; apparent analgesia over both legs anteriorly and posteriorly; other sensations could not be ascertained. Blood pressure 130/80; temperature 102.5° F., pulse 80, respiration 30. Lumbar puncture showed the fluid to be under increased pressure. The cerebrospinal fluid was clear; Wassermann was negative; increase in cells; globulin negative. Urine: Specific gravity 1018, trace of albumin; no casts. Blood showed, white blood corpuscles 3400, small lymphocytes twenty-two per cent, large lymphocytes two per cent, polymorphonuclears seventy-six per cent. Six days later patient died from bulbar paralysis. Before death the temperature rose to 106.5° F.

CASE XIX.—Male, twenty-four years old, seen on February 3, 1920. Present illness dated back seven days. It began slowly with simple headache, and he saw things quadruply, i. e., four objects while looking at one. At the beginning he had fever only at intervals and slight cough. The sleeping started four days prior to examination. When sleeping at night he could only be awakened with great difficulty; during the day he answered questions. The appetite was good, he had a desire for food. There was no cough; no chills. The bowels were constipated. The patient complained of inability to see. The eyes were closed; masked facies; no initiative, but he answered questions promptly. He could lift his eyelids only slightly. Pupils: right sluggish and rebounding, more pronounced on left; accommodation, absent; apparent paralysis of right sixth nerve. The tongue protruded in straight line. The right facial innervation was weaker than the left. The hands lifted well, there was some sagging on the right side. At times a cogwheel motion was obtained on the right upper extremity. The upper tendon reflexes were not obtainable. Abdominal reflexes were lively, cremasterics were present; knee jerks not obtainable; no Kernig; some rigidity of right lower extremity. Direct myotonic; irritability diminished;

Achilles jerks not obtainable; double Babinski. At times there was a diminution of sensation on the right side of back; difficult to verify due to lack of cooperation; no astereognosis. Diagnosis: Encephalitis lethargica of midbrain type involving ocular nuclei and, to some extent, motor fibres, probably at crura.

February 9, 1920. Patient lay with mouth open and eyes closed, facies immobilized. Responded in semicomatose form to questions. The eyelids, when forcibly opened, fell back at once. Pupils: almost no reaction; left angle of mouth lower than right. When the mouth was forcibly opened, no attempt to close it was made. Either upper extremity was held for a long time in the position placed by the examiner. A form of catatonica was suspected. Cogwheel movement in the upper extremities was present. The breathing was shallow. He seemed to react to pin prick in upper extremities. The knee jerks were not elicitable. The food was swallowed when put into mouth. Pulse 56, temperature 98° F. February 7, 1920. The patient was less drowsy; responded to questions with more readiness; took food himself; still had to be catheterized. February 14, 1920. Condition steadily improving; was able to keep eyes open for some time.

I am particularly grateful to Doctor B. Sachs, Doctor I. Abrahamson and Dr. Israel Strauss, for permission to look up the statistics of the neurological service of Mt. Sinai Hospital, as well as for the privilege of observing some of these cases under their guidance.

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252 EAST BROADWAY.

UMBILICAL HERNIA.*

BY NELSON A. LUDINGTON, M. D.,
New Haven, Conn.

The general impression gathered from a perusal of standard works is that the surgical repair of umbilical hernia is likely to be a hazardous procedure, beset with many technical difficulties, attended by a high mortality, and followed by a large proportion of recurrences. Umbilical hernia, for this and some other reasons, has always seemed to stand apart in the mind of the general practitioner.

Medical advisors, who uniformly recommend radical cure as a routine measure for inguinal, femoral, or postoperative hernia, quite as constantly counsel palliative measures and let it alone treatment in small and medium sized umbilical hernia; while the larger ones are unequivocally pronounced inoperable, and permitted to develop even to the point where they may, by their very size and weight, wholly incapacitate the patient.

This trend of thought is reflected in the attitude of the patient, who generally receives the suggestion of operative relief with either astonishment or incredulity. Even in the largest femoral or inguinal hernia the examiner is able at least to locate, and usually to determine, the size of the external ring. In large umbilical hernia the determination of the size of the ring is almost never possible, and, as a rule, even its location is lost under the hernial mass and the adipose tissue of the abdominal wall. Then, too, there is lacking the aggregation of definite landmarks and structures which have made the surgical anatomy of inguinal and femoral hernia almost an exact science.

There is, however, a very natural tendency to visualize the umbilical ring or hernial opening as proportionate to the size of the hernia. Nothing could be further from the fact. In all the large umbilical hernia which have come to operation,

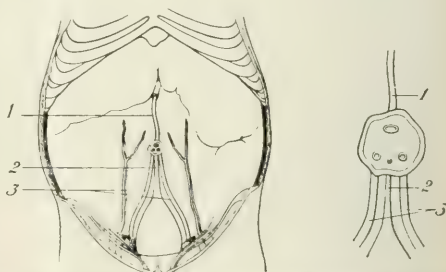


FIG. 1.—Taken from Johnson's *Operative Therapeutics*. Article on Hernia by Moschowitz.

the umbilical ring, or more properly the ventral ring, is of an extraordinary constancy both as to size and shape. It is invariably from six to eight cm. in diameter, uniformly circular in shape, and presents a smooth, firm, sharp edge at the depth of the posterior sheath of the rectus muscle. The

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anterior rectus sheath seldom forms a part of this ring edge proper, except in the lower quadrant of the ring or circle, and in this location only, because gravity has caused the hernia to sag down over the lower margin of the ring, producing a very acute flexure or bending of the sac, which is usual-



FIG. 2.—Taken from Johnson's *Operative Therapeutics*. Article on Hernia by Moschcowitz.

ly absent in both the lateral and superior portions of the circumference of the ring.

Anatomical and mechanical data are not wanting to explain the constancy both of size and shape of the umbilical ring in the larger hernia.

When the umbilical cord separates, there is left on the transversalis fascia a thin layer of granulations, which is shortly covered by epithelium. Through this small area (see Fig. 1) four structures pass: The umbilical vein above, the urachus below, and the umbilical arteries on either side. The superficial fascia coming in from all sides fuses with the cicatrix. There is no subcutaneous fat in this area. The four structures enumerated

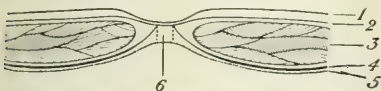


FIG. 3.—Taken from Johnson's *Operative Therapeutics*. Article on Hernia by Moschcowitz.

above penetrate the transversalis fascia and proceed in divergent directions; the umbilical vein backward into the round ligament of the liver; the urachus downward to the summit of the bladder; the umbilical arteries separating and descending as the left and right obliterated hypogastric arteries to the lateral walls of the bladder. We have, then, for an abdominal wall at the umbilicus: 1. Scar tissue; 2, superficial fascia; 3, transversalis fascia, and, 4, peritoneum (see Fig. 2).

The inner margins of the sheaths of the recti do not meet at the umbilicus. The umbilicus may, therefore, be regarded as a deficiency in the linea alba. The vital importance of the transversalis fascia to retain the abdominal contents is apparent.

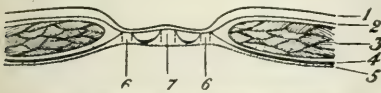


FIG. 5.—Taken from Johnson's *Operative Therapeutics*. Article on Hernia by Moschcowitz.

This essential holding fascia is pierced at the four points previously noted, and at each of these points there is a reflection outward along the course of the emerging vessel, of fibres of the transversalis fascia, thus producing a weak point in this fascia. (See Fig. 3).

According to Moschcowitz, it is at these points that hernia has its inception. If this be accepted as true, and there is abundant reason for so doing, it follows that an umbilical hernia does not come through the umbilicus as a whole, but comes through one side of the umbilicus. (See Fig. 4). This will explain why, in the very large hernia here shown, there is still preserved intact one side of the normal umbilical depression or outline. On account of the close proximity of the openings for the passage of the urachus and obliterated hypogastric arteries to the edge of the ring (See Fig. 5) and their small size compared with the opening for the umbilical vein, it is probable that the majority of umbilical hernia emerge through the latter opening and spread over the linea alba above the umbilicus.

Having once insinuated itself through the

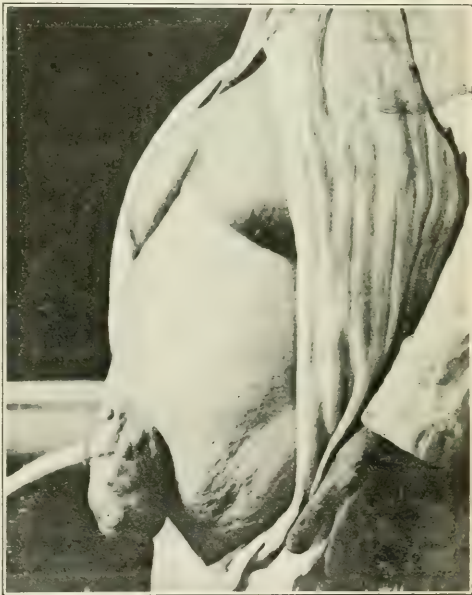


FIG. 6.—Large pedunculated umbilical hernia. Note the evident tone of abdominal musculature. Contents of sac omentum only.

transversalis fascia, some of the abdominal contents, usually the omentum, push the vascular prolongation of this fascia ahead of them and now become true hernia.

From this point on, its development depends almost entirely upon two factors, i. e., the amount of the intraabdominal pressure, the *vis a tergo*, and the resistance to be overcome—that is, the holding ability of the structures composing the sac.

Usually the sole contents of the sac at this stage is omentum. The intestines follow on after the omentum, pushing it on before them in the growing hernial sac. If the omentum is well developed and abundantly supplied with adipose tissue, it may serve to plug the hernial ring to such an ex-

tent as actually to exclude the small intestine until the hernial sac shall have attained a size sufficient to contain practically the entire great omentum. If now, in addition to such a condition, we have a goodly tone in the abdominal musculature and a firm, well developed rectus sheath which resists



FIG. 7.—Enormous umbilical hernia showing diverticulated sac with scars marking site of headed ulcers. Enormously dilated veins visible on close inspection.

dilatation of its umbilical ring, the resulting hernia is pedunculated. (See Fig. 6). Generally, however, the omentum drags the transverse colon along after it into the sac. This sequence of events is entirely in accord with, and adequately explains the operative findings as to the contents of the sac. Omentum is invariably present, most frequently associated with the large intestine. The small intestine is added later on. Occasionally, in a continuation of this same process, the traction of the colon on the gastrocolic omentum brings the greater curvature of the stomach into the sac. That this is not at all the rule, is due in large measure to the uniformly firm and constantly placed mesocolic attachment in the left flank, anchoring the splenic flexure.

The intraabdominal pressure, acting on the sac contents in conformity with the same law applying to fluids, that "pressure exerted on a fluid is transmitted equally in all directions," produces gradual enlargement of the hernial ring. In so doing, it not only pushes to one side and stretches the aponeurotic fibres of the transversalis fascia and the linea alba, but pushes the innermost decussating fibres outward toward the surface as well. Thus there is formed an aponeurotic funiculus which extends up the sac proper for a distance of from one to three cm. diminishing in density and terminating in a few stray fibres which seem to have been actually torn loose from their tendon.

This displacement process is, in reality, in the nature of a rolling back of these tendons, resulting in a constant increase in the ability of the ring to withstand further stretching as it increases in size.

The same forces which are gradually displacing the aponeurotic fibres are at the same time acting against the resisting powers of the coverings of the sac, and were it not for the pronounced tendency to the early formation of adhesions, the growth of an umbilical hernia would be much more rapid than is in fact the case, and its ring would be smaller. Just in so far as the sac can resist pressure, that pressure can operate to enlarge the ring. When, however, the ability of the ring to withstand pressure equals and slightly exceeds the holding powers of the sac, from then on the sac and not the ring must give. This marks a definite stage in the development of an umbilical hernia and explains why a small hernia may, and in fact so frequently does, remain practically unchanged in size for years, and then, without obvious reason, suddenly increase in size. From this time on there is very little, if any increase in the size of the ring but the growth of the hernia is continuous. That is why the size of the hernia itself is no criterion of the size of the ring to be closed. That is also why strangulation is more frequent in small than in large umbilical hernia.

The early formation of adhesions and subsequent growth of the sac leads to the presence of trabeculae sometimes several inches in length and



FIG. 8.—Very early stage of umbilical hernia. Note that hernia comes through upper portion of umbilicus and tends to spread upward over linea alba, obliterating upper margin only of umbilicus. Shows also large postoperative ventral hernia.

well vascularized. These trabeculae extend from one visceral element in the sac to another or to the wall of the sac. Again, the sac wall may be closely united to the contents over considerable areas, with adhesions varying in degrees from slight filmy veils to the most intimate consolidation.

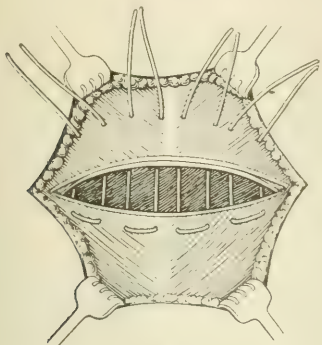


FIG. 10.—Taken from Johnson's *Operative Therapeutics*. Article on Hernia by Moschowitz.

In the large hernia, diverticulæ from the main sac are common, and may equal or even exceed the original sac in size. (See Fig. 7). Such sacculations in obese patients are prone to burrow well underneath the panniculus, and are to be constantly borne in mind when making the first incision.

The enormous stretching to which the skin is subjected in the large hernia, give rise to superficial ulcerations, which are of the utmost importance as portals for the entry of infection. The cutaneous veins are dilated, sometimes varicose—from the stretching of their walls; and cicatricial areas surrounded by zones of pigmentation, par-

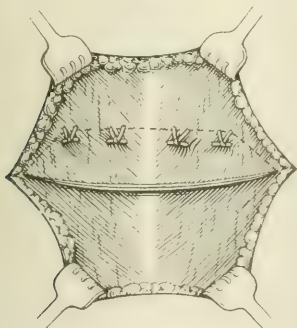


FIG. 11.—Taken from Johnson's *Operative Therapeutics*. Article on Hernia by Moschowitz.

ticularly about the summits of the sac, mark the site of healed ulcers and indicate the lowered circulatory efficiency of the sac wall. They are to be interpreted precisely as similar manifestations are interpreted in the lower leg. Chafing or maceration of the skin folds underneath the tumor, be-

tween it and the abdominal wall, is almost invariably present in obese patients, particularly in the hot seasons, and when present, is a most dangerous menace to asepsis. No amount of pains should be spared to make assurance doubly sure that the skin surface is free from this or any blemish.

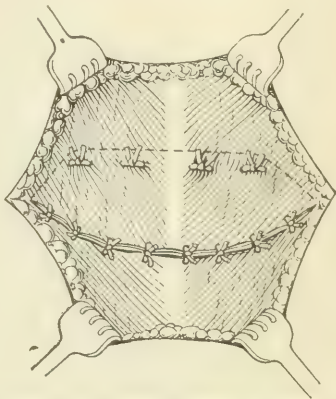
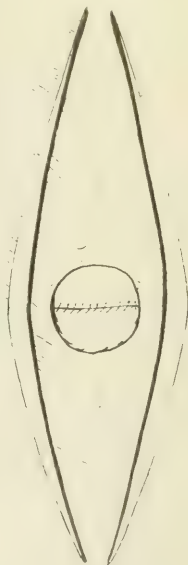


FIG. 12.—Taken from Johnson's *Operative Therapeutics*. Article on Hernia by Moschowitz.

The clinical course is entirely in harmony with the pathogenesis just described. The mass, small at first, usually appears at the upper margin of



Diagrammatic representation of incisions in rectus sheath.

the umbilicus, and tends to spread over the linea alba above and lateral to its origin. (See Fig. 8). It is always reducible at some stage in its development, and this history of reducibility is one of

the chief points in the differentiation between hernia and lipoma. Usually of very slow growth, unless expedited by the intercurrence of parturition or unusual and prolonged strain, the mass may give rise to a variety of symptoms varying all the way from no inconvenience whatever, to repeated at-

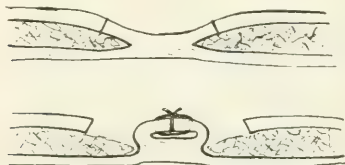


FIG. 18.—Cross section above or below umbilicus showing incision in inner margin of anterior rectus sheath and suture of inner margins together. (Diagrammatic.)

tacks of rather severe cramping or neuralgic abdominal pain.

The diagnosis of an umbilical hernia is usually most obvious. The exception most frequently encountered is in the determination of the presence or absence of hernia in an extremely obese patient, and more especially if the patient has been operated upon and the question is one of recurrence. (See Fig. 9). Under these conditions an umbilical hernia may attain a very considerable size, and remain so masked by the enormous mass of abdominal adipose tissue that the most careful physical examination is required to determine its presence. Aside from the frequent attacks of partial obstruction to which these hernias are prone, they give rise to disability from their size and weight. Abscess formation in the hernia itself is, fortunately, a very infrequent complication. The infection finds its way directly through the thin and possibly abraded or ulcerated skin of the sac into the peritoneal cavity. The resulting abscess lies between the peritoneal surfaces of the mesenteric folds and is usually well walled off. The clinical manifestations of this complication are likely to be very well marked both locally and constitutionally.

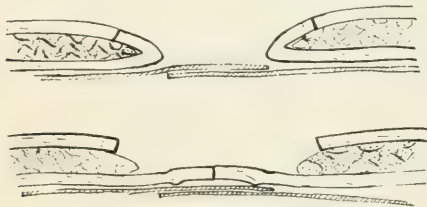


FIG. 19.—Same as Fig. 14—Cross section at the umbilicus. (Diagrammatic.)

The temperature is, as a rule, high, and the local signs unmistakable.

The tendency of these hernias in the newborn and very young children is to spontaneous cure without treatment of any kind. It follows that in the first years of life, palliative measures are to be given a thorough trial. A simple square of cigar box, securely sewn in a strip of canton flannel

wide enough to permit of its being so folded as to entirely cover the wound, and long enough to pass twice around the body of the child, has proved its practical efficiency.

The application of adhesive strips crossing the umbilicus in various directions is another effective treatment, but requires the frequent readjustment of the location of the strips in order to avoid excoriation of the tender abdominal skin. Buttons or other rounded objects held firmly in the navel with the idea of preventing the abdominal contents from entering the umbilical ring, are much less efficient than either of the other methods, and many times do positive harm by pressure, tending to promote adhesion of abdominal contents at the

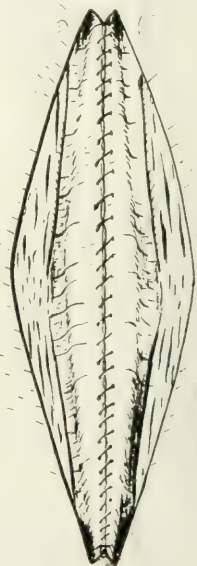


FIG. 20.—Plan view (diagrammatic) suture of mesial edges of anterior rectus sheath completed.

point of irritation. Nothing could more surely perpetuate a hernia than this.

In the adult all these measures are generally barren of good result, and operative treatment is the only alternative. It is beyond the scope of this paper to more than indicate the operative procedures which have been evolved and applied to the umbilical ring.

They have been briefly and clearly classified by Moschowitz in the chapter on hernia in Johnson's *Operative Therapeutics*, from which I take the liberty of quoting verbatim, as follows:

1. Suture of the peritoneum and suture of the skin; that this method is insufficient is manifest.
2. Through and through suture of all the structures gives only slightly better results.
3. Omphalectomy, i. e., excision of the umbilicus, followed by incision in layers, gives somewhat better results, yet not sufficiently encouraging.

- 4 Graser's method of suturing the different layers, not in one line, but so that they meet at right angles, is an improvement over the foregoing.
- 5 Transposition of the two recti and various plastics upon the anterior sheaths of these muscles have had a transitory vogue.

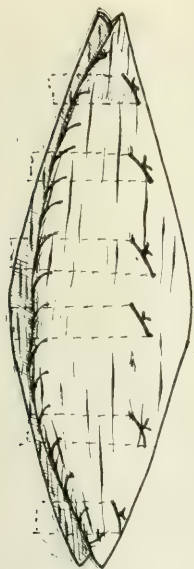


FIG. 21.—Plan view of upper muscle and mattress sutures placed near middle of muscle belly. (Diagrammatic).

6. Finally, we come to the modern operations for umbilical hernia, etc., referring to the well known overlapping operation devised by and known as the Mayo operation, and its subsequent modification by Blake. (See Figs. 10, 11, and 12.)

The operative procedure which I have followed is in no wise a radical departure from the well marked path to successful closure of the umbilical ring, but is rather a combination of some features of several of the methods previously alluded to. (See Fig. 13).

In the first place, the initial incision is not made over the hernial protrusion, but as close to that side of the hernial protrusion which seems to promise the most direct route to the neck of the sac as a due regard for the integrity of the sac will permit. This incision is immediately deepened to the rectus sheath and the lateral circumference of the ring is exposed. The hand is then introduced into the wound and the fingers by blunt dissection worked entirely around the neck of the sac. The facility with which this may be accomplished is truly surprising. The difference in the feel of the tense smooth surface of the transversalis fascia as it covers the sac wall, and the fatty tissue of the

panniculus, is at once apparent. Only a very moderate amount of manipulation is necessary to separate the fat from the sac, because the manipulations are conducted from the depth of the wound toward the surface, and the depth of the wound is firmly fixed. The transversalis fascia, though thin and attenuated, is sufficient to prevent any reasonable manipulations from tearing into the sac. (See Figs. 14 and 15). As the hand approaches the surface, diverticulæ are immediately recognized, and the dissection carried around them. Using the hand in the wound as a guide (See Fig. 15), the skin incision may be safely and rapidly completed (See Figs. 15 and 16), so as to encircle the prominence of the hernial protrusion and remove a liberal amount of the skin on its summit without leaving large concave side walls of fat, since these



FIG. 22.—Cross section (diagrammatic) at the umbilicus showing completed reconstruction of abdominal musculature.

tend to form dead spaces when sutured. (See Fig. 17).

The neck of the sac is cleared of fat as far up as fibres of the transversalis fascia are clearly visible and the sac opened, the contents liberated and returned to the abdominal cavity. It is important to be sure that the intraperitoneal aspect of the ring is absolutely free from adhesions. The sac is then amputated at the highest point at which the fibres of the transversalis are clearly marked. The stump left is usually about three fourths of an inch long. This tissue plane, consisting of the peritoneum and transversalis fascia is then overlapped, as in the Mayo operation, and secured by mattress sutures.

The inner margins of the sheaths of the recti are now incised from a point about half way between the ensiform and the umbilicus to a point well below the first transverse line below the umbilicus. (See Fig. 13). The mesial edges of these incisions are united by a continuous stitch, thus

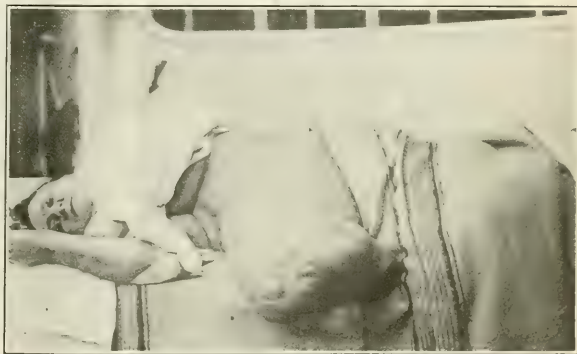


FIG. 31.—Enormous umbilical hernia producing total incapacity.

adding a layer to the coverings of the umbilical region. (See Figs. 18, 19, 20). The recti are then freed from their beds and overlapped in the midline, retained by mattress sutures passed as near the middle of the muscle belly as is convenient, and aided by interrupted sutures in the free edge of the upper muscle. (See Figs. 21 and 22). The anterior sheath is closed in the usual manner, and buried sutures are placed in the fat so as to carefully close all dead spaces. In closing the skin, provision is made for multiple small drains of folded rubber tissue, so placed as to permit of the egress of oil. Adhesive straps are so applied as to remove the danger of undue tension on the superficial sutures, caused by the lateral sagging of the fat of the abdominal wall. The aseptic technic must be faultless.

In so small a series of cases, the absence of a recurrence or a fatality is surely well within the limits of good fortune.

A discussion of diastasis of the recti or hernia of the linea alba, while closely associated with the consideration of umbilical hernia, is purposely omitted for the sake of brevity, and to focus attention upon the plea that umbilical hernia may be accorded the same thoughtful consideration which is bestowed upon other hernias; that the futility of palliative measures be recognized; that the small umbilical hernia be surgically repaired before it shall have attained extraordinary dimensions; and that the patient afflicted with large umbilical hernia be encouraged to seek surgical counsel, and to expect relief.

[We were obliged to omit many of the illustrations on account of lack of space. They will all appear in the author's reprints.—Editors]

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1252 CHAPEL STREET.

TWO CASES OF DISPLACEMENT OF THE ILIUM.

By EDGAR F. CYRIAX, M. D., Edin.
London.

Until about two decades ago the sacroiliac joints were regarded as possessing no movement and neither strain nor displacement was recognized as being possible in them. Of late years, however, these views have been considerably modified and a number of articles have appeared dealing with such conditions in these joints. It is a curious fact that few authors who recognize the possibility of displacements of the ilium on the sacrum recommend treatment by reposition. They usually advocate strapping, or rest in bed, or other means by which immobilization can be secured. This is in direct opposition to the method of treatment of displacements of the extremities, in which reposition is a *sine qua non* for radical cure, compensatory measures only being resorted to when reposition has failed or when it is considered dangerous to attempt it.

During the course of years I have had under my care several hundred cases of displacement of the sacroiliac joint and have never yet failed to obtain rectification thereof by bloodless methods (excepting in very old subjects.) As examples I present two cases which I have specially selected because of the x ray findings.

CASE I.—Miss X., a native of Antwerp, aged twenty-eight, came to me on April 5, 1915, suffering from sciatica in the right leg.

History.—There was no history of any accident. The disease commenced in September, 1912, when the patient began to experience pains in the posterior part of the right thigh. After some days she went to her physician, who recommended the wearing of warmer clothing. The pain, however, did not diminish, but became slowly and steadily worse, and the leg continually felt tired and heavy. By January, 1913, the pain had extended to the right gluteal region. Medicinal treatment was then resorted to during the next six months, and a number of prescriptions were tried, but it was only after some months that even partial amelioration resulted. The pain, although better, was continually present during the daytime; during the night it was absent, and did not prevent her sleeping. The condition remained practically the same for the next six months, and in January, 1914, she again saw her physician, who recommended electrical treatment. This was tried for a fortnight, but produced no change. In May, 1914, treatment by tonics was commenced; no improvement resulted. In July, 1914, electrotherapy was again tried, but war broke out and the patient came to England. Between July, 1914, and April, 1915, the condition became steadily and slowly worse; the pains increased in intensity and began to interfere with sleep, and the sense of fatigue also became more marked. No treatment was resorted to during this period.

Examination.—The patient complained of continued pain in the right leg, chiefly in the lower part of the thigh, middle of the calf and to a less extent in the gluteal region. The pain was constantly present during the daytime, with acute exacerbations about once a fortnight. In the evening the pain delayed her falling to sleep and sometimes woke her up. The right leg always felt tired and heavy and the right foot was always cold. Walking was difficult. During the acute exacerbations she could hardly walk across the room because of the pain. During the intervals she was able to walk about one hundred yards at a time, but then had to stop, partly because she felt as if her leg were giving away at the knee, and partly because of the pain. She was unable to sit on a hard chair, but had to have a cushion. Tenderness on pressure was moderate over the course of the great sciatic, external popliteal, posterior tibial and inferior gluteal nerves; it was considerable in amount in the right adductor region in the distribution of the obturator nerve, and was very marked over the right sacroiliac joint. Pressure in this site in a very few seconds caused aggravation of the pain in the nerves mentioned. When in the standing position, complete extension of the hip joint

did not aggravate the pain to any extent. With the patient lying on her back, flexion of the hip joint with the knee fully extended caused slight increase in the pain. Extreme flexion of the thigh and knee caused pain in the inguinal region.

General atrophy of the muscles was present in

that the spines of the lower three were rather prominent and rounded, so that the fingertip could be pressed in between the spines, which could not be done elsewhere. The spine of the third lumbar vertebra was slightly deviated to the left. Pressure on the right anterior superior spine downwards and forwards was distinctly unpleasant for the patient, inasmuch as it very soon, i. e., in a few seconds, produced aggravation of the already existing pain. Pressure in the opposite direction did not produce this effect. Pressures applied in a similar manner to the left anterior superior spine did not produce any such result. There was also some tenderness on pressure at the sides of the lumbar vertebrae, especially the third, and pressure applied to its left side as if to increase the amount of deviation from the middle line increased the pain in the thigh; pressure in the opposite direction did not have this effect.

A radiogram had already been taken by Dr. Stanley Melville on March 1st, previous to my having seen the patient. His report is as follows: "The transverse process of the fifth lumbar vertebra touches that thrown by the left ilium; on the right side it is much larger and appears to be wider than normal. There are also slight differences in the relative positions of the various bony

points of the two ilia in regard to the midline of the vertebral column. These appearances point to a subluxation at the sacroiliac joint." (See Fig. 1). To estimate the degree of malrotation in this case, the distance between the anterior superior and posterior superior spines can be taken as being about six and a half inches, and the centre of malrotation can be assumed to be about the centre of the sacroiliac joint, i. e., about one inch anterior to the posterior superior spine. The tan angle of

rotation = $\frac{3\frac{1}{2}}{5\frac{1}{2}}$, therefore angle of rotation = $7^{\circ} 45'$.

Of course this estimate is only approximate, but it shows that the displacement is a considerable one.

Treatment was commenced on April 27, 1915, and was applied nearly every day until May 17th, there being seventeen applications altogether. For the first fortnight the treatment consisted solely of passive movements of the pelvis. On and after May 12th general petrissage of the abdomen was added in consequence of the patient telling me (which she had not done before) that she suffered from habitual constipation.

On April 27th and 28th various passive movements of the hip joint and lumbar spine were applied in order to stretch all the structures in and near the sacroiliac joint. After this had been done



FIG. 1.—Subluxation at the sacroiliac joint.

the right leg, together with a certain amount of diminution of power. The measurements were as follows: Circumference of right calf, one and a quarter cm. less than the left. Circumference of thigh just above the knee, one cm. less than the left. Circumference half way up the thigh, one and a half cm. less than the left.

Both patellar reflexes were exaggerated, especially the left. On trying for knee clonus, two to three jerks were elicited on the right side, one to two on the left side. On trying for ankle clonus, six to eight jerks were obtained on the right side, but only one to two on the left side.

On examining the bony pelvis, it was discovered that the right anterior superior spine was three quarters of an inch lower than the left, and the posterior superior and posterior inferior spines higher on the right side than on the left. The posterior superior spine on the right side was slightly above the level of the second sacral spine, the corresponding point on the left side being on the same level. The ilium did not project so far behind the sacrum on the right side as on the left. This asymmetry was not affected by changes of position such as standing upright, sitting, lying on the face, lying on the back with or without the knees being drawn up.

As regards the lumbar vertebrae, it was found

on the 28th, the right anterior superior spine was grasped with one hand and while the patient was lying perfectly passive, was suddenly elevated. The result of this was a marked rectification movement of the bone, whereby it very nearly assumed its correct position so that the level of the two anterior spines became almost identical. This manœuvre was absolutely painless, so much so that the patient would probably have been unaware that it had happened had it not been accompanied by a loud articular sound at the very moment the bone moved.

April 29th. General amelioration of symptoms. The patient slept better; the pain in the thigh and gluteal regions was less intense and she was better able to sit on a hard chair. There was no longer



FIG. 2.—Showing same position of the two ilia.

any tenderness on pressure over the external popliteal nerve. From this date until May 3d, the treatment consisted of the same movements as on the 27th and 28th, though attempts at reposition were omitted. May 1st. Marked diminution in the tenderness on pressure over the right sacroiliac joint. As the result of passive rotation movements of the lumbar spine some movements of readjustment resulted therein. May 2d. Disappearance of pain in the right external popliteal nerve. May 4th. A second attempt to move the right ilium resulted in its accurate and permanent rectification. Tenderness in the right adductor region no longer present, but has arisen in minor degree in the corresponding area in the left leg. May 7th. Final reposition of the lumbar displacement.

May 7th. Disappearance of tenderness in the

left adductor region; no pain in the right inguinal region on extreme flexion of the thigh and knee; walking easier. The reflexes are not so marked; only four jerks on trying for ankle clonus in the right leg, and only one on trying for it on the left side. May 11th. Pain practically disappeared. The right foot does not feel cold now, except after walking for a quarter of an hour or so, at the end of which time a slight amount of pain and fatigue ensues. Atrophy of the muscles in the right leg less, the differences between the two sides being now one half, one half, three quarters, as compared with one and a quarter, one, and one and a half (*vide supra*).

May 14th. The patient was able to walk for half an hour at a time before fatigue set in, but even then no pain resulted. May 17th. Treatment finished. No subjective symptoms left, apart from fatigue setting in easier in the right leg than in the left. Objectively only some atrophy left of the muscles in the right leg, the measurements being the same as on May 11th. Inequalities in the bony pelvis entirely removed. Reflexes the same as on May 11th. The constipation somewhat improved. On May 20th a second radiogram was taken by Doctor Melville, whose report is as follows: "There is now apparently no difference between the relative positions of the two ilia." (See Fig. 2.)

Subsequent history.—On June 7th the patient wrote to me that she was able to take walks of an hour or more without fatigue or pain. She has also been able to run without any symptoms arising.

Note on the case.—The theory that sciatica can have its origin in an osseous or articular lesion is by no means new; indeed sciatic scoliosis has been the subject of a number of original communications. Some of these reproduce radiograms of the condition, many of which, to my mind, show the presence of subluxations of the ilium with or without the same condition in the lumbar vertebrae.

The authors seem, however, in some instances, either not to have realized that such subluxations existed, or to have regarded them as being the consequence and not the cause of the condition. It is of interest to note that Raimist (1) found tenderness at the side of the fifth lumbar vertebra present in every one of seventy-five cases of sciatica, tenderness of the third and fourth also occurring.

CASE II.—Mrs. X., aged thirty-two, came to me on June 9, 1915, suffering from severe backache in the sacral and lumbar regions.

History.—The patient had an attack of scarlet fever thirteen years ago, and considers that during her convalescence she strained her back by overbicycling; pains came on in the back, radiating to the front, and in the thighs. They lasted

many months and although improvement occurred, they never quite disappeared, and were easily aggravated by exertion or when fatigue ensued. About two and a half years ago the patient was in a motor accident; she was thrown violently on the ground and two ribs were fractured. This

was slightly convex when the patient was viewed from behind.

There was marked tenderness on pressure over the right, and to a less extent over the left sacroiliac joint. There was general tenderness on pressure over the last two and all the lumbar vertebræ, and in the latter region there were fibrous thickenings in the muscles near the middle line. There seemed to be atrophy of the interspinous ligaments of the last two dorsal vertebræ which rendered their spines round and prominent. There was only slight tenderness on pressure over the great sciatic nerves which had no specially tender spots. Flexion of the thigh with the knee straight aggravated the pain in the lumbar region, but not if the knee was flexed at the same time. The examination of the bony pelvis showed marked irregularities. The lumbar curve, as mentioned above, was slightly convex when viewed from behind. This was found to be the case even when the patient was lying flat on her back. As regards the position of the two ilia, the right anterior superior spine was as much as two inches lower

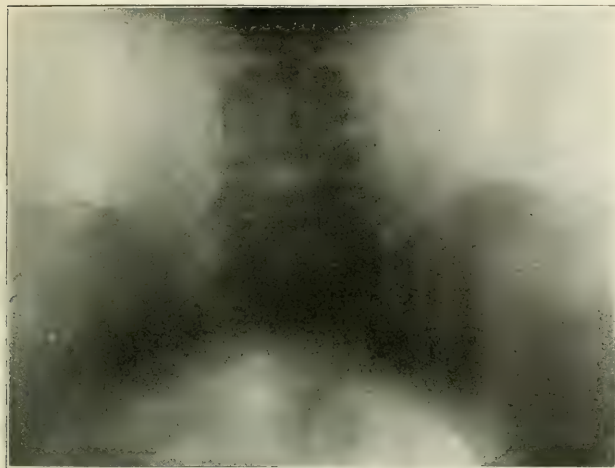


FIG. 3.—Splayed right sacroiliac spondylitis.

seemed to intensify the pains in the back which then spread to the sciatic nerves. Any exertion, especially lifting heavy things, generally brought on lumbago and sciatica in an acute form, which practically incapacitated her for from two to six weeks, and left her with a feeling as if the right leg was partly paralyzed. As a result, she had to be very careful what she did and gave up riding on horseback and playing tennis. Various treatments such as rest cures, blisters, electricity and massage were tried but without success.

Examination.—The patient complained of severe dragging pains in the lumbar, sacral, gluteal and posterior femoral regions. She described the sensation in the sacrum as if it were continually being gripped. She frequently had to lie down because of the pain, which to use her own words: "Simply tires me out." For several years past she has been unable to sit upright in a chair for more than a minute because of the pain, and even with her back supported had continually to change her position for the same reason, or it would have become unbearable. The patient walked stiffly, leaning forward and the normal concave curve of the lumbar vertebræ could be seen to be reversed and

than the left one, and this was the case with the patient in the standing, lying and in the semirecumbent positions. Posteriorly it was found that the



FIG. 4.—Showing ilia on same horizontal plane.

posterior portion of the ilium was further from the middle line and lower on the right than on the left side. On grasping the right ilium and attempting to rotate it at the sacroiliac joint so that the anterior portion became depressed, i. e., in a direction as if

to increase the deformity, a dull ache in the gluteal and femoral regions ensued immediately; this did not happen when attempts were made to rotate it in the opposite direction.

A skiagram was taken on the same day by Dr. Stanley Melville, whose report was as follows: "The right sacroiliac synchondrosis is 'splayed.' A line drawn across the transverse process of the fifth lumbar vertebra cuts the summit of the posterior portion of the crest of the left ilium, but passes well above the corresponding part of the right." (See Fig. 3).

To estimate the degree of malrotation in this case: the distance between the anterior and posterior superior spines being taken as six and a half inches, as mentioned above, and the centre of the rotation one inch anterior to that, then \tan angle of rotation = $\frac{1}{5\frac{1}{2}}$, therefore the angle of malrotation is very nearly 20° .

Treatment.—On June 11, 1915, during the first treatment, which was practically identical with that decided under Case I, the ilium was moved practically into position, the final adjustment being affected the following day. The replacement was fairly easy and absolutely painless, the only thing that attracted the patient's attention being a low grating sound as it moved. The immediate result was that there was great relief in the pain in the back, and the patient could walk more easily and an hour afterwards found that she was able to sit for more than an hour in a chair without any discomfort. On June 14th (the next visit) there was great diminution in the amount of tenderness on pressure over the right sacroiliac joint, and entire absence thereof over the left joint; on June 16th there was none over the right joint. From June 14th onwards movements were applied for the muscular spasm and the lumbar thickenings. June 21st, the backache has practically disappeared. The interspinous ligaments of the lower two dorsal vertebrae were much more marked, so that the spines were not so prominent. July 25th, treatment finished, it having been applied twenty-five times in all. There has been no further movement of the ilium at the sacroiliac joint since June 12th. The lumbar curve is concave when viewed from behind. There were no more thickenings in the lumbar region; the spines of the lower two dorsal vertebrae were no longer prominent.

Subsequent progress.—The patient remained quite well until December, 1916, when a slight attack of lumbago came on, for which she came to me on two occasions, December 12th and 13th. I found no alterations in the bony pelvis since her last visit, but merely some rheumatism of the lumbar muscles. Two applications of active and passive movements removed it. During February, 1917, she again got a similar attack, which was treated in the same way and cured in five visits. December, 1918, still keeping quite well. On June 30, 1917, a second skiagram was taken by Doctor Melville whose report was: "There is no marked difference between the two sacroiliac synchondroses and the crests of the two ilia lie much nearer the same horizontal plane." (See Fig. 4).

THE WLADIMIROFF-MIKULICZ OPERATION.

BY MARCELINO HERRERA VEGAS,
M. D., F. R. S. M., Eng.,
Buenos Aires,

President of the Academy of Medicine, Buenos Aires.

Considering how very rarely the Wladimiroff-Mikulicz operation on the foot is suitable, I have thought it worth while to publish the following case of a girl on whom I performed this operation in the children's surgical ward of the Clinical Hospital, in 1915, and in which satisfactory results were obtained:

CASE.—Augustina Balido, Argentine, aged four years, entered the hospital on May 22, 1915.

Family history.—Father healthy and living; mother died eight years ago of pneumonia; she has six brothers and sisters, all living and healthy.

Personal history.—Measles and smallpox in infancy; pneumonia when twelve years old; first menstruation at fourteen; then a suspension of her periods during the period of a year, at which time they again reappeared and afterward continued regularly. When twelve years old she had a fall which caused a wound followed by great pain and swelling in the ankle and the surrounding tissues. She was seen by a physician. As there was no improvement, fifteen days after the fall she entered the Teodoro Alvarez Hospital, where a puncture was made and a large amount of pus was, according to the statement of the patient, drawn off. A few days later an operation was performed, followed by another a fortnight afterwards. The wound healed but some fistulae remained from which pus was discharged for more than a year. At the end of this time the foot was put into a plaster bandage which had to be removed within a month on account of suppuration. The foot was rested for some days and then put into another plaster bandage, but in a month and a half this also had to be removed for the same cause, although the suppuration was not now so abundant. Fresh rest was given and then a new bandage was applied which was removed after five months, when she left the hospital. She walked with the aid of a crutch and stated that the left limb was shorter than the right. After remaining at home for seven months she noticed that her left foot was twisted and tended to turn inward. In spite of further application of plaster bandages, no improvement was effected of the bad position of the foot which rendered walking difficult. She therefore decided to enter my ward in the Clinical Hospital.

Examination.—May 22, 1915, the girl had her left foot turned inward, forming an angle of 160° . There was no equinus; the movements of the foot were greatly lessened; two scars were seen extending horizontally around the heel. The entire foot was deformed. The outline of the heel had practically disappeared. The posterior part of the calcaneus was hardly perceptible to touch. There was ankylosis between the tarsal and metatarsal bones that impeded movements of abduction and

adduction. Marked atrophy of the leg muscles was present. The length of the left leg from the anterior superior iliac spine to the vertex of the external malleolus was seventy-three and a half cm. on the left side, as compared to seventy-six cm. on the right side. In walking she supported



FIG. 1.—Marked deformity of the calcaneus.

the left foot on its external edge and extremity. She walked with a limp. The radiograph (Fig. 1) showed a marked deformation of the calcaneus which was formed by three principal fragments, of which the posterior had been carried forwards and was riding on the anterior fragment. The third smaller and upper fragment was carried upwards and was separated by a clear space of irregular edges from the posterior fragment already described. The astragalus was flattened from above downwards and appeared lengthened in the anterior posterior direction. There was fusion between the calcaneus and astragalus which explained the impossibility of foot movements. The cuboid was more clearly defined and more transparent than the neighboring bones.

In view of the fracture of the calcaneus and the inflammatory process in the posterior tarsus which maintained the prolonged suppuration and considering the great deformity of the foot and the impossibility of walking under such conditions, in spite of the repeated applications of plaster bandages made to obtain the correction of position

but which did not succeed, I proposed the Wladimiroff-Mikulicz operation to the parents and they consented.

Operation.—July 23, 1915. A Mikulicz-Lamter incision was made and the patient was placed in ventral position. The soft parts were dissected, with conservation of the artery, veins and posterior tibial nerve. A horizontal cut was made across both malleoli and another symmetrical cut across the cuboid and cuneiform. Both bony surfaces were placed in contact with each other and the soft parts were sutured with catgut. A plaster bandage was applied to the knee. October 6, 1915. Radiography showed the maleolar surface in opposition to the corresponding cubocuneiform surface, but with an intervening space of two m.m. April 30, 1916. The girl found it difficult to walk on account of pain and a lack of security in balance. Examination showed a slight deviation of the foot backwards and inwards and mobility of the *avant-pied* due to the pseudoarthrosis existing between the extremity of the bones of the leg and the subluxated tarsus. A new radiograph showed a slight subluxation of the tarsus forward and a space of two m.m. between the bony surfaces. In the posterior portion of the foot permeable masses were seen, interposed between the surfaces. As walking was so difficult under these conditions a further operation was decided upon.

Operation.—May 14, 1916, a posterior longitudinal incision was made and the bony surfaces



FIG. 2.—Slight position of bones of the foot.

exposed and all of the fibrous masses interposed between them were removed and a fragment of the shin bone from the sound leg was placed in the diedral angle left by the removal of this tissue. The bone graft was kept in position by suturing the peripheral soft parts with catgut. A plaster bandage

was applied. May 15, 1916. The operative results were normal. June 1, 1916. The dull white end of the bone graft appeared at the edge of the wound; occasionally a little serous fluid was discharged. July 1, 1916. Under the radiograph the graft could be seen between the avant-pied and the

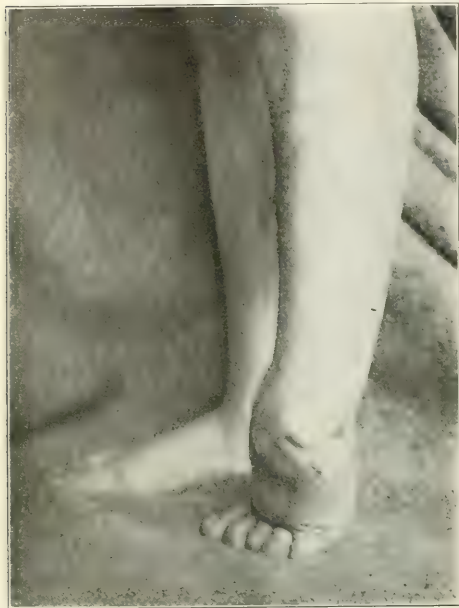


FIG. 2.—Showing support for the left limb.

bony tibioperoneal surface. Nevertheless there was still a space of one m.m. between the graft and the bony tibioperoneal surface. (Fig. 2). February 1, 1917. She left the hospital in order to receive heliotherapy treatment at home. June 27, 1919. She returned to my ward in the Pinero Hospital for a suppurative bubo in the left groin. Looking from the front on the inside of the left foot, it was seen that the axis of the avant-pied formed an angle of 170° with the axis of the leg. Seen from the outside the avant-pied was also observed to be slightly deviated backwards in relation to the axis of the leg. Inspection revealed a cutaneous protuberance on the inside corresponding to a serous sac which was found to be situated at the lower tibial extremity. On the outside and at the same level was a cutaneous callosity corresponding to a point of pressure of the prosthetic apparatus she was using. There was also another callus on the sole of the foot at a finger's breadth behind the fourth toe. Palpation showed the root of the avant-pied salient forwards in relation to the plane of the leg, to the extent of one finger's breadth.

When the lower extremity of the leg was held scarcely any mobility of the avant-pied could be obtained. There were no passive lateral movements and no active movements of the avant-pied present.

Movements of flexion and extension of the toes were maintained.

Measurements.—Left lower member eighty cm. from the anterior superior spine to the root of the first interdigital space. Right lower limb, eighty-four cm. Support in the left lower limb was made on the anterior part of the sole of the foot and was painless. (Fig. 3).

August 16, 1919. She left the hospital quite cured of the slight ulcer from the inguinal bubo. Radiography showed that the extremities of the leg bones were in contact with the corresponding surfaces of the bones of the foot.

Here we have shown the case of a girl with a fracture of the calcaneus, the result of a fall, and later followed by an osteomyelitis. This was followed by a series of punctures, incisions, scrapings, and plaster bandages, which caused an improvement in the local condition, but a deviation and pain under pressure in the foot, which made walking impossible. In view of the circumstances I proposed an osteoplastic operation of the foot and leg which in this case could be none other than the Wladimiroff-Mikulicz operation or one of its variants.

This operation consists of the extirpation of the



FIG. 4.—Orthopedic boot to correct deformity.

tarsus and of the distal end of the bones of the leg and then placing the foot in a marked equinus position in such a way as to transform the walk from plantigrade to digitigrade. I do not have the intention here to enter upon a complete study of the subject. I only wish to note some facts which

this case suggested to me. The exact details of this subject may be found in the work of P. Chutro.

This operation, which is really an economic intervention between amputation and resection, originated in Russia, where Wladimiroff (1) first practised it in 1871 and presented it in the following year to the Medical Society of Kassar. The case was published in the same year in the annals of that university. In 1880 Mikulicz (2) practised an analogous operation which he reported to the Medical Society of Vienna and also to the German Surgical Congress which met at Berlin in 1881. Four years later Sklifosowsky, of Moscow, read, at the Congress of Copenhagen, the history of a patient operated upon three years before by Mikulicz's procedure.

In 1886 Mikulicz (3) published an article claiming priority in this method, in which we see that he ignored his Russian colleague. Among other things, the difference between the operations of Wladimiroff and Mikulicz consists in the position of the foot. Wladimiroff placed it obliquely to the leg in an exaggerated equinus but made the sole bear the weight in walking, while Mikulicz followed a carefully thought out technic, placing the foot in the direction of the axis of the leg and causing the patient to walk on the tip of the toes, making it digitigrade. (4).

This operation was practised in Italy in 1885 by Lodina (5) and Caselli (6). In France Röhmer was the first to use it in 1885, and it was fully discussed in 1889 in the Surgical Society of Paris. MacEwen in 1885 and MacCormac (10) in 1887, published cases of this operation and it was practised in the United States in 1887 by Hopkins (8). In the Argentine it was first practised by Justo in 1891 and was the subject of Echeverria's (7) thesis in his doctorate.

Chutro's (9) very complete work, which I have already quoted, consisted of two of his operations at the Theodoro Alvarez Hospital. The first was the case of a man aged fifty-two of Italian nationality, and the second that of a man aged thirty-eight, Argentine. Both of these patients were operated upon for tuberculous osteoarthritis of the ankle and tarsus.

The original operation of Wladimiroff and Mikulicz have been modified according to circumstances and this has given rise to many operative procedures such as those of Ollier, Kocher, Berger, Michaux, Chutro (a modification of Michaux's), Jaboulay and Laguette, Lotheisen, Gellé, Kümmel, Rieder, Tietze, Wolkovitch, Mikulicz-Lanter and others.

The indications for this operation are tuberculosis of the tarsus and ankle, chronic ulcers of the heel, fractures accompanied by osteomyelitis of the calcaneus and neighboring bones, as in the case I have described. Of late indications have been extended to include the lengthening of limbs shortened by pathological luxations in the coxalgia or ample resections of the knee followed by shortening of the member in very advanced equinoparalytic feet. As an exception we can quote the case of a talus foot operated upon by Mikulicz and the case

of polichinelle feet with the idea of giving greater solidity to the member.

After operation there remains a salient of the posterior wound with two lateral salients of skin, which are of no importance as they atrophy in the course of time. The conservation of the tibialis posticus nerve, artery and vein must be the first thought of the surgeon on account of the gangrene of the flap that would follow their section. The mere severance of the posterior tibial nerve or of the internal plantar nerve, which in some cases does no harm, in others has produced paralytic gangrene and anesthesia of the corresponding region of the foot. Profuse postoperative hemorrhage has occurred and it has been found necessary to compress the femoral artery and use thermocautery.

The position of the patient is important and I have already insisted on the advantage of the ventral position, which greatly facilitates the different stages of the operation. In spite of consecutive plaster bandages there are cases in which immobility has not been obtained. The abnormal mobility which remains is most disagreeable for the patient. Hot air treatment has been advised for such cases, but I prefer heliotherapy and bone grafting.

A slight shortening may occur after operation and in this case the use of the orthopedic boot of Mikulicz is sufficient. When the shortening is greater than three to four cm. it must be corrected by adding cork soles to the shoe. Patients with great shortening receive benefit from the use of the boots of Percy, Guntorp and O'Connor. Fig. 4 shows the patient walking with an orthopedic boot.

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A Case of Aspergillus Infection.—A. Sartory (*Bulletin de l'Académie de médecine*, November 18, 1919) reports having recently isolated a mycelial organism of the genus *Aspergillus* from a patient suspected of having pulmonary tuberculosis. Its morphological and cultural characteristics showed it to belong to the fumigatus species of *Aspergillus*, but its relatively small conidiophores, thin sterigmata, and reduced mycelium led the author to class it as a minimus variety of *Aspergillus fumigatus*. The organism liquefied gelatin rapidly and proved highly pathogenic to the guinea-pig and rabbit upon intraperitoneal injection.

EXTENSIVE DESTRUCTION OF THE SELLA TURCICA WITHOUT CLINICAL SYMPTOMS.

With Report of Case.

BY CHARLES ROSENHECK, M. D.,
New York,

Neurologist to the Hospital for Deformities and Joint Diseases and
to the New York Diagnostic Clinics,

AND

LESSER B. GROESCHEL, M. D.,
New York,

Röntgenologist to the New York Diagnostic Clinics.

That grave intracranial processes may exist months or years without giving rise to demonstrable disturbances, has been so definitely established by authoritative observers that extended comment on this phase of neurological pathology seems quite superfluous. The type of morbid process that we have in mind in particular is usually neoplastic in nature although abscess formation has not escaped incrimination. The discovery that such a condition is present is usually made quite casually as in the case herein reported, or in cases of sudden death in which autopsy reveals the true state of affairs. Cushing and others explain this anomaly by the fact that these neoplasms are in the so-called "silent" areas of the brain and hence give rise to no focalizing symptoms. It is only when the pressure of the augmented mass compromises the general brain structure that the symptoms give rise to the characteristic syndrome of intracranial pressure. The involvement of the sella turcica in a destructive process, as in our case, can hardly be considered as an invasion of a silent area. The important anatomical structures within the sella and the vital vision pathways in the immediate vicinity precludes such an assumption. Nevertheless we are forced to confess that in the light of the negative neurological data which the patient presents these important nervous structures are "silent"; at least it may be pertinent to say that the invading mass has treated them with extreme consideration.

History.—The patient is a male, sixty years of age, born in this country and has lived in the South the greater portion of his life. His occupation is that of an analytical chemist. During the year 1918, on account of a labor shortage in his laboratory, he worked unusually hard. He suffered no ill effects from his strenuous efforts and having finished some problems which engaged his attention he decided to take a vacation. He came to New York and after consulting an oculist for a local eye discomfort decided, in view of his age, to have a general physical examination made. This was not undertaken with a view of relieving any apparent physical complaint but merely to satisfy himself that his organs were in good condition and functioning properly. The history revealed that with the exception of infantile disorders he had never been acutely ill in his life. An occasional insignificant headache, attributable to fatigue and promptly relieved by rest, was the only discom-

fort he had ever experienced. This occurred several years ago and he was quite positive that he had had no headaches within the past two or three years. He never vomited except after the ingestion of certain foods which disagreed with him. He considered his memory was quite good although he noted an impairment recently which he attributed to his advancing years. He had never experienced a sense of vertigo or visual difficulties. There had been no motor or sensory disturbances. His weight had been stationary for the past twenty years. He had not noted any enlargement in his bony extremities. His habits had always been excellent. He indulged quite moderately in an occasional drink or a cigar. He had never suffered from venereal infection. His family history was unimportant.

Neurological status.—There was no abnormal attitudes of the voluntary motor system noted. No deformities were present. The gait was normal in all its phases. All types of coordinative effort, both of the equilibratory and nonequilibratory type were normally performed. No dysmetria was noted. All rapidly repeated pronation and supination movements were normally performed. All skilled test acts were performed in a satisfactory manner. A slight tremor was noted in the upper extremities which was not intensified by the performance of voluntary acts. There was an absence of twitchings, choreiform movements, athetosis or spasms.

Examination of the deep reflexes revealed normal and equal responses. Of the superficial reflexes the ciliospinal was present. The supraumbilical upper and lower lateral abdominals, suprapubic and cremasteric gave a very weak response. At other times they could not be elicited. No pathological reflexes, such as the Babinski, Gordon, Schaefer, Oppenheim or Chaddock, were in evidence.

There was no impairment noted for all types of muscular effort. No atrophy or hypertrophy of the muscles was noted. Hypotonia and hypertonia were absent. The electrical reactions revealed no variations from the normal. No abnormal associated movements were noted. In the domain of the peripheral neutral apparatus there was no evidence of pathological alteration or disturbance in function.

General sensory examination revealed acuity, localization and discrimination normal for touch, pain, temperature, pressure and muscle tendon sense. Stereognosis and gnosia tests were performed in a satisfactory manner.

The pupils reacted somewhat slowly to light and accommodation; no disturbance was noted in the oculomotor apparatus, and the rest of the cranial nerves showed complete functional integrity. A special eye examination by Dr. Homer E. Smith reports O. D. 18/48; O. S. 18/200 with correcting lenses. No scotomata noted nor limitation of the visual fields. The fundus was normal.

The mental examination revealed no variation from the normal. The patient seemed alert, responded quickly, cooperated willingly, and expressed himself in an intelligent and rational manner. There was no disturbance in the emotional

tone. The systemic examination revealed no noteworthy abnormalities.

The laboratory examination showed a normal blood picture, a negative Wassermann and a urine in which abnormal elements were absent. Examination of the stomach contents revealed no marked variations from the normal. The glucose tolerance test was positive.

Specimen of blood after ingestion of 100 grams of glucose: One hour after ingestion 100 c.c. of blood contained 0.28 per cent. blood sugar; two hours after ingestion 100 c.c. of blood contained 0.27 per cent. blood sugar; three hours after ingestion 100 c.c. of blood contained 0.145 per cent. blood sugar.

Specimen of urine after ingestion of 100 grams of glucose: First hour, negative; second hour, positive, Benedict 0.75 per cent.; third hour, weakly positive, Benedict 0.32 per cent.; fourth hour, was not obtainable; fifth hour, negative.

A lumbar puncture was not done as it was considered inadvisable for obvious reasons. An examination of the vestibular mechanism revealed no abnormality. The left ear showed a chronic adhesive process.

Radiographic status.—In continuing the report of the patient whose history has been fully given from the neurological aspect, attention is now drawn to the radiographic status and in order to show the case in its true perspective it is permissible to treat in detail the radiographic findings in this case and to comment in general upon tumors involving the sella turcica.

A radiograph made in the usual anteroposterior position showed both frontals and maxillary sinuses to be negative. Stereoscopic lateral plates revealed the following: Partial destruction of the anterior clinoid processes of the sella turcica, complete destruction of the dorsum sella and floor, and partial destruction of the wall of the sphenoid sinus. No evidence of intracranial pressure was noted.

A diagnosis was made of hypophyseal tumor with invasion downward. The amount of destruction noted in this case is remarkable compared with the lack of other findings. One would expect at least one of the characteristic symptoms of brain tumor, such as headaches, disturbances of sensorium and intelligence, vertigo, slow pulse, vomiting, choked disc, and acromegalic syndrome. It might be well to quote at length Schuller-Stocking on Röntgen Disease of the Head as follows:

"Hypophyseal tumors, while not rare, are not common. They are usually adenomata. Cysts develop in rare cases without known cause and produce the same changes as tumors. Erosion of the sella may also be caused by syphilis of the hypophysis and as a manifestation of senile atrophy of the skull. Large tumors elsewhere in the cerebrum may by increased intracranial pressure produce erosion as will also hydrocephalus of the third ventricle.

Tumors of the hypophysis may be: 1, Intrasellar, that is, arising from the hypophysis itself and developing within the sella turcica; 2, extrasellar, those arising in the entrance to the fossa; 3, those arising posterior to the sella.

Intrasellar tumors produce a uniform dilatation in all diameters, the floor is depressed, and the dorsum elongated and pushed back. Extrasellar tumors growing from above produce a widening and flattened, unlike distention to the entrance whereby the dorsum is thin and shortened. Tumors of the cerebellar pontine angle, acusticus tumors, produce a characteristic thinning and bending forward of the dorsum sellae. Any of these varieties of tumors may produce the entire destruction of the sella.

CONCLUSIONS

A detailed analysis of this unusual case brings to our attention the fact that in spite of an obvious and grave intracranial process no demonstrable clinical signs or symptoms can be elicited. Its benign course up to the present, showing neither disturbances of a local or general nature is a remarkable commentary on the capacity of the brain to adjust and continue its functions in spite of an extensive invasion by a destructive process. The contention might justly be raised that this process has made its way in a direction which does not compromise vital brain structures. The negative neurological data partially confirm this assumption. This, however, does not dispose of the absence of symptoms due to pituitary involvement which surely is completely destroyed as the x ray studies so graphically portray. We are at loss to explain this paradox nor are we in possession of facts which would warrant us in saying that other endocrine organs take up the functions of a disabled or destroyed member of the endocrine chain. We merely mention this as a bare possibility.

The type of neoplasm present in this case has also engaged our attention. As it is manifestly impossible to predict with any degree of certainty the type of any growth (and this is particularly true of cerebral neoplasms), we shall have to content ourselves with the belief that this process is probably cystic in character. Two particularly convincing facts may be adduced in support of this. It has been observed that growths in the area of the sella turcica very often assume a colloid or cystic character and that the presence of such a growth would on account of the elasticity work less havoc with the adjacent brain structures than a solid mass of unyielding resistance. It might also be assumed that the absence of focal symptoms is due to the fact that cystic masses simply compress without destroying. At any rate, even in view of this comforting belief, the patient is suffering from an extensive intracerebral process which up to the present has not affected his general wellbeing.

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Dystocia Due to Anal Fissure.—F. C. Fosbery (*British Medical Journal*, December 13, 1919) reports a case of dystocia produced by a horseshoe magnet shaped tumor due to spasm of part of the anterior levator ani. On investigation, a fissure was found between two hemorrhoids and this was treated by the application of codrenine—a proprietary preparation said to contain cocaine hydrochloride and adrenalin—with the result that the head was born with the next two pains.

WHAT IS THE CAUSE OF GOITRE?

By J. CHRISTOPHER O'DAY, M. D.,
Honolulu, Hawaii.

To attempt to answer this question would require one to assume a tremendous task. I am of the opinion that no satisfactory answer is available in the light of our present knowledge. There have been many notions about it, but even notions cannot be accepted unless they are based upon a given amount of careful study. Yet the literature is such a maze of notions relative to goitre etiology that one is puzzled in finding many of them conflicting.

As the term goitre has been made to cover all diseases of the thyroid gland, it may be well to have it understood that malignancies and infections are not to be considered. We have concerned ourselves with but two classes—diffuse goitre and nodular goitre. Of the former we recognize the following subdivisions: Hypertrophic follicular; parenchymatous; diffuse colloid; diffuse vascular, and adenomatous. Nodular goitre differs from this classification only in its being limited to some particular portion of the gland.

That the thyroid gland is capable of imposing a goitrous condition on itself by multiplication of its follicles, a theory that has received the endorsement of capable men, did not appeal to me. I am ready to agree that the functional activity of this gland may and very often does, vary but that it has the power of multiplying its follicles is quite beyond conception unless some disparity of its anlage may delay the development of some portion of its embryonal structure.

It was when we took up the study of the rich lymphatic supply of the thyroid that we became impressed with the comparatively few trunks that are the ultimate reduction of drainage. To obstruct one of those main lymph channels would mean the accumulation of the secretion within the follicles involved until, one after the other, each would burst and be fused into one large cavity with the cuboidal epithelial cells of each flung back to be compressed into the wall, or sac, of the cyst. If, later, this wall is ruptured from the pressure within, and the rent is carried back into the vascular periphery, hemorrhage and the so-called grumous cyst may result.

Murphy taught, and I believe he was right, that when the cuboidal epithelium loses its conformation the secretion is changed from its normal physiological character to that of a serous exudate. From this he reasoned that the character of the contents of a thyroid cyst will depend entirely upon the degree of the early interocular pressure. That interference with the exit of the secretion of the thyroid into the lymphatics as the true cause of retentive goitre may readily be acknowledged. The cause of this interference may be either mechanical or physiological, the former having to do with any direct pressure or torsion imposed upon the lymph channels while the latter would be due to some physiological defect in establishing an overthickened product, too thick and heavy for easy egress. This brings us to a full appreciation of the type of person who most readily falls victim to a goitrous attack—namely—those of the nervous temperament.

Retentive goitre is rarely met with in those of the lymphatic temperament, and this brings us again to a better understanding of why goitre is not observed, endemically or otherwise, among the colored races. I have found it totally absent among the pure Hawaiians. Dr. George Herbert, of Honolulu, with some thirty years' observation in the Islands tells me he cannot recall having seen a single case of retentive goitre among the Hawaiians.

This is interesting inasmuch as the Hawaiian race is distinctively composed of people who are typically lymphatic in temperament. Colonel W. Wayne Babcock, of Philadelphia, during his service in Southern cantonments, very kindly sent me a report of his own observations. He says: "I sincerely trust you may be able to shed light on this most important problem. We have seen few goitres in Southern troops and practically none in negroes, while the Ohio troops in a southern camp I visited had quite a large incidence. Dr. J. P. MacKie, of Edinburgh, Scotland, after a year among the Polynesians of the South Sea Islands, writes me as follows: "I have not encountered a single case of goitre among the natives." The cause of retentive goitre, then, we believe, has to do primarily with a certain type of person.

CLINICAL NOTES FROM FRANCE

By CHARLES GREENE CUMSTON, M. D.,
Geneva, Switzerland.

DIFFERENTIAL DIAGNOSIS OF BUCCAL LEUCOPLASIA.

It is probably safe to assume that for the past few years the following propositions have been accepted as scientific facts, namely, that every permanent white spot arising on the mucous membrane is leucoplasia; that all leucoplasias develop on syphilitic soil and represent the onset of an epithelial growth of the mucosa. Nevertheless, this formula is somewhat too absolute and does not apply to all the data now in our possession and it also contains certain erroneous conceptions which are important to eliminate, from the viewpoint of treatment and prognosis, as well as unfortunate consequences which might result for the patient.

From the viewpoint of the practitioner, this subject requires attention and a few examples reported by Brocq will immediately show the practical importance of the subject. A young girl, whose marriage had been decided upon, one day noticed that she had some white spots on the dorsal aspect of the tongue and the family physician was consulted. As he hesitated in respect to the diagnosis a consultation was held with the result that the consultant was absolutely affirmative in the diagnosis of buccal leucoplasia, a syphilitic lesion requiring very energetic specific treatment, and breaking off of the marriage.

The state of mind of the family can readily be imagined and in a few days Brocq was consulted, who made a diagnosis of lichen planus of the mucosa, characterized by numerous eruptive elements on the dorsal surface of the tongue, with areas of atrophy in the upper strata of the mucous membrane. The white striae, pathognomonic of lesions of the posterior part of the cheeks where the

white striæ offered minute nodulations, were a distinctive sign of this process.

A man of thirty-five years, the father of a family and a great smoker, presented certain lesions on the mucous aspect of the cheeks which a physician diagnosed as leucoplasia which might transform into a malignant process. In great distress the patient consulted Brocq, who refrained from making an immediate diagnosis because the areas involved in the process were inflamed, painful, and covered by adherent patches. By a careful local treatment the condition improved, when a simple lichen planus was found to exist.

A young physician supposed himself to have leucoplasia and several of his medical friends were also of this opinion. Although there was no history of chancre or secondary accidents and a Wassermann was negative, the syphilitic nature of the process was nevertheless maintained. On examination an extensive white, pearly plaque, slightly atrophied at its centre, was found on the dorsal surface of the tongue, while a minute inspection of the internal posterior surface of the cheeks revealed pathognomonic lesions of lichen planus.

Numerous similar examples could be quoted and such mistakes can be easily made, because the difficulties are often considerable in making a differential diagnosis between buccal leucoplasia and lichen planus, all the more so because both processes occasionally exist at the same time. A large number of subjects, syphilitic or not, present white patches on the tongue, especially at the commissures of the lips, the result of persistent irritation of the mucosa from tobacco smoke, dental caries, or some other cause and the most intensive antisymphilitic treatment has had no effect whatsoever on the lesions.

I wish to relate briefly two other instances in Brocq's practice. A male, a great smoker, presented a thick white patch covered with resistant villousities, very adherent to the underlying structures, on the dorsal and lateral aspects of the tongue. By palpation there was no cartilaginous induration to be felt and the parts were painless to pressure. The same coating, but less thick, existed on the mucous membrane of the cheeks. The onset of the process dated back several years. There was no history of syphilis and no evidence of sclerosis or infiltration in the thickness of the tongue which would lead to the suspicion of syphilis. A test treatment was essayed, however, and proved negative. Local buccal treatment, a reduction in smoking, and scraping of the coatings when they became troublesome—without causing bleeding—constituted the treatment.

The interesting point is that this patient contracted syphilis at the age of fifty-eight, which was severe. He presented erosive syphilides in the throat and on the lips and underwent an antisymphilitic treatment which had no effect whatever on the leucoplastic lesions.

In still another case the patient had been treated for a very extensive papillomatous patch of leucoplasia for several years, which involved the entire dorsal aspect of the tongue. It was extremely thick and proliferated to such an extent that about every fortnight a careful abrasion had to be made. The patient was an extreme smoker, a *bon vivant*, and

an old syphilitic. He had followed various antisymphilitic treatments for some six years and at length died of influenza of a severely infectious type, and throughout all this he never presented the slightest change in the lesions which might lead one to suspect the onset of epithelioma.

These cases serve as an introduction to the remarks that are now to follow. It has been said that every permanent white spot on the mucous membranes is leucoplasia and that this lesion develops on a syphilitic soil. In the etymological sense, the word leucoplasia is too comprehensive and dermatologists—at least those of the French school—have concluded to distinguish distinctly: 1, lichen planus of the mucosæ; 2, marginal exfoliating glossitis or aberrant and pearly desquamation of the tongue. I would point out that Brocq also separates the process described by him under the name of superficial diffuse glossostomatitis—a somewhat fantastic name—of nervous autointoxicated subjects, from the two processes mentioned above.

Then there are the whitish, desquamating lesions consequent upon repeated scratching from pruritus occurring on the vulva and other mucous surfaces which may be regarded as a lichenification of the mucous membranes. With the elimination of these various processes, one is brought face to face with true leucoplasia, with its pearly white patch, more or less extensive and thick, adherent to the underlying structures and with an evolution almost invariably slow. The problem to be solved is whether this symptomatic ensemble is due to several quite distinct processes or to a single morbid entity.

The sagacious Fournier, as you all know, created the theory of parasyphilitic affections, while his successors took the trouble to enrich the master's doctrine, inasmuch as they regarded these processes as being distinctly syphilitic and consequent upon the treponema, including in these processes buccal leucoplasia, and they maintain that every subject with leucoplasia is so because of an acquired or hereditary syphilis. This rather exaggerated point of view has been energetically combated by Brocq, who rightly rejects this very narrow conception, which is shown to be such by many cases observed, some of which I have quoted above. He points out that for some time he has taught that leucoplasia almost always develops on syphilitic soil, but that to maintain that it is invariably the consequence of syphilis, and above all that it is a purely syphilitic accident, is far from his conception.

In point of fact it is at present beyond doubt, and proof abounds, that leucoplasia may develop in subjects absolutely free from syphilitic taint, either acquired or hereditary, since subjects already with a leucoplasia have later on contracted syphilis of even serious proportions, and with contagious lesions. Regardless of these facts, the partisans of the luetic nature of leucoplastic lesions, will not give in, and invoke an unsuspected syphilis, a latent one or hereditary lues dating back several generations, all this in spite of the absence of any stigmata, a negative Wassermann reaction and complete failure of specific treatment, even of the most intense form. For them, every leucoplastic patch must be syphilitic.

(To be continued.)

Editorial Notes and Comments

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THE PROBLEM OF ENDEMIC DISEASE.

The poor we have with us always, as is also the case with nonepidemic disease. The poor man is more general than the millionaire and so also is the case of endemic disease, for though far more spectacular, more talked about and more dreaded, the epidemic disease carries off only one fourteenth the number of persons that the same disease does in its ordinary form. Epidemics are mere troublesome waves on the surface of the great ocean of communicable disease which constantly surrounds us. The sanitarian recognizes this and accepts it as a necessity, for he keeps always before him the endemic index of his community or of the wards of his city, and pays little heed to the prevalence of diphtheria, measles, scarlet fever, pneumonia, and other similar diseases, provided the number of deaths does not rise above the average rate for the same month for ten years past. Nothing exhibits more strikingly the superficial attitude, the watchful waiting method, which health officers must perforce employ in these diseases.

The carrier is said to be the source of this sea of endless contagion, but is it so much the carrier as his communication of the disease? A great problem, then, in public health, for the physician and for the school teacher, is the early detection and isolation of the carrier. But we need to take more account of the transmission of disease through dust and droplets in the air. A case of tuberculosis or of diphtheria may not develop immediately after breathing the air of a room in which there is an

unnecessary amount of dust (as in many school rooms), or where there is much fine mouth spray because the air of rooms is not often renewed, but this does not signify that germs have not been transferred and have not taken up residence in the nose or throat, and that, weeks afterward, the recipient may not be afflicted with the disease due to this resident, or that he may not become a new carrier and a menace to the community.

We are at present making too little of unclean air; at any rate we have not proved that noninfective doses of bacteria are not transmitted in this way. The great number of deaths from diseases, which it is admitted are most commonly transferred through the air at short range and with prompt development, makes it worth while to be more cautious in general as to the cleanliness of air so that it may be free from the dead breaths of men and from the living germs of disease. We cannot afford always to follow the fads set by negative results of superficial laboratory investigations. We should make more use of the knowledge we have at hand before seeking new things to appease our curiosity.

SUTURE OF THE SCIATIC NERVE.

So much has been written during the four years of the war regarding injuries of the sciatic nerve and their treatment, that it may now be well to glance at the results of suture of this nerve trunk derived from civil practice. When one takes into consideration the sensory and motor disturbances occurring after division of the sciatic nerve or its branches, it becomes evident that, although limited when a secondary branch is involved, they may frequently retrogress and give rise to little trouble. However, in some instances trophic disturbances may arise which are the cause of pain and impotency of the limb. When the injury involves the main trunk or one of its branches, walking is possible, while the sensory phenomena may become attenuated. Nevertheless a certain amount of difficulty in walking persists and the trophic disturbances may result seriously.

For the reasons stated these morbid phenomena should be remedied. It is clear that when excision of the sciatic is done for involvement by a malignant neoplasm, it is better to extirpate a large portion of the nerves rather than expose the patient to a recurrence by attempting dissociation of the nerve bundles, which may be an impossibility. But in cases of nonmalignant growths the nerve bundles should be preserved. When the nerve must be ex-

cised, the excision should be as limited as possible and, after stretching, end to end suture should be attempted, or if necessary, suture *à distance* may be done. Thirty-eight millimetres of the sciatic have been excised and the ends sutured with excellent ultimate results. Therefore, in cases of recent division of the nerve, suture should always be essayed and even in cases of long standing it has likewise been successful. Motor disturbances are the most persistent after suture and are the longest in retrogressing after suture, and when this is not done the patient will limp indefinitely. Paralysis may persist after suture, but this is not common.

When late suture is attempted the motor disturbances have persisted in some cases, but in these cases paralysis was present for two years and six months before surgical intervention was undertaken and suppuration of the wound interfered with proper union of the sutured nerve. In a goodly number of cases secondary suture has been followed by a progressive return of the motor functions and a disappearance of the atrophy and this applies to indirect suture as well. The influence of suture on the paralytic disturbances is undeniable when the operation is resorted to soon after division of the nerve has taken place, but in cases of secondary suture the functional symptoms retrogress slowly although progressively. The sensitive and trophic disturbances are more favorably influenced by suture.

The phenomena of transitory hyperesthesia are probably due to phenomena of irritation, but they soon give way and sensibility becomes almost normal. Sensibility to contact is the longest in returning, but after about two years it will have recovered its integrity in not a few cases. In some instances it has been recovered from in a very short time. In one case the sensibility was normal a few days after suture, while in another, a pin prick could be felt by the patient on the second day. It is to be noted that in one case division of the sciatic had occurred five months previously, in three others nine months, eighteen months and two and a half years, respectively, so that a return of the sensibility in these cases is a favorable sign, although it has not the importance of the return of the motor functions.

Division of the sciatic trunk or its branches is less common than that of the brachial plexus and although the disturbances to which it gives rise are not so important as those resulting from division of the nerves of the upper limb, walking is seriously interfered with permanently. When the sciatic is divided at its upper part, and at the same

time the lesser sciatic is divided above the anastomosis that it sends to the external saphenous nerve, the anesthesia will generally extend throughout the entire territory of the sciatic nerve. One of the branches of the sciatic and the trunk of the nerve itself at its lower part may be divided without giving rise to complete and extensive anesthesia. Trophic disturbances, and those of nutrition, complicate the prognosis of division of the sciatic on account of their frequency and persistency. Suture of the divided nerve causes both the trophic disturbances and the anesthesia to disappear and lessens the paralytic phenomena, even when undertaken some time after injury.

THE PENALTIES OF INDUSTRIAL EMINENCE.

There is a reverse side to every picture. An object lesson of the result of the reprehensible custom of lavishly using human material is afforded, to some extent, by the British nation at the present time, if the report upon the Physical Examination of Men of Military Age by National Service Boards from November 1, 1917, to October 31, 1918, is to be taken exactly in its literal sense, that is, without certain reservations. The report is most depressing and shows that a considerable portion of the manhood of Great Britain in the period mentioned was absolutely unfit. It may be said at once that for the first time, a mass of facts and details has been provided which casts a bright light upon the physical condition of the manhood of Great Britain, and, what is perhaps even more to the point, the effects of industrial life upon the health and general well being of a people. The first warning given that race deterioration was exhibiting itself in serious forms among the British population was given by Sir Frederick Maurice when recruiting was going on for the Boer War. Commissioners were appointed and the outcome was the medical inspection of school children and their medical treatment to a limited extent.

Before proceeding to a closer examination of the figures of the report issued recently it should be said that they cannot be taken altogether at their face value, because they are based on medical examinations held during a period when the British Ministry of National Service was sweeping the last remnants of available manhood into the army. Already millions of young men, the pick of the country, had put on khaki, and moreover a goodly number of workers in certain occupations had been kept at work and not examined. On the other hand the sedentary trades were called upon to send away every

man. Lastly, the figures of 250,000, or ten per cent. of the number examined rejected as totally unfit, represent not individuals but medical examinations. There is no getting away from the fact that the report furnishes a grave indictment of the effects of city and industrial life on a people and indicates that there has been a progressive deterioration among the inhabitants of Great Britain.

The chief reason for the degenerative process undoubtedly seems to be that a steadily and rapidly diminishing proportion of the nation's children are being born to parents and in environments such as promise them the best inheritance. The classes least able to bring up healthy children mentally and physically supply the bulk of the population. The population of Great Britain is not only very largely urban but the cities themselves are mostly industrial, smoky, dirty and overcrowded.

This fact must be remembered, however, that it is impossible, or well nigh so, to have the health advantages of the country with the prosperity, social advantages and distractions of the city. While it is perfectly true that industrial conditions generally involve race deterioration, which if continued sufficiently long will bring ruin, people cannot be persuaded to endure nowadays the monotonous, unexciting life of the country, however healthy it may be. The alternative is to render city life as healthy as possible, to build comfortable, adequate, well ventilated houses in airy localities and to make the conditions of industrial labor not only hygienic and sanitary but pleasant and interesting. The penalties of industrial life, as has been shown, are all around us. In order to bring about the regeneration and salvation of the race, the conditions of industrial life and of the houses of the workers must be so changed that toil will be less monotonous and unhealthy, and overcrowding and dirty homes things of the past. It may be said that America has already made a move in this direction, and that the condition of her working classes compares favorably with those of Europe. Yet it may be added that in this country, and particularly in certain parts of it, there is room for much improvement.

DIAGNOSIS AND PROGNOSIS OF SOLITARY TUBERCLE OF THE CHORIOID.

At the onset, this ocular affection is not suspected, as all objective or subjective symptoms are wanting. In the more advanced phases of the process, the lesion gives rise to indefinite ocular symptoms common to other diseases of the eye and it is only by an examination of the fundus that the peculiar character of the tuberculous pseudoneoplasm of the chorioid will give a clue to the

diagnosis. The solitary tubercle varies in size and never projects more than two to three millimetres above the surrounding surface. It is a pale yellowish white, while its borders are gradually lost in the unchanged chorioid surrounding it. Frequently, on account of secondary complications, such as corneal or crystalline opacities, it will be found impossible to distinguish the characters of the lesion in the fundus oculi.

The globe presents inflammatory lesions and a decrease of the intraocular tension; hypotonia is a diagnostic sign of great value. But these symptoms are not sufficiently constant to be considered pathognomonic of tuberculous pseudoneoplasms of the chorioid and it is only by puncture of the tubercle, followed by guinea-pig inoculation with the material removed, that a positive diagnosis of the lesion can be made. The age of the patient and data regarding the general health are important for the differential diagnosis. This morbid process develops spontaneously in tuberculous subjects, usually with advanced lesions. Solitary tubercle of the chorioid has been met with more frequently in subjects between the ages of two and twenty years. If the patient is manifestly tuberculous or when the pseudoneoplasm offers distinctly appreciable characters, the diagnosis is not difficult to make, although this lesion often progresses with characters belonging to true intraocular neoplasms, such as detachment of the retina or glaucomatous accidents.

In solitary tubercle of the chorioid, the tuberculous masses give rise to distant inflammatory reactions, such as iritis or iridocyclitis, while in the case of a malignant growth no other ocular lesion than that of the tumor itself will be found. Inflammatory phenomena are so exceptional that they should be regarded as a secondary infection superadded to the neoplastic process. A very important point to be determined for the differential diagnosis, to which Zur Nedden has particularly called attention, is the invasion and early perforation of the sclera without being preceded by glaucomatous phenomena, while during the evolution of intraocular growths perforation takes place after a rather long lapse of time always preceded by a glaucomatous phase. A malignant neoplasm invades the entire ocular globe, causing it to project outwardly. This fact has been confirmed many times. In Dupuy-Dutemps's patient the scleral ectasis was marked three months after the onset of the process, while in Natauson's second patient perforation of the sclera occurred at the end of two months. In Botesat's patient there was a marked sclerotic ectasis with perforation three weeks after the onset of the affection.

After perforation has taken place the tuberculous neoplasin progresses slowly and in some cases appears to become attenuated. In malignant growths the opposite phenomenon is observed, the neoplasm developing rapidly externally and invading the surrounding structures. Spontaneous recovery from this ocular lesion rarely has been known to occur, even with complete return of the sight, but usually vision is quickly lost, especially in children, while in adolescents and adults the evolution of the morbid process is slower and more benign. A primary tubercle of the chorioid appears to progress more rapidly than when it develops in a tuberculous subject, when its evolution is likely to be slower and less serious. Generalization of the process usually takes place after perforation of the sclera, but cases have been observed where symptoms of generalization were manifest before perforation had taken place.

WAR ON TUBERCULOSIS IN QUEBEC.

Public conditions are said to be very bad in nearly every community when there has been a laxity in controlling the tuberculosis menace. It takes time and persistent education and agitation to arouse governments to a proper sense of their responsibility in safeguarding the health of the people they are elected to govern. There is, however, accumulating evidence that governments are doing better and in many instances have gone to the extent of establishing departments of health. Given a free hand, unhampered by political intrigue and party exigencies, departments of health will come to exercise weighty influences upon the health of the people in any state, province, or nation.

The province of Quebec is no longer to allow the tuberculosis problem to be neglected. Through its Superior Board of Health a decision has been arrived at whereby a campaign will be inaugurated against tuberculosis which is expected to win the gratitude of the people of that province. The preliminary action has been the appointment of a committee to study the question—how best to proceed—what to do. The members of that committee are well known physicians, zealous, competent, experienced in public health work. They are Dr. E. M. Desaulniers, Dr. R. R. Paquin, J. E. Laberge, and Dr. J. A. Beaudoin, the latter being appointed to act as secretary of the committee.

It is understood that the whole force of governmental assistance will be summoned to participate, both Federal and Provincial, and that boards of trade, the pulpit, platform and press will be brought into line so that a united front will be presented to this unseen enemy of Quebec.

THE UNCRADLED CHILD.

The cradle, which was for so long an indispensable piece of furniture, has had to go; presumably it was a bad thing for the modern infant to be rocked. The results in health are not apparent, for we cannot see that the cradleless child is any more stable in his bodily or mental affairs than his much rocked ancestry. Certainly before birth the child has, for two thirds or so of his time, a constant shaking about in all directions, upside down as well as right side up, and it is little wonder that, after seeing the light of day, he should enjoy being tossed about, and demand it.

Desires unsatisfied in youth are sure to seek satisfaction later, and who will say that the demand for speed, for chasing about on the earth and in the air, is but the outcome of this pentup desire for motion of the uncradled child. After all, was the cradling of a child a harmful process? True, it took much of the time of the adults, but it gave them some gentle exercise and kept their minds from straying to less happy fields of thought. We are not so sure but that the rocking of the child was harmless to the child as well as beneficial to the parents.

BIOGRAPHY OF SIR WILLIAM OSLER.

We are glad to direct the attention of those of our readers who may possibly have been acquainted with the late Sir William Osler to a letter from Dr. Harvey Cushing, asking for letters or personal reminiscences to be used in a biography of the great leader which he is preparing. The letter follows:

Lady Osler has requested me to prepare a biography of her husband and I will be most grateful to anyone who chances to see this note, for any letters or personal reminiscences, or for information concerning others who may possibly supply letters.

Copies of all letters, no matter how brief, are requested, and if dates are omitted it is hoped that they may be supplied if possible.

If the originals are forwarded for copy they will be promptly returned.

HARVEY CUSHING, M. D.,
Peter Bent Brigham Hospital,
Boston, Massachusetts.

News Items.

Rank for Army Nurses.—The provision for military rank for army nurses, which is a section of the army reorganization bill, has been passed by Congress.

Air Service Medical Association.—The next meeting of the Air Service Medical Association will be held on April 26th at the St. Charles Hotel, New Orleans.

Smallpox in Belleville, N. J.—Nineteen cases of smallpox, for the most part in children between the ages of ten and fourteen, are reported to have been discovered in Belleville, N. J. Public gatherings have been banned and all the school children are being vaccinated. All cases reported so far are said to be mild.

Leprosy in the United States.—During the week ending February 14th one case of leprosy was reported at Houston, Tex., and one death from the disease in Norwood, Ohio.

U. S. Civil Service.—An examination for medical intern in Saint Elizabeth's Hospital, Washington, D. C., at \$1200 a year and maintenance, will be held on July 1st. Other vacancies will also be filled from this examination.

Rochester Municipal Hospital.—A new power plant is being erected at the Municipal Hospital, Rochester, following which it is understood a fire-proof wing is to be added. Eleven acres of land adjacent to the institution have been acquired for future expansion.

S. W. Fairchild Honored.—Samuel W. Fairchild has been made a chevalier of the Legion of Honor, in recognition of his work as the head, in this country, of the Permanent Blind Relief War Fund for soldiers and sailors of the Allies blinded in the war.

Kappa Psi Installed at Columbia.—The installation banquet of the Gamma Gamma chapter of the Kappa Psi medical fraternity in the College of Physicians and Surgeons of Columbia University took place on March 19th at the Hotel Astor, New York. In connection with this event were the annual joint banquets of the Gamma chapter, Beta Upsilon chapter, New York Graduate chapter, and Brooklyn graduate chapter.

Local Medical Societies.—The following local medical societies will meet during the coming week.

MONDAY, March 29th.—Medical Society of the County of New York (stated meeting).

THURSDAY, April 1st.—New York Academy of Medicine (stated meeting); Brooklyn Surgical Society.

FRIDAY, April 2nd.—New York Academy of Medicine (Section in Surgery); New York Microscopical Society; Practitioners' Society of New York; Society for Serology and Hematology; Alumni Association of Roosevelt Hospital; Brooklyn Gynecological Society.

SATURDAY, April 4th.—Benjamin Rush Medical Society.

Red Cross Rules Esthonia.—A press dispatch from Esthonia states that in addition to the regularly constituted executive body of the country, the American Red Cross Commission, under command of Lieutenant Colonel Edward Ryan, of Scranton, Pa., is virtually ruling the country. The commission has been vested with authority to take any measures, political or economic, to stamp out the plague of typhus. The Esthonian government, realizing its inability to cope with the danger, has given the Red Cross authority to put the country under strict quarantine.

Woman's Medical Society.—The fourteenth annual meeting of the Woman's Medical Society of New York State was held Monday, March 22nd, at the Hotel McAlpin, New York, under the presidency of Dr. Elizabeth Thelberg, of Poughkeepsie. Officers elected for the ensuing year were: President, Dr. Lois L. Gannett, of Adams; first vice-president, Dr. Florence L. Staunton, of Utica; second vice-president, Dr. Mathilda K. Wallin, of New York; third vice-president, Dr. Louise M. Hurrell, of Rochester; secretary, Dr. Harriet M. Doane, of Fulton; treasurer, Dr. Elizabeth L. Shrimpton, of Syracuse.

Chinese Medical Congress.—The annual joint conference of the two medical associations of China, the National Medical and the Medical Missionary Associations, was held February 21-28, in the new Peking Union Medical College Hospital.

Medical Women's National Association.—The fifth annual meeting of the Medical Women's National Association will be held April 26th and 27th in New Orleans, immediately preceding the meeting of the American Medical Association. Headquarters will be at the St. Charles Hotel.

Home for Incurables.—The Beth Abraham Home for Incurables was opened March 22nd in the Bronx, New York. The present quarters are a reconstructed frame hotel which can accommodate only seventy-five patients, and a drive has been launched for \$200,000 to be spent on new buildings. It is planned to house 1000 patients.

New Army Hospital in Florida.—The U. S. Public Health Service has purchased the former Columbia College at Lake City, Fla., for use as an army hospital. Hospital equipment used at Camp Joseph E. Johnston, near Jacksonville, will be moved to Lake City and used in equipping the college building as a hospital.

Physicians Not Laborers.—Word comes from Oregon that a group of Portland physicians desired to form a union and affiliate with the American Federation of Labor. The application for a charter, however, was rejected on the ground that members of the medical profession receive fees and therefore cannot be classed as salary or wage earners.

Tri-State Medical Association.—The Tri-State Medical Association of the Carolinas and Virginia held its twenty-second annual session February 18th and 19th in Charlotte, N. C., under the presidency of Dr. Robert C. Bryan, of Richmond. The following officers were elected: President, Dr. John P. Monroe, Charlotte; vice-president, Dr. J. A. Williams, Greensboro, N. C.; Dr. W. W. Fennell, Rock Hill, S. C.; Dr. H. S. Hedges, Charlottesville, Va.; secretary, Dr. J. K. Hall, Richmond. Spartansburg, S. C., was elected for the place of meeting in 1921.

Medical Society of the State of New York.—The annual meeting of the Medical Society of the State of New York opened Tuesday, March 23rd, at the Hotel Waldorf-Astoria, New York. At this session announcement was made of the establishment of the National Radium Bank, which has three grams of radium valued at \$375,000 to be lent free of charge to hospitals and physicians all over the country. The bank, which is at 55 Liberty Street, has already lent \$40,000 worth of radium to the Post-Graduate Hospital for its cancer research. This radium came from Colorado and is the largest collection of American mined radium. Officers elected by the society were: President, Dr. J. Richard Kelvin, of Brooklyn; vice-presidents, Dr. W. Meddagh Dunning, of New York; Dr. Wesley T. Milligan, of Rochester, and Dr. W. A. Purdy, of Westchester; secretary, Dr. Edward L. Hunt, of New York; treasurer, Dr. Harlow Brooks, New York.

State Regulation of Boarding Houses for Tuberculosis.—A bill introduced into the New York State legislature by Senator Julius Miller provides for the licensing of boarding houses for tuberculosis patients and for their supervision by the State and local health boards. Tuberculosis patients will be permitted to go only to country places where the climate is suitable, the houses maintained in sanitary condition consistent with the demands of the sufferers, the food adequate, and medical supervision for emergencies furnished by the State. Patients unable to pay will be aided by the State. Others will be required to pay one third of their expenses; one third will be paid by the county and the other third by the State.

Japanese Gift to Red Cross.—The Empress of Japan has established a fund, the income of which is to be used to promote public health and preventive medicine, under the direction of the International Committee of Geneva. The fund is to be utilized for the following purposes: 1, For work which the International Committee of Geneva or the Red Cross societies deem advantageous for the general interest in their peacetime program; 2, to popularize the methods adopted by the Red Cross societies and recognized by the best authorities for the prevention or extirpation of tuberculosis and other malignant contagious diseases; 3, to aid the rescue work of the Red Cross societies for victims of great disasters. Red Cross societies desiring to obtain grants of funds will apply to the International Committee at Geneva.

Cause of Olive Poison.—The U. S. Bureau of Chemistry has just concluded an investigation, in cooperation with the Public Health Service, into botulinus poisoning. The report states that failure of some packers to use a sufficiently high temperature during sterilization of ripe olives in glass containers permitted the development of the botulinus germ. The poison would develop just the same in tin containers if the olives were not sufficiently processed, but as there is no danger of breakage involved in tin, the packer does not hesitate to apply the proper degree of heat to kill the germ in sterilization. The investigation disclosed only one fatality where a tin container was involved, but this contained a relish of minced ripe olives, the poison forming through inadequate processing.

Strike of Volunteer Hospital Workers in Vienna.—Difficult conditions of life in Vienna have given rise to a strike of unusual character. Formerly only a small proportion of the hospital medical staffs were paid. The house physician and two or three clinical assistants received a moderate salary, but all the others got was honor and hard work. With the change produced by the decline of Austrian money, these men could no longer live on their mostly very limited means. They demanded a salary as well as the right to obtain inexpensive meals at hospitals or clinics, and after futile appeals to both the government and the medical faculty, a strike was proclaimed on February 1st. The strike lasted only two hours. The demands were not granted entirely, but the strikers agreed to await further arrangements. It is reported that the public was anxious to see the question settled in favor of the physicians.

American Medical Association.—The seventy-first annual meeting of the American Medical Association will be held April 26th-30th in New Orleans. The House of Delegates will convene at 10 a. m. Monday, April 26th; the scientific session will open with the general meeting to be held on the evening of Tuesday, April 27th, and the sections will meet on Wednesday, Thursday, and Friday, April 28th, 29th, and 30th. Surgeon General William C. Braisted, U. S. Navy, will be installed as president of the association at the opening meeting. The Bureau of Registration will be located in the Josephine Hutchinson Memorial Building, Canal Street, between Villere and Robertson Streets, where a branch postoffice and a bureau of information will also be maintained. A series of clinics has been arranged by members of the local profession on April 22nd to 24th and April 26th and 27th and May 1st.

A number of nonaffiliated organizations will hold meetings in New Orleans during the days immediately preceding those on which the scientific sessions of the association will be held. These organizations are the Air Service Medical Association of the United States, American Radium Society, Association for the Study of Internal Secretions, Association of American Teachers, Diseases of Children; Association of Military Surgeons of the United States, Louisiana State Medical Society, Medical Veterans of the World War, and the Radiological Society.

Among the guests from foreign countries who are expected to be in attendance at the meeting are Sir Humphrey Davy Rolleston and Col. H. J. Waring, of London; Dr. Norman Walker and Dr. A. H. Freeland Barbour, of Edinburgh; Prof. Victor Morax, of Paris; Prof. J. C. Connell, Kingston, and Alexander Primrose, Toronto, and a number of physicians from Mexico and South America.

The sixth tournament of the American Medical Golf Association will be held April 26th at the New Orleans Country Club, under the auspices of the local committee, Dr. Clyde Lynch, Dr. Larry De Buys, and Dr. John Elliott, Jr. There will be many and varied entertainments provided for members who attend the conference, chief among which will be an event to be known as the President's ball.

Chairmen of the various sections are: Practise of medicine, Dr. James S. McLester, Birmingham, Ala.; surgery, general and abdominal, Dr. Dean D. Lewis, Chicago; obstetrics, gynecology, and abdominal surgery, Dr. Reuben Peterson, Ann Arbor, Mich.; ophthalmology, Dr. Allen Greenwood, Boston; laryngology, otology, and rhinology, Dr. Joseph C. Beck, Chicago; diseases of children, Dr. Fritz B. Talbot, Boston; pharmacology and therapeutics, Dr. George W. McCoy, Washington, D. C.; pathology and physiology, Dr. Howard T. Karsner, Cleveland; stomatology, Dr. Vilray P. Blair, St. Louis; nervous and mental diseases, Dr. Arthur S. Hamilton, Minneapolis (vice-chairman, succeeding the late Dr. Elmer E. Southard); dermatology, Dr. Oliver S. Ormsby, Chicago; preventive medicine and public health, Dr. James A. Hayne, Columbia, S. C.; orthopedic surgery, Dr. George W. Hawley, New York; gastroenterology and proctology, Dr. Frank Smithies, Chicago.

Book Reviews

TEXTBOOK ON THE NOSE.

The Nose, Paranasal Sinuses, Nasolacrimal Passageways, and Olfactory Organ in Man. A Genetic, Developmental, and Anatomico-Physiological Consideration. By J. PARSONS SCHAEFFER, A.M., M.D., Ph.D., Professor of Anatomy and Director of the Daniel Baugh Institute of Anatomy of the Jefferson Medical College of Philadelphia; Formerly Assistant Professor of Anatomy, Cornell University Medical College, and Professor of Anatomy, Yale University Medical School. Illustrated. Philadelphia: P. Blakiston's Son & Co., 1920. Pp. vii-370.

Seldom has a more carefully compiled monograph been published. The book is the result of painstaking work covering a long period. Aside from the direct value of the book it is gratifying to find so thorough an analysis of this small but highly important portion of the human body. Another point worthy of note is the way Schaeffer has correlated the various adjoining structures of the nose and traced them to their embryonal relationship and also taken them up from every angle in which they could possibly have any bearing on the olfactory organ. In spite of the minute descriptions which are given, the functioning organ as a whole is never lost sight of. The only criticism one could offer is that the part devoted to the physiology of the nasal apparatus is not as extensive as a monograph of this size would warrant. It seems as though the exposition might be continued into the realms of physiology and pathological physiology and so give more concrete value to the book. However, this should in no way detract from the value of the material.

As a study, the relations of the maxillary sinus to the teeth is of special interest. The variations which are so seldom given sufficient care during operation or in the consideration of pathological phenomenon are here carefully discussed. The recess formations, the communications with the dental canals, and the changes incident to age and disease are set forth. Attention is directed to the intimate relationship existing between the teeth and maxillary sinus. The author warns, however, of the danger of overemphasizing this relationship on a causal basis as he thinks dental disturbances may have their origin from a diseased maxillary sinus as frequently as the disease may originate in the teeth. This is a disputed point and the correct answer is not as essential as the necessity of remembering the relationship and giving it due consideration when a pathological condition exists in one or the other location.

The frontal sinus is beautifully described. The embryonal development and variations are portrayed and examples of the various possibilities are shown in diagram. A warning is given against making a diagnosis of the absence of frontal sinuses when in reality they are merely diminished in size. Careful searching is advised in order to avoid errors in diagnosis. The frequency with which important chronic and even extremely virulent infections are overlooked in this region should cause us to direct more attention to this portion of the nasal tract. X rays and transillumination should be more frequently used and the relationship of the sinuses to each other and to the corresponding anatomical structures

would prevent many serious errors and lead to earlier diagnosis and the prevention of grave complications. It may be conceded that the general practitioner is not competent to do expert work in this region, nevertheless he should know enough of the essentials to enable him to recognize trouble in this vicinity when it occurs, and not allow morbid processes to gain a foothold to any unnecessary degree. Little credence is given to the so-called genital spots designated by Fleiss. However, the study of the erectile tissue is based on histological evidence. Clinical evidence as submitted by Fleiss and other workers is more convincing than the more limited microscopical study. The decision in a case of this kind should not be left to the specialist. This would also hold for examples like the relationship of various teeth to the endocrine glands. The histology worker may not be able to demonstrate any difference structurally between the incisors and the lateral incisors, but clinically their relationship to endocrine disorders has been proved beyond doubt.

The vascular and nervous distribution is beautifully described and no set course is followed. This has enabled the author to link together possible etiological, physiological, and pathological factors in the consideration of diseased conditions. The germicidal powers of the nasal fossæ and its related paranasal sinuses are given, the action of the ciliated epithelium and the bactericidal properties of the nasal mucosa. The importance of respecting the functions of the erectile portions of the nasal mucous membrane is emphasized.

THE AMERICAN PLAY BY AN ENGLISHMAN.

Abraham Lincoln. A Play by JOHN DRINKWATER. With an Introduction by ARNOLD BENNETT. Boston and New York: Houghton, Mifflin & Co., 1919. Pp. 112.

Some critics have said that this should have been written by an American, but there are many reasons for doubting the possibility of improving on Drinkwater's achievement. An indigene of this country today could not have a clearer picture of the United States in the days of Lincoln. Extensive use has been made of the symbols—homely symbols—which characterized Lincoln's greatness, earnestness and fixity of purpose. He is not a fortunate statesman, ably meeting issues as they arise; his power is shown in his creating a tremendous situation and then solving it. His greatness is shown by another bit of play on symbols in regard to alcohol. In his home strong drink is not found, but when Grant is mentioned as a leader for the armies of the North, the fact of his being a heavy drinker does not stand in the way of his appointment to the command by Lincoln. He may be a heavy drinker but he wins victories, Lincoln tells his cabinet.

The crudities of his character are shown and his disregard for the petty niceties. Drinkwater reveals how this man was needed to handle the important question of abolition. A polished statesman like Seward could not have met the situation. More than polish was required.

Another pleasing picture is shown in Lincoln's interview with two female visitors at the capitol. The one is opposed to the war because blood is being shed. She has lost her son. She pleads with Lincoln to end the war. She cannot see the big issue at stake—that liberty must be bought with blood. Lincoln does not agree with her, but he sympathizes and respects her, understanding fully her point of view. She, the pacifist, and he, the militant abolitionist, still remain considerate friends. The other visitor is overjoyed at the continuation of the war. She gloats over the deeds of the army and blatantly talks of extermination and punishment. It develops that her husband is a profiteer. Small wonder that she thinks the war a fine business! On with the slaughter, she pleads; it helps business! After she has been ushered out by the irate president the servants are instructed not to give her entrance again. No doubt the author transferred some of the observations he made during the present war back to Lincoln's time.

It is perhaps difficult to picture Lincoln's lament over the loss of some 4,000 lives of friend and foe, the casualty figures for those of the enemy predominating, after reading the recent communiques in which the losses of a single day would reach 50,000. But Drinkwater adapted himself to the situation with great depth of feeling. We owe to this Englishman—the son of our forefathers—a great debt for his characterization of our noblest statesman.

PARADOXES.

Irish Impressions. By GILBERT K. CHESTERTON. New York: John Lane Company, 1920. Pp. ix-222.

Mr. Chesterton has gone forth, armed with the "higher ignorance," on the trail of the Irish bull. What he has brought back is the Chestertonian epigram, embellished and with a few kinks in its tail.

It is no secret that Mr. Chesterton can say more in a phrase than in a paragraph, more in an epigram than in a chapter. His most important contribution to the Irish Question is summed up in a sentence: "Englishmen would see a situation of great interest, objects with which they could feel considerable sympathy, and opportunities of which they might take considerable advantage, if only they would really look at the place plain and straight, as they would at some entirely new island, with an entirely new name, discovered by that seafaring adventure which is the real romance of England." The difficulty lies in the words "plain and straight"; the hardest thing in the world is to see anything plain and straight. The Ireland which Mr. Chesterton sees is an entirely different Ireland from that which a similar expedition would reveal to Mr. H. G. Wells, or Mr. Kipling, or the correspondent of the London *Daily Herald*. Mr. Chesterton, for example, has little or nothing to offer on what might be considered the more burning political and economic questions of the day. He realizes that the British policy toward Ireland has been wrong, on the ground of expediency if on no other, and that the British military government there "succeeded in half killing its friends, and affording an intelligent but somewhat inhumane

amusement to all its enemies." He realizes furthermore that Ireland is a nation—"if we free Ireland, we must free it to be a nation; if we go on repressing Ireland, we are repressing a nation"; but it is only by implication that he can be said to be for Irish freedom. He sees in the small peasant proprietor a problem as much to the socialist program as to the capitalist state of the present, but he sees that problem in a light not vouchsafed to either party. Mr. Chesterton thinks he is a radical, but we do not agree with him. His is a mind that projects itself backward to the era before the industrial revolution, and he, too, sees a "new freedom" constituted of peasant proprietors, with the family and the church vital factors.

And in his aims he is right. "It is right that men should have houses, right that they should have land, right that they should have laws to protect the land; but all these things are only machinery to make leisure for the laboring soul." One may disagree as to the institutions—economic and spiritual—which form this machinery, but here, again, the author has stated a pregnant philosophic truth.

In spite of his medieval trend, however, we are not sure that we do not prefer Mr. Chesterton's Ireland to that of the gentlemen previously suggested. For Mr. Chesterton, who takes epigrams seriously and serious questions epigrammatically, has found in Ireland that most congenial of stimulants—a paradox. In this Englishman who, ironically enough, went to Ireland to stimulate British recruiting and remained to disapprove of British conscription, there is a kinship with much that is lovely in Ireland. Mr. Chesterton is peculiarly fitted to write sympathetically and beautifully about a country where "the Christian ideal was something more than an ideal"; where poetry is a staple, like bread; where the intellectuals are really intellectual. It is such a country, we think, as "himself" might have designed.

THE PATHOLOGICAL STOMACH.

Le Contenu stomacal à jeun à l'état pathologique et les catarrhes gastriques. L. PRON. Deuxième Edition, Modifiée et augmentée. Paris: A. Maloine et Fils, 1920. Pp. vi-65.

The purpose of this book is to emphasize the importance of a study of the contents of the fasting stomach in gastric disorders. The author holds that examination of the stomach contents early in the morning, before breakfast, frequently offers highly serviceable clinical indications. Splashing sounds can often be elicited under these circumstances, and such sounds, he finds, are only rarely due to an actual retention of food in the stomach. Presence of gastric juice, even in small amount, in the stomach upon awakening is to be considered pathological. Pron divides the cases further into those with both free and combined hydrochloric acid, those with combined acid without free acid, the cases of mucous catarrh, those with serochloride fluids, those with biliary fluids, and those with residual food. The clinical peculiarities of these various types are described and the prognostic bearing of each pointed out. The book should prove of some interest to the general practitioner and of great service to the specialist in gastroenterology.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

RECENT GLEANINGS IN DIPHTHERIA PROPHYLAXIS.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

Prompt recognition of the presence of true diphtheria bacilli in patients or carriers reduces not only the risk of transmission of the infection to other persons, assuming that isolation can then be satisfactorily instituted, but also that of a fatal issue in the clinical cases themselves. While the reduction in diphtheria mortality from the use of antitoxic serum is so completely proven as no longer to require emphasis, it is still insufficiently recognized, perhaps, that a further reduction in mortality can be effected by the administration of antitoxin at the earliest possible moment in the course of the disease. Indeed, at the Philadelphia Hospital for Contagious Diseases no case in which antitoxin was administered during the first twenty-four hours of the disease has ever been lost, according to a recently published bulletin. Complete utilization of this fact in the elimination of diphtheria mortality would require, in the first place, education of the general public to a realization of the potential seriousness of all cases of sore throat, however mild, in children, as well as of croupy coughs and of dirty white or yellowish nasal discharges, and in the second place, immediate administration of antitoxin injections when such cases are first seen by the physician. In practice, however, these requirements are not wholly attainable, particularly in the mildest, least suspicious cases, and the physician's efforts are restricted from the start, according to the period of the disease at which he first receives the individual case, as well as by the apparent uselessness of administering antitoxin in disorders so mild or incipient as only remotely to resemble the typical, established diphtheria case.

Not infrequently conditions are such as to make immediate administration of antitoxin, before the result from a culture is at hand, seem advisable. At other times, more especially in the milder or very recent cases, the culture is accorded greater importance as a guide to the necessary treatment, the laboratory report being awaited before antitoxin administration on the ground—sometimes deceptive—that the morbid condition present is as yet so slight, doubtful, and slowly progressive, that the patient's safety can hardly be jeopardized by a brief period of delay.

In the detection of carriers the culture is likewise, as previously emphasized, an important means of reducing the sum total of damage done by the disease. Aside from the favorable results undoubtedly secured by culturing all house contacts in clinical diphtheria cases, culture work has demonstrated the danger to which school children are exposed when sitting in the same classroom, even for a rela-

tively short period, with one or more pupils harboring diphtheritic infection. The advantages to be derived from free culturing in the schools when trouble from this infection arises were illustrated in the sporadic series of diphtheria cases that occurred in one of the Philadelphia schools in the winter of 1915-16. Twenty cases developed among the pupils in this institution, and there were also forty-seven exclusions of other children from the school because of contact with these or other neighborhood cases. Upon culturing of the entire school, positive cultures were obtained from the throats of twenty-one apparently healthy children.

Manifestly, the technic of culturing and culture study for diphtheria infection should be such as will yield the most reliable results as promptly as possible. The true diphtheria germ is, unfortunately, almost identical in morphology with a number of other organisms, and definite recognition of it in smears from the throat or from nasal discharges is attended with some difficulty. The diphtheria organism itself is subject to morphological variations which, according to some, bear a relationship to its virulence and toxicity. Further, there may occur as confusing factors in throat or other secretions the bacillus of Hoffmann or pseudodiphtheria bacillus; the bacillus xerosis, a harmless parasite sometimes abundant in the presence of mild conjunctival inflammations, and the diphtheroid bacilli, also frequently referred to as belonging to the group "corynebacterium."

Surgical Aspects of Spinal Tumors.—P. Sargent (*British Medical Journal*, January 10, 1920) reports on a series of twenty-seven cases of neoplasm of the cord operated upon during the last ten years. Fifteen of the cases were of encapsulated intrathecal extramedullary tumors and of these all but one were of a benign type. In this group, eleven are described as showing satisfactory results, one case with a long previous history remained *in statu quo*, and three patients died. Twelve cases with tumors in other positions, all of which were of a malignant type, gave less satisfactory results. Three patients died shortly after the operation; seven showed improvement and two lived for over six years; three were unimproved. The operative procedure was practically that employed by Horsley save for the anesthesia, which in most cases was ether given intratracheally. Postoperative dangers are unexplained death, leakage of spinal fluid with general symptoms and danger of infection, acute dilatation of the stomach, and paralytic ileus. The chief results were relief of pain in practically every case, improvement of motor control and sensation in the more recent cases, improvement of sphincter control in the most satisfactory cases, and in a few of the cases, practical cure with return to a condition such that ordinary duties could be resumed.

Routine Treatment of Malaria in Uganda.—J. A. Taylor (*British Medical Journal*, January 24, 1920) has had such good results with smaller doses of quinine in the treatment of malaria than recent writers have advised, that he reports his methods of administration with results. His treatment is as follows:

1. Calomel, five grains followed in a few hours by a saline. 2. Quinine hydrochloride five grains by mouth an hour after the saline and three doses more of five grains each in the course of the next six hours. Continue the same dose of quinine every morning until the temperature has been normal for twenty-four hours. Then give fifteen grains daily, five grains before each meal for one week; after this five grains night and morning for two weeks and finally five grains every evening for two months more. 3. Phenacetin in five grain doses up to fifteen grains daily for the headache, or aspirin in the same doses when the pain is in the arms and legs as well as in the head. In all his patients there were no bad effects from the quinine and no recurrences of the fever during the treatment. The temperature was normal after three to five days. The object is to get in all the quinine before the rise in temperature to avoid so much likelihood of vomiting. When the morning temperature was up, the doses were given at less frequent intervals and if the temperature arose above 104° or the quinine was vomited before fifteen grains were given, intramuscular injections of quinine were given. The cases were largely of the subtertian type but in some of the true tertian type the same method was used save that the twenty grain doses were continued for two days after a normal temperature was reached. The writer considers that the calomel has an almost specific action to prepare the way for the absorption of the quinine and emphasizes the need for using the five grain dose instead of the smaller doses which in his experience have produced griping and insufficient purgative action. Only two deaths from blackwater fever occurred in this series and both of these patients had been seen late in the course of the disease. Iron and arsenic proved useful in the convalescent period.

Castellani's Bronchospirochetosis and Its Treatment.—Najib Farah (*Presse médicale*, December 17, 1919) reports from Egypt ten cases of this disorder, and states that in Alexandria it is very common among both the natives and Europeans. The Spirochaeta bronchialis occurs in large numbers in the sputum, and is readily stained by the Ziehl method, with carbol gentian violet, with crystal violet, or the Fontana-Tribondeau silver nitrate method. It is negative to Gram's. The ten patients ranged in age from twenty to forty-five years. Eight patients had had a chronic cough, while two were acute cases. General health seemed unaffected, but all patients complained of a sense of oppression in the chest. Cough was most pronounced in the evening, at night, and on awakening. Expectoration varied from slight to copious and mucopurulent; in seven instances the sputum was bloody or bloodstreaked. Acute cases began with chills, fever, headache, and bronchitis, and resulted in a prolonged state of prostration. Hemoptysis

was rather frequently observed. Tubercle bacilli were uniformly absent. In the treatment, successful results were obtained by intramuscular injections of iodine in the form of lipiodol, a preparation similar to iodipin and containing fifty-four per cent. of pure iodine in oil of poppy. Five to ten daily injections of two mls were given, followed by ten to twenty injections at intervals of two or three days, according to individual tolerance. Injections were made in the buttock. No manifestations of iodism were observed, save dryness of the throat and nose in a few instances. In cases with hemoptysis, calcium chloride by mouth was simultaneously given. Oral cleanliness was insisted upon and a solution of one part each of iodine and potassium iodide applied to the pharynx every three days. In some cases tonics such as syrup of hypophosphites were also prescribed. Practically all the patients were relieved by this treatment, as shown by physical examination of the chest and the disappearance of cough. No recurrence took place. Generally improvement followed the initial iodine injection. Sputum examinations after the fifth injection showed marked reduction in the number of spirochetes. After the second series of injections they had practically disappeared, and little expectoration remained. The iodine treatment was applied also in two cases of bronchial moniliasis, with encouraging results.

Brain Abscess Complicating a Local Cranial Infection.—William Sharpe (*Surgery, Gynecology and Obstetrics*, March, 1920) states that the mortality of patients having the condition of true brain abscess is high; without operation practically 100 per cent., and with operation seventy per cent. and even higher. Subdural and localized abscesses are excluded. The diagnosis of the intracranial condition and then the accurate localization are most difficult, and for these reasons the operation of drainage must always be considered as an exploratory procedure.

The ideal operative approach is the direct one—through the infected mastoid area, dura, and into the adjacent abscess cavity—but only in the presence of an adherent dura to the underlying cerebral cortex thus walling off the infective process. In those other selected patients in whom the accurate localization of the abscess is not possible and in the absence of an adherent dura to the cerebral cortex, an exploration of the cerebral hemisphere should be performed through the clean subtemporal area, and, if the abscess is found, satisfactory drainage can be obtained. If the abscess is not located, then the risk of a resulting meningitis is practically nil, and it may be possible later to localize the abscess and to drain it. This operation, however, should only be used in these selected patients and the operation of mastoidectomy with wide exposure of the dura should always precede it in order to remove the primary infective focus and at the same time to ascertain whether or not the definite signs of an adjacent brain abscess are present. If these signs are not present, however, the dura of this infected area should not be punctured in the hope of locating the abscess, because the risk of a resulting meningitis is very great, whether the abscess is found or not.

Management of Diseases Due to Deficiency of Diet.—W. H. Willcox (*British Medical Journal*, January 17, 1920) describes the conditions in the British forces in the Mesopotamian campaign as regards the diseases due to diet. Before the importance of the conditions became recognized, there was an enormous wastage due to scurvy among the Indians and beriberi among the British. With a new field ration, formulated to prevent these deficiency diseases, there came a gradual though impressive decrease in the number of cases. The most important antiscorbutic foods in the revised diet were fresh meat, which gave striking results, the tamarind of the Indian troops, lime juice if recently prepared, and fresh vegetables and fruits. Beriberi resulted from the use of white flour bread and biscuits with insufficient fresh meats and vegetables. The addition of a yeast preparation to the diet or of atta, a wheat flour containing the essential vitamins to the bread, produced a marked reduction in the number of cases of beriberi. Details of the rations at various times are given and outlines of the routine treatment were as follows: Rest in bed as long as the anemia or cardiac dilatation persisted or while there were any severe hemorrhages; treatment of the stomatitis with applications of one half per cent. salicylic acid in alcohol twice a day; frequent washing of the mouth with a solution of alum and carbolic; scraping the tartar from the teeth and the extraction of carious teeth; the diet to consist chiefly of fresh vegetables, fresh milk, fresh lime juice and fresh meat; physical exercises twice a day to such patients as were fit.

Tuberculosis and Dislocation of the Hip.—A. Rocyn Jones (*Journal of Orthopedic Surgery*, January, 1920) reports a case of necrosis of the ilium and upper part of the acetabulum revealed by the x ray in a boy of eight. It was found that the boy was suffering from tuberculosis of one hip and congenital dislocation of the other. In order to treat the one condition and prevent the left femoral head from wandering upward, the plaster was discarded and the boy was placed in a modified double Thomas splint, with a bar along each side of the left limb and a joint, controlled by a key, placed opposite the right hip. In this way the right thigh could be abducted at the desired angle, and at the same time the left limb was continuously extended and slightly abducted. Later a sinus appeared in the left groin, but the splint allowed the daily dressing to be carried out without disturbing the position of the limb. Several abscesses occurred, but later healed, and this coincided with the formation of bony ankylosis of the hip joint. With the treatment of the tuberculous joint the abduction of the right thigh gradually diminished so that the right half of the instrument was discarded and the boy allowed to exercise his right limb, but due to the formation of abscesses the mobilization of the left limb was continued. The physical condition of the boy improved and he put on weight. The left hip became firmly ankylosed with the limb in good alignment, the reduced dislocation of the right side remained thoroughly stable under all movements of the thigh, but a little rotation of the limb remained.

An Untoward Effect of Intravenous Mercury Cyanide Injections.—Léon Renard (*Presse médicale*, December 27, 1919) notes that intravenous injections of one centigram of cyanide of mercury in one mil of water daily or on alternate days act well in syphilis, causing more rapid improvement than intramuscular injections and inducing, in his experience, no stomatitis in any case. In about one third of all instances, however, the author has observed that at the close of the intravenous injection the patient experiences a more or less pronounced odor of bitter almonds. Usually no complaint is made of the odor but a neurotic patient recently treated grew pale at the termination of the injection, her eyes became haggard, she seemed in a state of great anxiety and when able to talk again she remarked on the intense odor of bitter almonds she had experienced and explained that at the same time she had felt dizzy and dazzled. This condition lasted about ten seconds after which the patient, having been placed in recumbency, quickly recovered. This phenomenon is manifestly due to the fact that the cyanide in the blood stream reaches and excites the nasal mucous membrane and the olfactory nerve. The cyanide element in the compound is thus shown to be not entirely devoid of importance. Possibly instances of sudden death following injection of one mil of cyanide solution are to be explained on the basis of an idiosyncrasy to cyanides.

Head Light and Aspiration in Bone Surgery.—H. L. Rocher (*Presse médicale*, December 27, 1919) comments on the advantages of using a head light in operations for osteomyelitis and other bone or joint disorders. With its assistance the surgeon is enabled to inspect easily deep recesses and explore secondary cavities containing sequestra; areas of necrotic osteitis still lining the sides of osteomyelitic cavities or formerly fractured bone ends are also rendered visible. The surgeon is enabled to avoid operating beyond the infected zone of the osteomyelitis and thus inoculating a healthy marrow cavity not as yet protected by inflammatory reaction and condensing osteitis. Frequently in the chronic osteomyelitis of adolescence or in war osteomyelitis persistent suppuration is due to a single small sequestrum encysted in a little bone cavity lined with fungous tissue; with the electric head light such a condition can be detected and removed, prompt repair following. Rapid operating is advisable in osteomyelitis, but bleeding at the bottom of the osseous wound markedly slows the surgical procedure. Under these conditions the author has found aspiration with an electrically driven suction apparatus of great service. Besides greatly accelerating the procedure, aspiration obviates reinoculation of open tissues from repeated swabbing in a septic field. Capillary hemorrhage from bone stops of its own accord rather promptly after the osteomyelitic lesion has been completely cleaned; ether is then poured in, and the osseous cut surface simply covered with aseptic gauze. An extensive operation for chronic osteomyelitis of the femur, sacrum, or iliac bone need not take more than ten minutes when the aspiration is employed.

Agar Gelatin in Gastric Disorders.—F. Ramond (*Presse Médicale*, January 10, 1920) uses agar gelatin as a substitute for bismuth and other inert powders to form a protective coating for the gastric mucous membrane where it is hypersensitive or actually inflamed. It is equally as effective as bismuth in all cases unassociated with retention of food in the stomach. Pure agar is indicated in dyspepsia with hyperacidity and excessive mobility, while agar gelatin is preferable in cases of suspected ulcer and in gastric hemorrhage. The ratio of agar to gelatin, as employed by the author, is one to four. A jelly is prepared with these agents, flavored to the patient's liking, e. g., with mint syrup. In administering the preparation, one heaping tablespoonful of the jelly is allowed to melt down in a glass of hot water or infusion or in a half glass of hot vichy water—the latter in cases with hyperchlorhydria and pronounced pain. The mixture is taken at the same hours of the day as bismuth—either once daily, on awakening, or three times a day, once in the morning and again half an hour before the noon and evening meals. While there is no pyloric retention, it is well to give it a fourth time, four hours after the evening meal, that it may act overnight. On awakening and at bedtime the patient lies for a few minutes on his stomach and on either side, as with bismuth. In cases of hyperchlorhydria sodium bicarbonate or prepared chalk may be added to the agar gelatin, and in dyspeptics with pain and spasm such remedies as tincture of belladonna, laudanum, antipyrin, sodium bromide, or bismuth subcarbonate. As the agar gelatin does not keep well, powders of dry agar and gelatin may be made up and placed in a cupful of boiling water before use.

Operative Methods in Empyema.—H. Lilienthal (*New York State Journal of Medicine*, October, 1919) discusses the treatment of empyema which he classifies under four heads. 1. Empyema resulting from pneumonia must be considered as likely to present numerous cavities due to the rupture of several small lung abscesses into the pleural cavity at different points. These must be discovered at the operation or subsequently by means of the x ray when the removal of the main body of the pus makes their detection possible. If mechanical pressure be the cause of the chief symptoms, the pus may be removed by simply inserting a cannula into the lower part of the pleural sac and allowing the pus to run out and be replaced by air which at the end of the evacuation may be forced out by having the patient strain with the glottis closed and withdrawing the cannula when the last bubble of air escapes. Occasionally this is not followed by a recurrence of fluid but if the fluid does reappear, the lung is now splinted by an exudate on its pleura so that a tightly fitting tube may be inserted between the ribs and constant drainage instituted without the danger from a sucking wound. Evidence that such drainage is not clearing up the case is an indication for a thoracotomy and opening up of all pockets with the subsequent use of the Carrel-Dakin method of disinfection. 2. Empyema complicated by a lung abscess of appreciable size is treated by the resection of five or six inches of rib, including the periosteum, so that no bridge of new bone will

interfere with satisfactory drainage. The opening into the abscess may frequently be identified but it must not be drained with gauze or tube because of the danger of rupturing the pulmonary vessels. The Carrel-Dakin method is not of use here because of the bronchial fistula practically always present. The insufflation of oxygen, two drops a second for forty-eight hours, is of distinct value. Blow bottles, or simpler still, rubber bags to inflate are to be used for the distention of the lung. When the cavity is practically gone and nothing but a fistula remains, bismuth paste injected once will usually bring about a quick healing. 3. Chronic empyema with thoracic fistula must be explored through an intercostal incision and division of ribs over the cavity. This procedure has also been employed with success by the writer as a primary operation where the patient was not too ill to stand the operation. It allows of the complete opening of all the pus pockets and well prepares the way for the Carrel-Dakin treatment used afterwards. The warning against filling the cavity under any pressure of fluid whatever is emphasized. 4. Traumatic empyema, resulting from infection, without hemothorax, and from infected hemothorax, is mentioned only to lay stress on the poor prognosis even with the most careful surgery.

Stripping of the Os Calcis.—Arthur Steindler (*Journal of Orthopedic Surgery*, January, 1920) describes an operative procedure for the relief of certain cases of cavus deformity of the foot. The operation consists mainly in the subperiosteal stripping of the muscular attachments to the anterior surface of the os calcis. The following technic was employed: A curved incision was made horizontally from the posterior aspect of the heel in front to the inner side of the foot, reaching to a point one and a half inches in front of the tubercle of the os calcis. The upper surface of the plantar fascia was then dissected from the covering fat layer of the foot and made free through the entire width of the fascia to the lateral side of the foot. The fascia was incised across its insertion to the lower surface of the os calcis. A sharp periosteal elevator was then inserted and a subperiosteal stripping of all structures attached to the lower surface of the os calcis was carried out.

It was necessary to extend the stripping over the under side of the os calcis to its junction with the cuboid in order to detach the ligamentum plantare longum, which was often contracted and the cause of the cavus deformity, at the outside of the foot. By keeping close to the inner tuberosity of the os calcis one was at a safe distance from the plantar vessels and nerves. After the stripping process had been carried out the wound was closed by subcutaneous suture and the skin was sutured with catgut. In some cases the operation had to be accompanied by osteotomy of the tarsus in order to overcome the talipes cavus deformity of the skeleton. In a series of other cases dropping of the first metatarsal and retraction of the big toe was overcome by Sherman's procedure, that is, by severing the extensor of the big toe beyond the metacarpal phalangeal joint and fastening the tendon to a point to the head of the first metatarsal.

Miscellany from Home and Foreign Journals

Epidemic Encephalitis Lethargica.—Beverley R. Tucker and S. W. Budd (*Virginia Medical Monthly*, December, 1919) report experience with about forty cases of this affection, which they consider to be either an influenza complication, a recrudescence of influenza, or an expression of influenza in a cerebral form. The interesting points of the disorder are the somnolence, varying in Tucker's experience from one day to 129 days in duration, the occurrence of various transient cranial nerve palsies, the finding of choked discs, increased cerebrospinal fluid pressure, leucocytosis of the cerebrospinal fluid and blood, increase in the urea content of the blood, and many and varied changes in the superficial and deep reflexes, with at times muscular rigidity and at times flaccidity. Budd examined the brain in his autopsied cases, and gives the detailed findings in two instances. Enormous engorgement of the vessels entering the longitudinal sinus was observed. Infiltration of the meninges with mononuclears, polynuclears, blood, and fibrin were noted, and definite adhesions between the base of the brain and the emergent nerves were found. In one case there was marked dilatation of the ventricles. The most salient features, however, were enlargement, engorgement, parenchymatous degeneration, and exudation of leucocytes, both mononuclear and polynuclear, in the anterior and posterior lobes of the pituitary body. In one instance the pituitary body is described as having been found much congested and infiltrated with blood cells, with some cloudy swelling of the cells. In the other case the anterior lobe showed slight enlargement of the sinuses and cloudy swelling of the parenchyma, while the posterior lobe showed infiltration with leucocytes and blood cells. The authors deduce from these findings that the somnolence in this disease is due chiefly to pituitary gland involvement.

A New Leg Test for Pyramidal Tract Impairment.—J. A. Barré (*Presse médicale*, December 24, 1919) has the patient under examination lie in the prone position on a bed or table, lifts the legs to a right angle with the thighs, and requests the patient to keep his legs motionless in this attitude. The normal subject maintains the legs in the vertical position for a prolonged period and without distinct effort. In paralysis or paresis of the pyramidal tract, on the other hand, the leg on the affected side sags in extension more or less quickly. It may immediately drop, or if there is merely paresis, remain vertical for a short time, then descend in an even or jerky manner. The patient may make several incomplete attempts to bring the leg back to the vertical before it finally drops to the bed or table. Where there is slight paresis, the leg may remain for some time at an angle of 120° or 140° with the thigh. In such cases a further test is to order the patient to flex both legs on the thighs as completely and for as long a time as possible. On the affected side flexion will be found less complete and steady than on the normal side, and if the affected leg is brought back to

the vertical it will usually be seen to fall in extension in spite of contractions of the posterior thigh muscles. Another supplementary test is to request the patient to resist extension of the legs after he has brought them as near as possible to the thighs. On the sound side, the examiner will note prompt resistance as he attempts to force the limb down in extension, while on the affected side it will appear only after the angle has been to some extent opened. The procedure as a whole is useful as a direct indication of paralysis of voluntary motility. Experience has shown it to be a more reliable test of pyramidal tract disturbance than the tests hitherto in use. It may facilitate differentiation between true and hysterical paralysis, and may distinguish certain spinal lesions from disease of the cauda equina or peripheral nerves. Among the organic, spastic paraplegias or hemiplegias it differentiates cases with actual paralysis from others in which the term paralysis is hardly appropriate. When the sign is negative in paraplegia, complete return of voluntary motility is shown to have occurred.

Analysis of One Hundred Consecutive Cardiac Cases.—W. B. Jones (*British Medical Journal*, January 31, 1920) reports the results of his observations on the symptoms and prognosis in a hundred cases of cardiac disease. The more interesting points are those regarding pain, breathlessness, exhaustion after exertion, dilatation, and prognosis. Pain was found in seventy-three cases and was felt chiefly in the precordium, though it did shoot out into the arm in a number of the cases and in some was felt in the right chest and arm. It was always intermittent in character. The exciting causes were exertion in over half of the cases; excitement in a third, gastrointestinal disorders in a third, and in a fifth of the cases the pain was felt while the patient was in bed. In the latter group the prognosis was unfavorable and was taken to indicate an advanced degeneration of the myocardium. Breathlessness was found in eighty-nine instances and was considered as one of the earliest symptoms of cardiac failure. Exhaustion after exertion was present in eighty-five cases and frequently accompanied breathlessness, the two symptoms being taken as a measure of the improvement or lack of improvement of the condition. Dilatation was found in sixty-one cases, and in only twenty-two of these was a murmur heard. The prognosis as regards life was good in seventeen of the 100 cases. The treatment consisted first of rest and second of diet. Rest was either in bed or in graduated exercise so that no symptoms of decompensation were produced. The digestion was attended to by putting the teeth in good condition, by withholding indigestible foods, such as pork, veal, and sloppy foods, strong tea, coffee, and alcohol, by limiting the amount and number of foods. The drinking of hot water was recommended and, if necessary, soda mints after meals were prescribed; also a grain of calomel once or twice a week. Cases were reported to illustrate the points discussed.

The Sachs-Georgi Test for Syphilis.—B. Gallivalerio (*Correspondenz-Blatt f. Schweizer Aerzte*, December 25, 1919) describes the test proposed by Sachs and Georgi in 1918, and thinks so highly of it that he believes it may supersede the Wassermann test, at least to some extent, as its technic is improved. It is based on the observation that a precipitation or flocculation, more or less great, of the globulin is produced in a mixture of syphilitic serum with a cholesterinated organ extract. The organ extract is made from 100 cc. of an alcoholic extract of beef heart, one gram of heart to five cc. of alcohol, 200 cc. of alcohol, and 13.5 cc. of a one per cent. alcoholic solution of cholesterol. At the moment of use one part of this extract is mixed with one part of 0.85 per cent. physiological solution, agitated, and then four parts of the same solution are added. This gives an opalescent liquid. The serum to be tested should be fresh, clear, sterile, and inactivated by heating for half an hour at a temperature of 55° or 56° C. To one c.c. of the patient's serum, diluted ten times with the 0.85 per cent. saline, is to be added 0.5 c.c. of the extract diluted as above indicated. The whole is well mixed, incubated at 37° C. for two hours, and then kept at room temperature for twenty, twenty-four, or forty-eight hours, after which the findings made be recorded. Meyer suggests that the time may be shortened by centrifuging the tubes after three or four hours' incubation. The precipitation may be estimated by placing the tubes slanting on the black background of a Leitz dissection microscope and examining with a number eight glass, which renders the use of an agglutinoscope unnecessary.

Clinical Research.—Sir James Mackenzie (*British Medical Journal*, January 24, 1920), in an address at the opening of the St. Andrews Institute for Clinical Research, points out the importance of the work of the general practitioner in advancing medicine and shows how he should go about his work to obtain results of the greatest importance. He also emphasizes the tremendous responsibility of the practitioner to do work which will in the long run result in the discovery of means to prevent or cure disease in place of simply alleviating conditions which have passed the stage at which a cure is possible. In the first place, the practitioner is in a position to see disease in its earliest stages before physical signs have developed and his diagnosis and prognosis must be made from the symptoms. This means that he must be continually on the alert to find and interpret symptoms and must observe and record carefully all his findings so that as the case progresses he may learn by experience the diagnosis and prognosis which, unfortunately, are not to be found in any writings on many of the commonest diseases. Years of careful observation and consideration will qualify him to produce results fully as valuable as those coming from the laboratory. It is not to detract from the laboratory findings that the paper is presented, but to point out that there are yet many things of the greatest importance to medical progress which must be worked out clinically and the chief need for such work is the training of men in truly scientific clinical observation and deduction. Examples from the writer's own

experience and from the experience in England during the war are cited to show the need for real knowledge of the clinical significance of such common findings as heart murmurs and irregularities.

The principles of clinical research are four. 1. Differentiation of the symptoms on the basis of the mechanism of their production and on the bearing they have on the future of the patient. 2. Classification of the symptoms into a structural group, shown by a physical sign, the result of a structural change in the tissue; a functional group, due to disturbance of function, and a reflex group, arising from stimulation of the central nervous system. 3. Employment of the recognition of the fact that a new discovery is not an end but a beginning, a foothold for further advance. Thus for many years there has been no advance in the use of the thermometer and the stethoscope, not because such advance is impossible but because the fact is not recognized that there is need for the understanding of the prognostic significance of symptoms and because there is so little understanding of the principles of investigation. 4. The search for other symptoms than the most prominent ones. If we find a structural symptom, we must at once look for functional and reflex symptoms and in finding these we must at once be stimulated to search still further and deeper. It is pointed out that the need for such research at present is on the commoner diseases and the size of so small a town as St. Andrews—10,000 population—is an advantage, since here the inhabitants are less migratory than in a larger place and it is a simpler matter to investigate the living conditions of the people.

Prognosis in Cranial Traumatism.—P. Lecène and H. Routtier (*Presse médicale*, November 12, 1919) relieve from extensive clinical experience during the war, that serious attention should be paid, in the prognosis of cranial traumatism, to a pathological state which corresponds neither to an extensive local focus of traumatic encephalitis nor to a meningoencephalic infection, but to diffuse brain lesions of concussion—"commotional"—origin. Pure brain "commotion" is attended with an immediate and more or less prolonged unconsciousness, followed by a stage of mental confusion and disturbed tendon and skin reflexes, either diffuse or localized in one segment of the body. There are also frequently disturbances of vascular tone and of muscular tonicity, the latter at times confirmed by electrical tests. Finally, there are psychic reactions and subjective disturbances the organic nature of which may be shown through the abnormal response of the patient to induced vertigo. Lumbar puncture in these cases revealed many instances of abnormal histochemical conditions in the cerebrospinal fluid. Commotional lesions in the brain itself were found actually present by postmortem histological examination. The prognosis in cases of skull traumatism is always a matter of some difficulty, both as regards the immediate vital prospect and the ultimate effects. The observed existence of minute histological lesions in the brain doubtless accounts for the importance and chronicity of certain mental disturbances met with following diffuse traumatism of the brain.

The Chemical Composition of the Blood in Cancer.—Ruth C. Theis and William S. Stone (*Journal of Cancer Research*, October, 1919) determined sugar and nonprotein nitrogen constituents (except creatinine and creatine) of the blood of 189 patients suffering from malignant or allied diseases. As a whole the cases showed a value slightly lower than normal for the nonprotein nitrogen and urea nitrogen. The uric acid values were normal except when kidney complications were present, and in two cases of melanoma without kidney complications, when the uric acid figures were high. Contrary to the observations of previous investigators the sugar values were practically normal when there was no kidney complication or diabetes present. The figures obtained are analyzed from the standpoint of the age of the patient, the general condition, and the location of the tumor.

Histological Changes in Squamous Cell Carcinoma of the Cervix of the Uterus after Radiation.—Nicholas M. Alter (*Journal of Medical Research*, September, 1919) describes in this article (which is the first of a series dealing with the tissue changes in the different types of growth after radiation) the histological changes in carcinoma of the cervix observed after exposure to radium. A complete description of these changes is given, and among the conclusions Alter states that the so-called squamous cell carcinoma of the cervix is really a basal cell growth of three types, solid, adenoid, and cystic. The first effect of radium is the destruction of the cells of the malignant parenchyma, with a corresponding increase in stroma. The greatest sensitiveness toward the radiation was displayed by the chromatin substance of the parenchyma cells, and the protoplasm of these cells showed marked, but not such obvious changes.

Primary Lymphoblastoma of the Intestine.—Stuart Graves, (*Journal of Medical Research*, September, 1919) has collected from the literature 246 cases of lymphoblastoma of the intestine, to which he adds three new cases. The first, occurring in a man fifty-four years old, was diagnosed as possibly a scirrhous lymphoblastoma, and seven months after operation the patient died with recurrence in the abdomen and metastases in the lungs. The second case was in a man forty years old, who until thirty-eight months after operation remained in good health, but at that time examination showed symptoms of recurrence in the abdomen. The third patient was a girl fifteen years old, with the diagnosis of lymphoblastoma of colon, ileum, and adjacent lymph nodes (so-called lymphosarcoma or small round cell sarcoma) apparently primary in the intestine. This patient recovered after operation and three years after it was still in good health. Graves states that lymphoblastoma of the intestine has long been regarded as fatal, and that although death is the usual outcome, an analysis of the cases reported in the last ten years shows that in some of them years have elapsed without postoperative recurrence. The cases in the literature are grouped according to type of sarcoma and the age of the patients at which it occurred. Graves makes a plea for a more logical classification, based on the histogenesis of their type cells.

Experimental Study of the Action of Chloramines.—B. Fantus and M. I. Smith (*Journal of Pharmacology and Experimental Therapeutics*, November, 1919) found unicellular animals promptly killed by very dilute solutions of soluble chloramines, which act as powerful irritants. Chloramine-T depresses the central nervous system in the following order: brain, medulla, and spinal cord. This is easily demonstrated in the frog, but also probably obtains in the higher animals. The depression is chiefly due to the para-toluene sulphonamine, i. e., the chlorine free parent substance of the chloramines. Given intravenously, chloramine-T produces pulmonary edema—an effect probably due to the chlorine in the molecule, as the parent substance does not produce it. The hemolytic power of chloramine-T is due chiefly to its alkalinity. Hemoglobin is changed to alkaline hematin by it. Methemoglobin formation due to the chlorine in chloramine-T also occurs, but merely to a slight degree. Dichloramine-T likewise is slowly hemolytic and slowly changes hemoglobin to methemoglobin *in vitro*.

The Comparative Nutritive Value of White and Yellow Maizes.—H. Steenbock and P. W. Boutwell (*Journal of Biological Chemistry*, January, 1920) state that there is a close relation between the yellow pigment and the growth promoting property attributed to the presence of the fat soluble vitamine in the maize kernel. Feeding experiments with rats, where maize was the sole source of fat soluble vitamine in the diet, showed that the rats grew normally and reproduced young, though usually they were not able to rear them. When white maize was used to supply the fat soluble vitamine in the diet, the rats seldom lived longer than three months. Using variegated maize the results were intermediate between these two. In a mixed diet containing white maize the fat soluble vitamins contained in other foods compensate for the lack of this property in the maize.

Births, Marriages, and Deaths.

Died.

CLARK.—In Utica, N. Y., on Thursday, March 4th, Dr. Joseph Eddy Clark.

HILL.—In Brooklyn, N. Y., on Saturday, March 20th, Dr. Helen E. Hill, aged eighty-one years.

LEVISEUR.—In New York, N. Y., on Friday, March 19th, Dr. Frederick J. Levisaur, aged sixty years.

MCCAA.—In Ephrata, Pa., on Wednesday, March 10th, Dr. David J. McCaa, aged seventy-five years.

MURPHY.—In Chicago, Ill., on Wednesday, March 3rd, Dr. Michael F. Murphy, aged fifty-nine years.

SICKLER.—In Wilkes-Barre, Pa., on Saturday, February 28th, Dr. Parke C. Sickler, aged forty-seven years.

STARR.—In Rochester, N. Y., on Sunday, March 7th, Dr. Charles Sackett Starr, aged seventy-six years.

TAYLOR.—In Maricopa, Cal., on Wednesday, March 3rd, Dr. Harry Neafie Taylor, aged forty-seven years.

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A STUDY OF THE EFFECTS OF ALCOHOL FROM A NEW ANGLE.*

By CHARLES S. POTTS, M. D.,
Philadelphia.

The eminent English physician, Sir William Roberts, some years ago wrote as follows: "Alcohol is such an exceedingly bad boy that one is afraid to say a word in his favor, but I am satisfied that there is a good side as well as a bad side to the alcohol question." I believe this to be true; however, it is not my purpose to say anything good of its use as a beverage, but to endeavor to show that statements of its bad effects upon the human race are exaggerated. I also want to protest against allowing hysteria, hypocrisy and cowardice to influence the settlement of medical questions.

It has long seemed to me that if alcohol was as nearly a potent factor in causing mental and physical deterioration as is claimed by many, by this time the world should be peopled almost entirely with physical and mental weaklings. Therefore, the world, instead of progressing as it has, should have gone backward and the average length of life should be much less in spite of the increase in our knowledge and skill in the treatment of disease.

Most of the indictments of alcohol are based upon the results of laboratory work and the study of statistics. I believe that such evidence is often fallacious, and not consistent with actual experience. This is true not only in reference to alcohol but many other questions. As an example, some years ago the propaganda for reform in the *Journal of the American Medical Association*, stated that a certain food preparation had no nutritive value whatever. I remembered that, some years before, a relative who had had a tuberculous kidney removed was given that same preparation for several weeks as his only food and had gained strength. The laboratory worker tells us that we lose efficiency, that various muscular movements are performed a fraction of a second less rapidly after imbibing a certain amount of alcohol, that it causes degeneration and destruction of nerve cells and fibres, and so on. In connection with the latter statement I am reminded that some years ago a well known neuropathologist from a neighboring city read a paper before the Philadelphia Neurological Society on the influence of alcohol on the nerve cells.

*Presidential address delivered before the Philadelphia Psychiatric Society, January 10, 1919.

This may not be the exact wording of the title but it describes the subject matter, which was based on the administration of alcohol to some of the lower animals. He showed pictures of nerve cells whose dendrites looked as if they were afflicted with the chestnut blight. After the meeting he was tendered a reception, and while there did not seem to have any fear of alcohol. When someone jokingly asked him about it, he stated that it did not have the same effect when one became inured gradually. In some temperance literature I find the following: "Alcohol is the same in beer, wine or whiskey." So it is in one sense, but no one will claim that a half teaspoonful of tobasco sauce in a pint of soup will have exactly the same effect as the same amount in a tablespoonful of soup.

The statistician tells us that insanity is increasing, a certain number of epileptics had parents who used alcohol, and so on. You are all familiar with their conclusions. I believe that such are not strictly accurate because the total of all those who use alcohol in any amount, with their average duration of life and the mental and physical condition of their children, is not considered. This cannot be done on account of the large number of secret drinkers that exist.

Also in compiling statistics it should be borne in mind that many of those who become insane from the use of alcohol do so because they are unstable mentally to begin with. There can be no doubt that the opinion of Burr that those who become drunkards do so because they are not normal mentally is mostly correct. In this view he is sustained by other competent observers. I say mostly because I believe there may be a few exceptions. It is also true that such are frequently the offspring of parents who do not use alcohol. Witness the large proportion of clergymen's sons who turn out badly. It should be borne in mind that only a small proportion of those who use alcoholic drinks abuse them. Much of the recent statement on this subject would have us believe that all do. It is also true that the man who dies young and has used alcohol in more or less amount and the man who lives to an advanced age and has never used it are exploited by the uplifter and the statistician. We rarely, however, are told of the man who dies at an early age from arteriosclerosis, who has never used alcohol or been guilty of other vices, and of the man who lives to an advanced age and most of his life has taken it in large quantities. Many of the latter class

exist and their children are often useful citizens. Similar statements are made in regard to cigarettes. We are all familiar with the frequent publication in the daily papers of accounts of some one who has either become insane or committed a crime owing to their excessive use. Such statements are often attributed to members of the medical profession. As a matter of fact, the excessive use of the cigarette in these cases is due to some form of mental disease, dementia præcox very often. Yet based on such false statements their use is prohibited in a number of States, especially those with strong prohibition tendencies. It is also true that many criminals, especially those committing crimes of violence, blame the use of alcohol for their misdeeds. Having had some experience as an official of the Eastern Penitentiary, I know this excuse is often made, in the hope of securing a lighter punishment.

Statistics, however, on this subject vary. They often depend upon the point of view at the start. Lombroso (1) quotes statistics of a number of writers showing that the Jewish race is more prone to mental disease than other races (the experience I think of all of us), and makes the further statement that alcoholism is rare among them. H. M. Pollock (2) shows that in New York State the percentage of alcoholic cases among all admissions was 10.1 in 1909, and this had become gradually reduced until in 1916 it was 5.7. He attributes these results to improvement in the habits of the people as regards alcohol. Nevertheless, these habits had not changed to such a great extent in New York during that period.

As a result of these investigations we are told by social reformers that if the drink habit is not curbed the people of the world will degenerate mentally and physically. If there is anything in this view, I hope to show that it should have been our fate by this time. As evidence that their statements are not strictly accurate I have thought it might be interesting and instructive to detail somewhat the customs in regard to alcohol of some of the nations who have progressed, especially our own. I will also detail somewhat the personal habits of some of those who have made us great. I will tear down no idols, as all my statements are recorded in the literature, and much more could be added.

The use of alcoholic drinks is recorded in the ninth chapter of Genesis, where it is stated that Noah became drunk. Just how long ago that was is somewhat doubtful, but it was certainly several thousand years B. C. Since that time alcoholic drinks have been used more or less by most of the civilized or semicivilized nations of the earth. The ancient Egyptians attributed their knowledge of the art of making beer to the god Osiris. Beer was made in England at least as early as the fifth century A. D. If we believe geologists and paleontologists, man existed four hundred thousand years ago. It is stated that it took him approximately three hundred and fifty thousand years to learn to make flint arrowheads and nearly forty thousand years more to acquire the art of working metals. About this time, nearly ten thousand years B. C., Babylonian literature begins and alcoholic drinks were used at or near this period. From this era the real

progress of the world dates. It seems, therefore, to be coincident with the use of alcohol, as there is no evidence that our ancestors of three hundred and ninety thousand years previous used it. It is also true that the world has progressed relatively faster as time has passed, in spite of the extensive use of alcohol as a beverage. As regards the coexistence of progress and the use of alcohol this statement of Sir William Roberts is interesting: "I think it probable that three or four generations of total abstinence in this country (England) would lower our mental capacity to the Moslem level and that we would cease as a nation to be the breeding ground of men of genius."

Coming to a later period it is well known that the French people for centuries have drunk wine from their earliest childhood, and the Germans likewise have drunk beer. No one in the light of recent history can term them decadent and inefficient, whatever we may think of other characteristics of the German. The English have been probably the heaviest consumers of alcohol in the world. According to Lecky, previous to 1688 the consumption of beer in England and Wales was ninety gallons a head. In the middle of the eighteenth century a man could procure enough gin for one penny to become drunk and a place was furnished him to sleep it off. Walter Besant (3), writing of 1837, says, "The drink bill for that year was enormous. A case of total abstinence was a phenomenon." He further states that beer was habitually drunk at breakfast. In an Irish town of eight hundred people there were eighty-eight gin shops. In London there was one public house to every fifty-six houses, and in Glasgow one to every ten. The number of visitors to each of fourteen great gin shops in London averaged three thousand a day. This, however, is said to have been an improvement over one hundred years previous (1742) when the consumption, counting men, women and children, was three gallons apiece a year. In 1837 this had dropped to half a gallon. In Scotland, however, it was a little over three gallons and in Ireland six and a half gallons. In 1906 the average consumption of beer was twenty-eight gallons, a little over one gallon of spirituous liquor and one third of a gallon of wine, for each man, woman and child. Certainly not an improvement since 1837, and it has remained about the same until 1917, but who will call England decadent? Japan, which may, I think, be termed progressive, consumes in the form of beer one third as much alcohol as England.

That which is of especial interest to us is the habit of our own forefathers in this regard. It is stated of the Virginia colonists (4) that "they drank without object. When they died there was no famine at their funerals. It was a feast rather and a flow and there was more real drunkenness than real sorrow." In 1739 an application was made to license the Black Horse Inn, near Media. The reason given why it should be granted was, "That it was a necessity for the public generally, and it was especially needed because it was located about three quarters of a mile from the Presbyterian meeting house, which commonly is a great resort of people." McMaster (5) referring to 1791, writes

as follows: "Whiskey stills studded the banks of the Monongahela and Ohio Rivers, and in no other part of the United States could so many stills be found, could so much whiskey be made and consumed, as in the four western counties of Pennsylvania." At this time whiskey was used as money in these counties and in Pittsburgh and the neighboring counties one gallon was equivalent to one skilling or twenty-five cents. When it was proposed by the national government to tax it there was great opposition. Resolutions against it were passed in North Carolina, Virginia, Maryland, and Pennsylvania. In the latter State this culminated in 1794 in the whiskey insurrection and United States troops were required to stop rioting. The participants in this were not the hoodlum element alone by any means.

In a history of the old Lancaster turnpike we find that in 1805 there were situated on it sixty-one taverns in sixty-six miles (of course these were also hotels). An advertisement of the Washington Inn at Holmesburg, Pa., in 1816 is of interest: "Ye good and virtuous Americans, come! Whether business or pleasure be your object. Call and be refreshed at the sign of Washington. Here money and merit will secure you respect and honor and a hearty welcome to choice liquors and sumptuous fare. Is it cold? You shall find a comfortable fire. Is it warm? Sweet repose in a cool and grassy shade. In short every exertion will be made to grace the sight of the hero who was 'First in war, first in peace, and first in the hearts of his countrymen.'" It is evident at that time liquor and virtue were not incompatible. In 1800 when the Lower Dublin Academy near Philadelphia was enlarged, we find among the expenses, two shillings for one quart of rum for the porters hauling logs, and sixteen shillings and four pence for seven quarts of rum for the raising. The following is given as the bill of fare provided in 1817 at the Red Lion Inn, still in existence near Torresdale, now part of Philadelphia: "They always give us plentiful fare, particularly breakfast, where veal cutlets, sweetbreads, cheese, eggs and ham were most liberally set before us. Dinner is little more than a repetition of breakfast with spirits instead of coffee. * * * Rum, whiskey and brandy are placed upon the table and the use of these left to the discretion of the company, who seem rarely to abuse them." In 1854 the leading hotels in what was then the West placed a small glassful of whiskey at each plate at dinner time.

According to Watson's *Annals* there were in Philadelphia as early as 1683 seven taverns and in 1744 it is said that the houses which sold drink made nearly a tenth part of the city. The Junta of which Franklin was the leading spirit met at the Indian King tavern, as did also the Masonic Lodge. As describing the habits of the best class of citizens, the following extracts from an account of the celebration of the one hundredth anniversary of the founding of the "State in Schuylkill" is interesting. It might be mentioned that the State in Schuylkill still exists and is the oldest club in this country. Its membership is limited to a small number and is very exclusive. It has had and still has among its

members many of the most important men of this city. Washington and Lafayette were frequent guests. "On May 1, 1832, there was a high celebration of the centenary of the club. The feast was more sumptuous than usual and those convivial gentlemen drank fourteen toasts presumably in fish house punch. * * * The thirteenth toast was to the 'First city troop. Its earliest members and four of its commanders were citizens of our State.' By this time their voices were a bit hoarse when they sang *The Trooper*. But they had enough strength to drink to Izaak Walton * * * whereupon those who still had strength enough to do so struck up a solemn dirge. Anyone initiated in the mysteries of fish house punch will agree that was the only thing left for them to do."

It seems peculiar in these days that during a presidential campaign an alcoholic drink should be the watchword of a political party. Harrison and Tyler were elected in 1840, as the Log Cabin, Hard Cider candidates, and hard cider and other alcoholic beverages were freely distributed during the campaign. Shortly after the Revolution, Washington in making a contract with a gardener, agreed that as part of his compensation he should have four dollars at Christmas and allowed to be drunk four days and four nights; two dollars at Easter and allowed to be drunk the same period; two dollars at Whitsuntide and allowed to be drunk two days; a dram in the morning and a drink of grog at dinner.

In the description in *Sargent's Recollections* of the reception following Jackson's inauguration we find that punch and other drinkables were carried to the lawns in tubs, buckets and barrels for the people.

In 1880 an amendment to a bill then before Congress was proposed by a representative from North Carolina. It exempted from the whiskey tax the first sixty gallons manufactured by any one person in one year. It was supported by nearly all the southern congressmen on the ground that whiskey was an agricultural product and the farmer's necessity. At that time moonshine whiskey was extensively made in many of these States. Since that time the practice has been largely broken up and accordingly representatives from these States find the advocacy of prohibition to be politically more profitable. Previous to 1888 liquor saloons were much more plentiful in this city than at present and anyone who could reach the top of the bar could buy a drink.

It will not be denied, I think, that in spite of the long and extensive use of alcohol by the countries mentioned they have progressed and are not becoming decadent, this being especially true of our own. Any of them, I am sure, will compare favorably in that regard with countries in which the prevailing religion is Mahometan, by which the use of alcoholic drinks is forbidden. Neither will anyone claim that Mahometan countries compare favorably in other virtues.

Let us, however, look briefly into the lives of some of those who took an active part in the making of our country. First, let us consider Washington, who, while in public life, was abused more than almost any public man who has lived since and is

now held up as an exemplar of all the virtues, and deservedly so. It is said that in his early life at all the crossroads and court houses in Virginia, there sprang up taverns, and in these the men of the neighborhood would gather and over a bowl of punch or a bottle of wine, would spend the evenings. Into this life Washington entered eagerly. In 1758 he was a candidate for an elective office. In his campaign it is recorded that "punch by the barrel and hogshead, plenty of wine, brandy, rum and strong beer, assisted the voters to see special merit in one of the candidates and Washington's bill for this instruction was a heavy one." John Adams, after a visit to Valley Forge, wrote: "In a time of famine General Washington sets a fine example. He has banished wine from his table and entertains his friends with rum and water." A number of writers have described dinners at Mt. Vernon. One of them writes: "The dinner was very good * * * we were desired to call for what drink we chose. He took a glass of wine with Mrs. Law first, which example was followed by Doctor Croker and Mrs. Washington, myself and Mrs. Peters, Mr. Fayette and the young lady whose name is Custis." Another writer in describing a similar occasion, says: "The General sent the bottle about pretty freely after dinner. We had a very elegant supper at nine p. m. The General with a few glasses of champagne got quite merry." Washington habitually drank four or five glasses of Madeira at dinner and often added a glass of punch and one of beer. In 1795 he began the distilling of whiskey on his plantation and found the business to be very profitable.

Benjamin Franklin was certainly one of the greatest men produced by this or any other country, yet we read that when as a boy he was on his way from Boston to Philadelphia, he drank a large draught of ale at Burlington, N. J. He states that "he loved a glass and a song." It is told he could drink without inconvenience a quantity which nowadays, especially in America, seems surprising. His celebrated dialogue with the gout begins as follows:

Franklin: Eh! Eh! What have I done to merit these cruel sufferings?

Gout: Many things, you have ate and *drank* too freely and too much indulged those legs of your in their indolence.

His punch bowl is exhibited at the Historical Society of Pennsylvania. Patrick Henry spent three years of his life as a bartender. McMaster says that for three years Henry tended travellers and drew corks.

Thomas Jefferson never drank spirituous liquors and was much opposed to their use. He was, however, very fond of wine. He made the statement that "No nation is drunken where wine is cheap." During the eight years he was President he spent nearly \$11,000 for it. His father paid for 2400 acres of land where he made his home "Henry Weatherbourne's biggest bowl of arrack punch."

Parton writes of Andrew Jackson that when a young man "he played cards, ran horses, * * * carried off gates, moved outhouses to remote fields and occasionally indulged in a downright drunken debauch."

Of Henry Clay it is written that "at the bar he

was courteous, in debate he never took unfair advantage and only when aroused by passion with a too generous admixture of whiskey did his better nature lose control." We read also that "according to the custom of the time he drank freely but seldom to excess." In later years he made wine on his own estate of which he was very fond.

In the committee rooms of the Senate at that time and later liquor was to be found, and it was almost the universal custom for the members to fortify themselves repeatedly. In spite of this, legislation enacted then will compare favorably with that of the present day. Henry Clay had a son who, if he had not been killed in the Mexican war, bade fair to become as great as his father.

That Daniel Webster was a hard drinker is generally known. General, and afterwards President, Grant was compelled in 1854 to resign from the Army for drunkenness. It is recorded that Lincoln, who did not use alcoholic drinks himself, had more confidence in Grant than any of the other generals. Several times during the Civil War when ultra pious and prohibition committees (I am quoting) complained of his habits to Lincoln, he paid no attention to them, once making the reply, "I cannot spare this man, he fights."

William Penn used alcohol very little, if at all, but his father who became Vice-Admiral of England at the age of thirty-one, was a hard drinker all his life, and it caused his death before he was fifty.

Many famous literary men have used alcohol, some to excess. Among them may be mentioned Shakespeare, Dickens, Thackeray, Tennyson, Browning, de Musset, Poe, Addison, Steele, Sheridan, Burns, Charles Lamb, Samuel Coleridge and Hartley Coleridge. The following abstract of a letter written by Mark Twain, one of our greatest writers, if not the greatest, to William D. Howells is interesting. It describes a dinner given to the well known novelist, George W. Cable, by several men of note: "You know that when it comes down to moral honesty, limpid innocence and utterly blameworthy piety the apostles were mere policemen to Cable; so with this in mind you must imagine him at a midnight dinner in Boston the other night, when we gathered around the board of the Summerset Club: Osgood full, Boyle O'Reilly full, Fairchild responsibly loaded and Aldrich and myself possessing the floor and properly fortified. Cable told Mrs. Clemens when he returned here, that he seemed to have been entertaining himself with horses, and had a dreamy idea that he must have gone to Boston in a cattle car. It was a very large time. He called it an orgy, and no doubt it was, viewed from his standpoint."

Ex-Governor Pennypacker in his autobiography gives an account of a dinner given in 1888 to Justice Miller of the U. S. Supreme Court by the faculty of the law department of the University of Pennsylvania. The guests comprised the most notable men of Philadelphia, and he says, "After the wine had somewhat enlivened the party, the turn taken by the conversation made it a most interesting event." In 1887 a breakfast was tendered the Chief Justice and Justices of the U. S. Supreme Court by the Bar of Philadelphia. The committee

was composed of leaders of the bar, Richard C. McMurtrie being chairman. The guests were the Supreme Court of the United States and judges from this and neighboring States. They drank six different kinds of wine at eleven in the morning.

Many more examples could be given, but I will generalize and say that from a considerable acquaintance with men who have made good in many different walks of life, I can affirm that the number of those who either did not or do not use alcohol in some form is very much in the minority. If this government had deprived itself of the services of those who have rendered it great aid, both civil and military during the present war, because they had used alcohol, I doubt if it would now be won.

In view of what has been detailed, and as an example of the sort of statements often made let me read the following letter, written by the president of a large corporation and printed in a book designed to show the evils of alcohol:

H. B. CLAFLIN COMPANY,
NEW YORK, 4/27/07.

My Dear Sir:

I do not knowingly employ a young man who uses alcohol. Its use, even occasionally, renders him unreliable and impairs his ability to do intelligent and constant work. In the struggle for success in life the total abstainer has a great advantage over the moderate drinker. The immoderate drinker is out of the race.

JOHN CLAFLIN, President.

It is evident that none of those whom I have mentioned could get a position with the H. B. Claflin Company, to say nothing of the Philadelphia Recreation Board. Yet they will be remembered forever in history for the good they have done in the world. Who knows outside of the drygoods trade who John Claflin was?

My object in bringing these facts to your attention is not to defend the use of alcohol, to claim that its use makes one do better work, or that it does not do harm. I do claim, and I think I have shown, that the statements with which you are all familiar, made by those who are endeavoring to stop entirely the manufacture and sale of all alcoholic drinks, are exaggerated and inaccurate. Hysteria and hypocrisy are rampant in our country and are influencing the settling not only of the alcohol question, but of other sociological questions as well. I feel sure that if it were published daily in the papers for a reasonable length of time and also preached from the pulpit and rostrum, the people of this country could be made to believe that "the moon was made of green cheese." Such a state of mind causes grave danger to our future liberties. It has resulted in the putting on the statute books of more ill considered legislation aimed to regulate personal liberty and conduct than can be found in any other country on earth. There is a rapidly increasing number of people whose chief aim in life is to mind everyone's business but their own. When the alcohol question is settled to their satisfaction what will be the next habit or custom to claim their attention? Even now there are indications pointing towards tobacco.

Much of this legislation is made possible by the ignorance, cowardice, and hypocrisy of those who make our laws. We are the hypocritical nation of the earth, and the various manifestations of our hy-

pocrisy were well summarized by Henry L. Mencken in the New York *Evening Mail* a year or more ago. He says: "There is no need for me to pile up examples; our policy in all things, social or political, important or trivial, fairly reeks with that dualism * * *. We bawl about the crimes of Big Business—and every last man in Little Business is trying to horn into Big Business as fast as he can. We drive out the saloon to the tune of 'Onward Christian Soldiers!' and let in the blind pig. We profess a personal virtue that would do credit to the monks of Mt. Athos, and support it by laws of the utmost ferocity—and our cities swarm with prostitutes * *. No wonder foreigners stand flabbergasted before the incredible contrast between our theory and our practice—men arrested for republishing parts of the Declaration of Independence, men jailed for republishing parts of the Bible, notorious drunkards advocating prohibition in our legislatures, bawdy judges slobbering piously over the Mann Act, shyster lawyers lifted into office on reform waves, trust busting politicians borrowing money from trust magnates, tax dodgers exposing and denouncing tax dodgers, uplifters screaming for the common people with their mouths, and picking their pockets with their hands."

Possibly in part this may be due to our Puritan ancestors, for Anthony Wood, a Quaker diarist of the time of William Penn, says of them: "They were factious, saucy, conceited, morose and delighted in plots. They affected temperance, but tiptoed privately in their own rooms and crept into taverns at the back door." A not uncommon state of affairs today.

Much of this sort of thing was apparent during the early days of our entrance into the war, and still is. No one can deny that the rigid regulation of the procuring of liquor by soldiers is important. It seems hardly so much so that Congress should spend weeks wrangling over this question before they arranged to secure an army or before it was known where they would get guns for them to shoot with. It seems a reflection on American manhood that they could not be trusted in the least. They are probably the same sort that has fought all our previous wars without this essential protection that we now read about. It is doubtful if they need it, for if one wants to find liquor he sets out to find it. He is rarely dragged to it by main force. Even if it is needed I am sure Philadelphia is not the only city in which it is necessary, although our newspapers and many citizens seem to take pride in making the world think so. Many of the loudest shriekers along these lines object to theatres having Sunday evening entertainments for the benefit of the enlisted man, and have succeeded in stopping them. As a matter of fact they were allowed wine and beer while in Europe and do not appear to have been harmed. One would have supposed, while reading Congressional debates during that period, that we were beginning a Sunday school and not a war, as only those of the best moral character could apply. As a matter of fact, the best fighters are not always the most moral, as witness the French Foreign Legion, composed of men who in large measure had left their country for their country's good. Of

our own army a well known story writer, also an officer in the army in France, wrote a few months ago as follows: "Another thing—the toughs, the men who were roughnecks back in garrison or in town, always getting drunk, make fine soldiers when they get into the line. That is true in four cases out of five. * * * Often very vigorous men require a safety valve for excess vitality. * * * Some of our guardhouse pets have done great work up here, whereas we have had to bust a couple of noncoms who were efficient, well behaved soldiers in training camps. They couldn't deliver under the guns." Those who have fought our previous wars certainly did not suffer from a dearth of alcohol. Until 1862 the grog ration was served regularly in our navy. It seems probable that many of the hard swearing, hard drinking heroes of 1812 would not be allowed to serve now. As a matter of fact, during the present war men of great ability were pushed to one side, if it was known that during their off hours they had ever indulged too much.

The difference in the attitude of Lincoln has been mentioned. That of Andrew Jackson is shown in the following: "A certain officer who in the past had rendered heroic service was complained of to President Jackson for intemperance. He replied: 'That man has done enough to entitle him to get drunk every day of his life if he wants to and * * * by the Eternal the United States shall pay for his whiskey.'"

While hypocrisy is probably to be expected in present day politicians it should not be expected in the medical profession, which wishes to be considered scientific. Unfortunately, we are hypocrites. Alcohol has been used as medicine from time immemorial. Like many other therapeutic measures it has no doubt been abused. It is not likely, however, that had it possessed no merit the use would have persisted so long as it has, and it would have gone the way of the many therapeutic delusions detailed at our last meeting by Doctor Mills and Doctor Lloyd.

During its 1917 meeting the American Medical Association received a communication from the National Women's Christian Temperance Association which was referred to the Council on Health and Public Instruction. This communication told this supposedly scientific body what they were to say, and they said it in a resolution reported back to the association. This stated that alcohol has no drug value, either as a stimulant, as a tonic, or as a therapeutic agent and that it has no food value and that its use is detrimental as a beverage or as a therapeutic agent, and for this purpose its use is not permissible in medicine. The section in therapeutics and pharmacology, which ought to know, opposed the adoption of this resolution and stated that many of the statements made were not yet settled. In spite of this it was dutifully adopted. These ladies and their followers apparently know more than the advisory committee of the Central Control Board for the Liquor Traffic of England. This committee, composed of eminent sociologists and scientific men, medical and otherwise, state in their report recently published that alcohol has a certain limited food value. Its action is that of carbohydrates and fats

in economizing protein, by reducing to a minimum the amount which the body requires. Therefore when the patient cannot take other food it may tide him over the crisis until he can.

Major Sir Robert Armstrong Jones, lecturer on mental diseases at St. Bartholomew's Hospital, in a recent paper on The Relation of Alcohol to Mental States, Particularly in regard to the War, speaks of the great value of the "rum ration" served to the men of the English army while in the trenches in enabling them to withstand exposure to intense cold and wet. He also believes that it checks tissue waste and is valuable in serious nutritional disturbances. He does not approve of it as a beverage. During the late epidemic of influenza I heard internists of great skill and experience testify to its value in certain phases of that disease. Dr. Morris Manges, professor of clinical medicine in the University and Bellevue Hospital Medical College of New York, in a recent paper speaks thus of the treatment of the asthenia often present in this disease: "Secondly, it is an indication for the free use of alcohol. I consider whiskey or brandy in full doses a most important part of the treatment. In these days when prohibition has even invaded the hospital wards, and when the younger generation of physicians is ignorant of the value of alcohol in toxemias, it may not be amiss to lay stress on the great benefit which may be obtained from it in the treatment of these patients."

Enough has been said, I think, to show that the resolution passed by the American Medical Association was hasty and not entirely true.

In conclusion I wish to say something of the effects of alcohol in those who do not use it and do not wish anyone else to do so. Many such are undoubtedly mentally peculiar. They exhibit a form of bolshevism in that they want to rule or ruin. They alone are right. In furtherance of their views they believe in false statement, vilification, and slander of those who do not agree with them. They refuse to believe conclusive evidence (which according to an old definition means insanity). They advocate confiscation and destruction of legally owned property, illegal exercise of police power, and they tempt people to do the things they protest against, so that they can show how wicked the world is. They do not follow the maxim of William Penn, "To do evil that good may come of it, is for bunglers in politics as well as morals." They also believe that laws made to govern others should not apply to them, which also applies to the advocates of another propaganda, now rampant. Such people also exist in other countries, but they have not the same influence as here. Major Jones, previously quoted, speaks thus of the English variety, who did everything they could to hamper the work of the commission before mentioned, merely because it would not do everything they wanted done:

"What is the psychological explanation of such opposition? I am of the opinion that this intolerant exhibition of superiority deliberately shown by this extreme section is based upon a form of egoism; it is a consequence of a psychological selfgratulation and selfesteem which borders upon an obsession and is regarded by some authorities as pathological.

Most of us will acknowledge that all excellences require some comparison to demonstrate their advantages, but when specious reasons are advanced to support them and these are mingled with personal attacks, then such criticism passes beyond the bounds of legitimate argument. A person who argues from selfish ends and from a feeling of personal superiority over others is very apt to dry up the wells of truth in order to justify his standpoint. Nor is such a person contented to stand alone, but as we see in this instance he courts the sympathy of others, whoever they may be, and so long as his own views are furthered he will even sacrifice his own sense of honor in his effort to bring the opinion of society against this opponent and to throw discredit upon his views. * * * It is a favorite device with the advocate of a weak cause that he should not only excite public opinion against his opponent, but also that he should heap upon him as much private contempt as possible, with the sole object of forcing him through this vituperation and scorn to modify his attitude, and in this irrespective of the public good."

If we agree with so good an authority as I have just quoted we must admit that considerable legislation is now being dictated by those mentally diseased. Be that as it may, I hope I have said enough to show that what I stated in the beginning of my address is true: That alcohol is not necessarily a deterrent to good work and to the attainment of greatness, that the world is not going backwards in spite of its long continued use of alcohol, and so far as its use is concerned is in no danger of doing so, that everyone who uses alcoholic beverages is not *per se* a drunkard and unable to do his share of the world's work.

I do not dispute that it may be a cause of harm, both from the medical and social point of view, but it also, from the former viewpoint, may be an agent for good. I believe that legislation influenced by perversion of facts, hysteria, hypocrisy, and cowardice is of more danger to the country than alcohol. There never was a time when common sense was more needed and never a time when it was less prevalent.

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ALCOHOL A NERVE STIMULATOR.

BY WILLIAM HENRY PORTER, M. D.,
New York.

Professor Emeritus of Pathology and Clinical Medicine of the New York Post-Graduate School and Hospital.

For more than forty years I have studied the pros and cons of alcohol from their scientific and medical aspects. As I stated in an article on alcohol, published recently in the *New York Times*, the abuse of alcohol does not admit of discussion. It is unqualifiedly harmful. The use of alcohol, however, as a chemical agent in medicine most certainly is still open for discussion, that is, if many of the statements concerning its action and effects

are correctly quoted. I cannot accept a dictum from any one that alcohol is not a stimulant, until the laws that control the universe are radically changed.

Our primary source of heat is the rays that are given off by the sun—admitted by all to be the fundamental life giving principle of all forms of growth, vegetable and animal. Heat, therefore, is the stimulant that energizes life. Its withdrawal (barring violent traumatic causes or the ingestion of poisons) is the fundamental cause of death. Normally, the proteids, sugars, and fats are oxidized within the body, by a process similar to that by which wood and coal are burned in a furnace. It is the heat thus generated that produces the stimulation or energy absolutely necessary to the maintenance of life from day to day. Withdraw heat, and death ensues.

Alcohol is composed of carbon, hydrogen and oxygen—the same as is sugar and fat, but a much less complex molecule. Like these substances, it is oxidized in the body, yielding heat, stimulation and energy, just as do sugars and fat. Hence, like these substances, alcohol is a stimulant.

Alcohol has the following composition: C_2H_6O . It is completely oxidized and completely reduced to its end products, carbon dioxide and water, by the use of six atoms of oxygen. Thus $C_2H_6O + H_2O + 6O = 2(CO_2) + 3(H_2O)$. For each gram so oxidized seven large calories of heat are produced. The next most simple molecule utilized by the animal economy is glucose and it has to be produced out of starch and other forms of sugar, by the expenditure of digestive energy, before it is available for oxidation. Glucose has the following composition: $C_6H_{12}O_6$, therefore glucose requires twelve atoms of oxygen for its complete reduction into its end products, carbon dioxide and water. Thus $C_6H_{12}O_6 + H_2O + 12O = 6(CO_2) + 6(H_2O)$. When the glucose is so reduced it yields four (4.1) large calories of heat only for each gram thus consumed. This shows conclusively, that alcohol, with no expenditure of digestive energy and with the expenditure of less oxygen, yields a much larger production of heat and energy. Consequently, alcohol has great power for good when the system is in a pathological condition or greatly debilitated from any cause and cannot secure the necessary heat and energy from the ordinarily used food elements. Hence, like food substances, alcohol is a stimulant. To deny these facts is simply to disbelieve the fundamental laws of nature.

Fortunately, because of its less complex molecular structure, alcohol can be oxidized within the body at times when sugar and fat cannot be so utilized—a wise provision of Nature. Hence the virtue of alcohol as a therapeutic stimulating agent in times of dire need. So far as I know there is nothing that can take its place.

My clinical observation proves conclusively that many lives have been saved by the proper use of alcohol at such times, when without this stimulus they inevitably would have been lost.

Owing to the fact that alcohol is very quickly oxidized in the system, it may first overstimulate, and a period of depression follows. These funda-

mental principles being facts, I can so conduct my experiments that they will show a stimulating or a depressing result from the use of alcohol. Therefore, I do not deny that some very eminent men have proved to their own satisfaction that alcohol is a depressant. Yet, on the other hand, these men have not proved that alcohol does not first stimulate before this depressing influence is manifested. Nor have they proved that alcohol cannot be used so as to secure a stimulating effect, without developing any of the subsequent depressing action. To my mind, therefore, it is a great mistake to drop so valuable an agent from the pharmacopœia—an agent whose action is so definitely known. This is the opinion of all who fully understand the laws of chemistry, as applied to physiology and pathology.

The frequent reference to the action of the American Medical Association concerning alcohol has been variously and voluminously misquoted with respect to this action. The allegation that the American Medical Association unanimously condemned the use of alcohol deviates very markedly from the facts in the case, for not two per cent. of the members of the association ever voted yes or no, or had an opportunity to vote yes or no on the subject. When the resolution was presented to the few members who attended the meeting, my information is that the question was not directly acted upon, but was referred to the council, and that the council decided what the sixty-five thousand members of the association thought about alcohol. Had every member at that meeting voted against alcohol, it still would not even then have been the expression of more than one half of one per cent. of the total membership, who are supposed to have gone on record with thumbs prominently turned down on the alcohol proposition.

In connection herewith it seems to me most unfortunate that science cannot be studied with more exactness and less bias. For it is just such ill considered action as the reputed action of the American Medical Association that has caused the public to doubt the scientific ability and reasoning powers of the medical profession as a whole.

46 WEST EIGHTY-THIRD STREET.

SOME CHEMICAL ASPECTS OF THE WOOD ALCOHOL PROBLEM.

BY CHARLES BASKERVILLE, Ph. D., F. C. S.,
New York,

Professor of Chemistry of the College of the City of New York, and
Chairman, Committee on Occupational Diseases in the
Chemical Trades of the American Chemical Society.

Wood alcohol poisoning is a unique problem in that it involves not alone physiological changes and technical matters having to do with production and distribution of the toxic agent, but sociological factors as well, for it is closely knit to prohibition. Others have made distinct contributions to our knowledge of the subject on certain lines, so I may be allowed to offer you a few thoughts upon other phases, unmedical in nature but pertinent in character, I hope, drawn from some ten or more years' experience with wood alcohol. This will, however, entail some inevitable duplication.

The *adiophorous* spirit obtained by distilling wood (Boyle, 1661) was thought by Taylor (1812) to be a new kind of *ether*, in fact, he called it *pyroligneous æther*. Dumas and Peligot (1835) established its resemblance to ethyl (*ether*) alcohol, and named it methyl alcohol from the Greek *μέθυ* mead; *ήλκ* wood. In fact, you will recall that the word alcohol, derived from the Arabic, *Al Kohl*, at one time meant a fine powder and only later meant spirits. To refresh your chemistry, methyl alcohol is methyl (CH_3) hydroxide (OH), as ethyl alcohol is ethyl (C_2H_5) hydroxide (OH), or water is hydrogen (H), hydroxide (OH); that is, respectively, CH_3OH , $\text{C}_2\text{H}_5\text{OH}$, and HOH .

Commercially the destructive distillation of hard woods (refuse) is the main practical method followed for the production of methyl alcohol in America, although in Europe it has been obtained from peat and as a byproduct from vinasse and in the manufacture of wood pulp by a soluble sulphite process. The numerous synthetic methods known at present are too costly to be practised on a commercial scale. The condensed tarry and acid products distilled from wood are subjected to partial purification by distillation at these plants. This crude material, about eighty per cent. pure, is then usually shipped to centrally located refineries in tank cars, drums, or barrels for further purification and rectification.

This crude wood alcohol, wood spirit, wood naphtha, a vile smelling, greenish yellow to dark brown appearing, nauseous liquid, is a complex mixture containing a variety of impurities, unnecessary to enumerate here. They are removed in the main in the first refining, yielding a product containing about ninety-five per cent. methyl hydroxide. In 1896 processes for greater refinement were put into operation, so that about 1906 a deodorized product (ninety-seven to nearly 100 per cent.) was placed upon the market in the United States under such names as Columbian spirits, Eagle spirits, Hastings spirits, Colonial spirits, Manhattan spirits, Union spirits, and Lion d'or; in Canada as Greenwood spirits and Standard wood spirits; and in Germany in 1912 as *pro spirit*. Technically it was called methyl hydrate, carbinol, methylic alcohol, methyl hydroxide, and methanol. The pure substance is a colorless, mobile liquid, having a pure vinous odor, similar to that of pure ethyl alcohol, and possesses a burning taste.

The legitimate uses of methyl alcohol may be grouped as follows:

- A. For denaturing ethyl alcohol.
- B. In the chemical industries: 1, as a solvent (fats, varnishes, moving picture films, etc.); 2, as an extraction agent (explosives); 3, as raw material for production of formaldehyde; 4, in synthetic chemistry for introduction of the methyl (CH_3) group (perfumes, flavors, dyes, etc.); 5, as a reagent in the laboratory.
- C. In pharmaceutical and medicinal preparations (surgical dressings, cattle medicines, etc.).
- D. In the arts and crafts (manufacture of incandescent mantles, of hats, furniture, pianos, burial caskets, boots and shoes).
- E. Unclassified (fuel, illuminant, cleaning fluid).

The abuses of methyl alcohol will be referred to.

No doubt the stress laid upon the matter of nomenclature appears quite trivial to the distinguished specialists. There are three reasons, however, for emphasizing this phase of the subject, each sufficient unto itself. First, the influence of the New York Academy of Medicine is more than local, and, I take it, these discussions are to reach every channel of medical influence in this country and many channels elsewhere. Second, these facts of names and their meanings of necessity can scarcely be known by all medical men. They are even less known to the man of the street; but the layman does know that alcohol is the stuff which makes drunkenness come; that it is the stuff that cheers when downhearted; that uncontrolled it has been a curse in the world; that it is the right thing, in the disguise of beer or light wine, which formerly rested him when the arduous day's work was done. So when he sees the can or vessel with the label alcohol on it, and as he knows alcohol is the thing that gives the kick, rest, or cheer, without considering the qualifying words wood, methyl, or what not, he is going to take it. He is little deterred by the poison label, for he has seen the picture of the snake curling out of the bottle in the pictures of intemperance, and still he drank. Therefore, third, it shall be the purpose of some influential chemists and powers in the transmission of chemical terms in the English language to see that the word alcohol ceases its present significant use, at least in chemical literature. Technically all alcohols should become known as -ol bodies or hydroxides, as methanol, ethanol, propanol, butanol, methyl hydroxide, ethyl hydroxide, propyl hydroxide. This movement is already well under way, as producers of ninety per cent. of the refined methyl hydroxide in this country have decided that hereafter all packages containing it shall be labelled methanol, and so their advertisements read in the trade journals this day.

This change in nomenclature cannot be brought about instantaneously but will require time. The word will continue as a synonym in any event, although through concerted action, it may become more or less obsolete. No legislation can eliminate the name.

In 1906, after a vigorous campaign in which many of us chemists participated, the United States followed England, France, Germany, and other European countries by enacting laws permitting the general use of a tax free domestic alcohol for industrial purposes, and for light, heat, and power.¹ Such a step was essential that we might keep pace with other countries in the industrial development necessary in the commercial competition of the world. A discussion of the economics of this example of intelligent and farseeing fiscal legislation would be somewhat pertinent, but I fear may lead us a little far afield. Suffice it to say that it has made us a self-contained nation in regard to certain medicinals; ether, ethyl chloride, chloral hydrate, nitrous ether, and numerous synthetics may be mentioned in illustration. To emasculate alcohol, as it were, the law requires that tax free alcohol for use in the arts and industries shall have first mixed with it

(under close supervision) substances which "destroy its character as a beverage or render it unfit for liquid medicinal purposes." To fulfill the intent of the law and to carry into effect the provisions of the act, the conditions and regulations are made by the commissioner of internal revenue with the approval of the secretary of the treasury. On account of its poisonous properties, difficulty of removal from the resulting industrial alcohol, noninterference with many of the industrial purposes for which the denatured product was intended, and a desire to avoid the destruction of the methyl alcohol business, for methyl alcohol was cheap at that time, the first act designated it as a denaturant and the commissioner of internal revenue selected it as the principal one.

Up to date some forty-one formulas for specially denatured alcohol, to be used for designated purposes only, have been authorized under the several acts. Five formulas for completely denatured alcohol, which may be used for light, heat and power, have been authorized. One of each of these has been revoked.

The control of the former class (special) is so complete, involving as it does the moral character of the users, that little danger attends its use. One formula (No. 30) allows the addition of as much as ten per cent. of the purest methyl alcohol, but its use is restricted to general chemical and physical laboratory purposes.

The latter class (completely denatured) promises some needed relief for the liquid fuel shortage and will consume much the largest portion of denatured alcohol. That means denatured alcohol will become even more common than it is now.

Data collected prior to 1918 indicated that the drinking of liquids containing methyl alcohol was responsible for many deaths and acute cases of blindness. The deodorized methyl alcohol resembles pure ethyl alcohol so closely that the ordinary layman can hardly distinguish the difference between the two. In complex mixtures, whiskey and others, its detection involves very careful chemical analysis. Formerly it cost less than ethyl alcohol, so unscrupulous people were tempted to use it as a substitute for ethyl alcohol in adulterating whiskey, essences, extracts, bitters, washes, liniments, balsams, perfumes, and other products. The victims were generally those who indulged in the commoner forms of whiskey, rum and wine, although persons not addicted to the use of intoxicating drinks were undoubtedly often affected innocently from drinking Jamaica ginger, lemon extract, essences, bitters and medicines, whose chief menstruum was deodorized wood alcohol. At one time the poorer negroes in the Southwest drank it under the name of white horse or old mule. The price at which it sells now will reduce that danger to a minimum.

Happily the abuses grew less through the operation of the national pure food and drugs act of June, 1906. However, during the penumbra of prohibition many cases of blindness and death occurred through the drinking of wood alcohol or denatured alcohol.

The completely denatured alcohol is the more readily obtainable. Formula No. 1 called for ten per cent. of specified commercial methyl alcohol with

¹ Act of Congress, June 7, 1906; amended March 2, 1907; Act, October 3, 1913.

one half of one per cent. of approved benzine. This has been, and, is used in radiator water of motor vehicles to make a nonfreezing mixture. This may account in part for the cases traced to garages. After the outbreak referred to, this formula was revoked, December 29th last, appearing in orders issued January 8, 1920. Hereafter no completely denatured alcohol containing more than two per cent. methyl alcohol will be allowed. As alcohol of strengths above eighty per cent. requires dilution before drinking, it is doubtful if any future acute cases may be attributed to denatured alcohol, that is, after the present outstanding stocks under formula No. 1 are used up.

However, we cannot be so hopeful in regard to chronic cases culminating in blindness or defective vision which may be attributed to drinking diluted denatured alcohol containing methanol. The denaturing deterrents are selected primarily on account of the nauseous odor and repulsive taste, rather than physiological action. These odors and tastes repel some people as do the fragrant emanations of a pippet, or the seductive waters of a sulphur spring, yet some people accustom themselves to the atmosphere of the piggery; others through medical advice pay big money to drink sulphur waters. Rot gut whiskies and some mountain dews are not far behind varieties of denatured alcohol in odor and taste. With added flavoring, denatured alcohol containing two per cent. of methanol may be diluted until it contains one per cent. or less methyl hydroxide and be drunk. Death is not to be expected, nor immediate nor early blindness, from such a draught. And therein lies the danger, so apparent to you who are familiar with the cumulative action of drugs and the insidious influence of liquor.

Proper doses of paraldehyde produce effects associated with ethyl alcohol. I have heard, but it has not been authoritatively supported, that not a little paraldehyde was shipped to Russia from another country (not United States) to serve as a substitute for vodka. We are familiar with the historic accounts of ether sprees indulged in by the Irish and Piccadilly Willies and recent medical literature tells of the successful use of oil ether cocktails prior to dressings of seriously wounded soldiers. So a variety of intoxicants and exhilarating soporifics are actually available, but their names and associations are those of drugs, hence their use is not common. If we can but divorce the name and promote the recognition that these -ol bodies are in fact drugs and dangerous, likely to produce blindness, the very element of fear alone will have a most salutary effect in protecting men and women from themselves. Undoubtedly the recent publicity given the cases of the deaths from wood alcohol in the metropolitan district has materially assisted in maintaining sobriety during the past two months. In other words, wise education of all the people will in my opinion prove to be the only solution of the problem.

Some people who talk about wood alcohol and its associated evils very nicely reply to the query, "What is it?" by saying, "It is obtained from wood." When asked the source of the other alcohol, the alcohol of beverages, tinctures, and medicines, they reply that it is a product of fermentation. May I

call your attention to the fact that methyl hydroxide is a product of fermentation also, especially if the *Bacillus caproicus* or certain wild yeasts are present when the juice of sugar cane is fermented? It or ethyl formate is a normal constituent of rum.

In the fermentation of sugary or starchy materials for the production of grain alcohol the utmost care must be exercised to guard against these wild yeasts. Certain of these wild yeasts may be domesticated, as it were, and caused to bring about their own specific transformation in these carbohydrates to produce special bodies. For example, by birth control of yeasts these selfsame carbohydrates have been made to produce acetone and butyl alcohol from the same raw materials from which grain alcohol was made.

Granulobacter butylicum, presumably identical with *Gruber's Bacillus amylobutyricus* I.

Granulobacter saccharobutyricum, presumably identical with *Fitz's Bacillus butylicum*. Produces alcohol from glucose and with some difficulty from maltose.

Granulobacter polymyxa, frequently found in cereal grains. Produces traces of butyl alcohol.

Fernbach's culture, produces butyl alcohol and acetone from grain and potato mashes.

Bacillus violarius acetonicus, produces ethyl alcohol, acetone, etc., when grown on saccharose peptone media.

These liquids proved to be of immense value in the manufacture of high explosives during the war and may serve as one of the valuable initial products in the production of the synthetic rubber of the future.

One of the products of normal fermentation is amyl alcohol. In the distillation of beers and wines to produce distilled liquors, as whiskey, brandy, and gin, this amyl alcohol is concentrated, being then called fusel oil. The purpose of the process of rectification in the manufacture of the better grades of distilled liquors and ethyl alcohol was, and is, to eliminate, or reduce the content of this fusel oil, the alleged primary cause of the old, and somewhat reminiscently familiar, *Katzenjammer*.

Grain alcohol has long since ceased to be a definitive term. When rectified, it is ethyl hydroxide, ethanol, the same as obtained from distillation and rectification of any saccharose or starchy material, which has undergone the quondam alcoholic fermentation. As a sequel of President Taft's famous "What is whiskey?" definition, however, it required a decision of the highest courts to show that ethyl alcohol obtained by fermenting molasses was the same as that obtained from beer made from grain. It was my privilege to participate in proving that one substance obtained from two different sources brought to the same degree of purity was that one substance.

Ethyl alcohol, ethanol, ethyl hydroxide is prepared in quantity by fermenting, under regulated conditions, ordinary sugar (beet, cane, maple), starch (grain, potato, rice) and cellulosic material. They will not ferment when pure, but first require conversion, or inversion, into fermentable substances. I remember, as a student thirty years ago, inverting, fermenting, and distilling an old night shirt, spiking a synthetic lemonade with the product obtained therefrom for a laboratory frolic.

As you well know, the foundation of wood is cellulose. Paper pulp, especially book stock, is es-

entially cellulose. Saw dust and lumber scrap make up one of our greatest national wastes. Ethanol is a very valuable solvent, fuel, and chemical. By purifying the cellulose from these sources, inversion, fermentation, and other processes, some 300,000 gallons of ethyl alcohol were made each month in this country during the war. The output will no doubt be greatly increased. This was the regular alcohol of *likker* variety, made from wood, but it was not wood alcohol.

Recently propyl alcohol, propyl hydroxide, propanol, has been made on a semicommercial scale from petroleum products. It is an excellent solvent and acts very much like ethanol in stimulating and bringing on those conditions in animals which we associate with the influence of liquor. I mention these facts because, in my opinion, they serve to show the complexity of the problem and the need for keeping our heads upon our shoulders in seeking a salutary sane solution. I have said elsewhere:

"Since man began handling fire he has been utilizing dangerous substances to his own good purposes. Also the chemist has discovered many substances and shown how they might be used for the benefit of mankind; he has demonstrated the value of cyanides for extracting gold; how strychnine may serve as a heart stimulant; he has proved the value of phenol as a disinfectant; and how sulphuric acid may be used in multitudinous ways. All these substances are dangerous to handle, in fact many of the commoner reagents used in the hundreds of laboratories and factories are poisons. Were partial facts only presented, it is conceivable that they might assemble themselves in astounding array, which, if not properly interpreted, would serve for a cause of impeachment of the entire chemical profession, whose daily routine is one of handling poisons of all kinds, except for the fact that the chemist is supposed to know his business as well as the substances he handles, and to take some precautions for safeguarding himself and the people working with him."

The problem of wood alcohol is not a matter of mere business; it is a matter of humanity.

611 WEST ONE HUNDRED AND TENTH STREET.

THE LESIONS IN WOOD ALCOHOL POISONING.

BY CHARLES NORRIS, M. D.,

New York,

Chief Medical Examiner, City of New York.

Medicine is indebted to ophthalmologists, especially those of our own country, for its knowledge of wood alcohol poisoning, and it has been largely through their efforts that the community has been aroused to the dangers of this poison.

Nevertheless, a brief review of the pharmacological problems presented by wood alcohol poisoning and the pathological changes described may be acceptable. Reid Hunt (1) says that "although it has been known to pharmacologists for many years that the action is in some respects so markedly different from that of ethyl alcohol that the substitution of the former for the latter in any preparations intended for internal use would inevitably be

accompanied by the greatest danger, there seems to be much ignorance of this fact, even among physicians," due largely to the failure to discuss this form of poisoning adequately in the English text books. Since 1893 Professor Abel of the Johns Hopkins Medical School has warned and taught the students concerning the grave dangers of its use.

The general physiological action of methyl alcohol has been studied by Dujardin, Beaumetz and Audige and by Jeffroy and Serveaux in their classical studies on the toxicity of methyl alcohol. The true toxic equivalent, namely, the quantity to the kilogram of body weight, which when injected into a vein or into muscular tissue is lethal, that is, in a day or two, was determined for rabbits and dogs. Briefly stated, the toxic equivalent for methyl and ethyl alcohols are approximately similar but with certain striking differences. The coma induced by methyl alcohol is somewhat delayed when compared to that of ethyl alcohol, but it continues for a much longer period, two to four days, whereas in ethyl alcohol the period is much shorter—six hours—and it is rarely as long as twenty-four hours. In poisoning by daily small doses in animals, the differences in toxic effect between the two forms of alcohol poisoning are most striking. Grain alcohol may be administered for months whereas the administration of wood alcohol in similar doses is attended with serious difficulties. The prolonged narcosis observed in men was early ascribed to the presence of impurities in wood alcohol. Although this theory of the dangerous properties of wood alcohol was disproved, we find that as late as 1912 the German authorities were not in accord with this view, although the Hungarian, Austrian and Russian authorities had taken strong measures to protect the communities from adulterations with wood alcohol of all articles used internally or externally.

Methyl alcohol attacks the most highly differentiated nerve elements, inducing a deep and prolonged coma and blindness, and it has a marked selective affinity for the most highly differentiated nerve elements of man, which are therefore more rapidly and severely damaged than those of the monkey. Whereas drunkenness in man from grain alcohol is easily recovered from, it is almost uniformly fatal when due to methyl alcohol.

The toxic action of this alcohol is best demonstrated by Birch-Hirschfeld, who states that methyl alcohol is capable of injuring the eye more severely and rapidly than ethyl alcohol and that blindness ensues after the acute intoxication and even after very small doses, a result which does not occur with grain alcohol. The cumulative effects of wood alcohol poisoning are striking. Extensive fatty degeneration of the liver was always present in animals which had received daily small doses, the animals remaining comatose for days and refusing to eat.

The reason for the differences in effects on the animal organism between the two alcohols is explained by the difficulty which the organism experiences in oxidizing methyl alcohol; whereas ethyl alcohol is rapidly split into harmless end products (carbonic oxide and water), methyl alcohol is slowly and partially oxidized in the body and is split into substances which are in themselves more

toxic than the methyl alcohol, namely, formaldehyde and formic acid. The formic acid is excreted and found in the urine. According to Pohl, the acid is excreted slowly; the maximum amount in the urine did not appear until the fourth day after an initial dose and even when small quantities are administered to animals, formic acid is still found, showing how difficult it is for the body to oxidize completely methyl alcohol. The protective mechanism of the body to wood alcohol is overwhelmed and we have the curious anomaly of the conversion of one poison into another many times more toxic. It is believed that formaldehyde may be the intermediate product in the conversion of methyl into formic acid and that if it is, it becomes rapidly converted into its acid. It has been estimated that formaldehyde is thirty times as toxic as methyl alcohol, and Mayer has found that formic acid is approximately six times as toxic, namely, one and twenty-five hundredths grams to the kilogram was fatal to rabbits in an hour and ten minutes.

Bongers states that methyl alcohol, unlike ethyl alcohol, is found in the urine in large amounts. The slow excretion of the alcohol and of its oxidation products accounts for the long continued effects observed in acute poisoning and for its selective action on the retinal elements and the optic nerves. Bongers furthermore observed that, as in the case of many other poisons, such as morphine and bichloride of mercury, methyl alcohol is excreted into the stomach, where it acts as an irritant to the intestinal tract.

With this short introduction, it may be interesting to describe the work of the medical examiner's office in the recent epidemic of wood alcohol poisoning. The chief medical examiner's investigatory function to determine the cause of death brings him into touch with a group of cases, or a single case, which may present extraordinary difficulties of diagnosis. In the routine autopsy work of the department, we encounter a large number of cases in which the findings, except for general visceral congestion, are negative. They necessitate a more or less exhaustive chemical, bacteriological and microscopical examination. In perhaps the majority of these cases a clinical history is unattainable. For instance, the men on tour find a body, perhaps unknown. There are no surrounding circumstances which aid in the determination of the cause of death, and the neighbors, if any, can throw no light upon the incident. Perhaps most of the cases of methyl alcohol poisoning that we have investigated in the borough of Manhattan in the year 1919 are of this character, and they are the most difficult to determine. The six men who died last December as a result of drinking alcohol, presumably in a saloon on Fulton street, presented no great difficulty. The organs were analyzed, the tests for methyl alcohol were positive and obtained in the space of a few hours. The much more difficult, tedious, and time consuming part of the work was that performed by Doctor Gettler, the pathological chemist of the department, who analyzed the contents of the bottles, cans and jugs that were seized from the saloon by the police under my direction. In January of this year there

were three deaths from methyl alcohol which presented no great difficulty. One of the men was found dead on the premises, Madison street, the other two having been removed to Gouverneur Hospital, where they died shortly after admission. A bottle of medicated alcohol with the well known red poison label was found, which contained the usual amount of methyl alcohol. In a recent case an unknown man was found dead in a room and an empty bottle was found marked "denatured alcohol" on a red poison label. The analysis of the viscera showed large amounts of ethyl without methyl alcohol. Although we have not found out how this alcohol was denatured, it is quite certain that some other one of the means employed to denature alcohol was used. As you know, alcohol may be denatured by any one of the following seven formulas: By mercuric chloride, hydrochloric acid, formaldehyde, phenol, alum, formaldehyde and camphor, and by the liquor cresolis compositus (U. S. P.).

The gross pathology of methyl alcohol poisoning is indefinite. General visceral congestion is the only constant finding in acute methyl alcohol poisoning. Many authorities have emphasized the pres-

	Manhattan.	Brooklyn.	Bronx.	Queens.	Richmond.			
	1916.	1918.	1919.	1918.	1916.	1918.	1919.	1918.
Jan.	1	1	1	1	1	1	1	1
Feb.	3	1	1	1	1	1	1	1
Mar.	5	1	1	1	1	1	1	1
Apr.	2	1	1	1	1	1	1	1
May	1	1	1	1	1	1	1	1
June	1	1	1	1	1	1	1	1
July	1	1	1	1	1	1	1	1
Aug.	2	3	1	2	1	1	1	1
Sept.	1	1	1	1	1	1	1	1
Oct.	1	1	1	1	1	1	1	1
Nov.	11	1	1	1	1	1	1	1
Dec.	19	1	2	1	1	1	1	1
	44	5	3	2	6	1	1	1
Total for 1918—	8.							
Total for 1919—	54.							

ence of petechial hemorrhages in the various viscera, especially in the lungs. Strassman has noted the contractures of loops of the small intestines in a number of patients who were examined in the municipal lodging house catastrophe in Berlin during the Christmas celebrations in 1912, and has called attention to the fact that it may account for the acute abdominal distress which is present so frequently in cases of acute poisoning. None of our cases have shown this condition. The hemorrhages so largely emphasized, except those of the gastrointestinal tract, in my opinion are probably asphyxial and terminal in origin and therefore are largely determined by the manner of death. One would expect to find them most pronounced and marked in the patients dying of a slow asphyxia. In the Fulton street cases all the victims (middle aged men) had marked chronic visceral lesions, such as adhesive pericarditis, wet brain, chronic nephritis and arteriosclerosis, and they all belonged to that period of life in which such lesions are consistently present.

In cases coming to autopsy without a clinical history and where the surrounding circumstances throw no light on the cause of death, the diagnosis of wood alcohol poisoning may not be made until chemical analysis shows the presence of this al-

cohol. Frequently it is difficult for us to determine the exact extent or relation to the cause of death which the methyl alcohol has played. I refer to a class of cases in which very large amounts of ethyl alcohol are found with mere traces of methyl. I feel that I must emphasize this point for the reason that it is by means of such cases that the inference may be justified that much of the grain alcohol sold since prohibition has contained methyl alcohol.

For the past two years it has been a matter of constant speculation and consideration how these indefinite cases of general visceral congestion were signed out, without chemical examination and without history. I presume that the unhappy phrase "chronic or acute nephritis" was written. These cases were simply never recognized, and this condition, I may frankly say, existed all over the country, with the exception of Chicago and Boston. Without the routine help of a well equipped chemical laboratory, the pathologist at the postmortem table cannot differentiate between such conditions as acute sepsis, acute bacterial toxemias, such as tetanus, hydrophobia, so-called encephalitis lethargica, infantile paralysis, acute grain alcohol poisoning, and morphinism or cocaine poisoning. I may be excused for emphasizing this point for the reason that it has only been with the greatest difficulty that I have been enabled to develop this important medicolegal side of the medical examiner's office. We have been told by those having authority over our budget "that any physician may make a diagnosis of methyl alcohol poisoning at autopsy and that all this chemical reform work is unnecessary and is only done for the benefit of the colleges."

In regard to the microscopic changes which we have found in our cases, I am at the present time, unfortunately, not able to give definite information. There are two reasons for this: First, on account of the lack of help and press of work we have not been able to examine our material thoroughly; secondly, much of the material is poorly preserved for microscopic purposes. I may say, however, that the sections of the optic and other nerves that we have thus far examined are unsatisfactory. The changes are so slight, when compared with a normal nerve, that at the present time nothing further may be stated. I realize that this phase of the subject is of the utmost interest and importance.

In one of the Madison street cases, however, a vascular lesion was discovered which is of interest. It consisted of a marked swelling of the wall of the vein, the lesion being evidently a degenerative one. It is unfortunate that we were not able to examine the retinal elements in our cases. There were many reasons which prevented our doing this. First, the care which we have to exercise in not injuring the appearance of the face, and second, the unsatisfactory condition of many of the bodies upon which we perform autopsies. The lesions described by Birch-Hirschfeld were those observed after the experimental feeding of daily small doses, usually for six to eight days. Chromatolysis, vacuolization, and the shrinking of the nuclei and the protoplasmic changes leading to the more or less complete destruction and absorption of the retinal ele-

ment, as described by Birch-Hirschfeld, and Holden in experimental poisoning, may or may not be present in acute human cases. This work must be left for future determination. The lesions that we have discovered in the viscera are either of a chronic nature, as I have indicated, or the general changes which occur after acute and passive congestions of the viscera.

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344 WEST SEVENTY-SECOND STREET.

WOOD ALCOHOL AND THE EYES.

A General Consideration.

BY COLMAN W. CUTLER, M. D.,
New York.

Society may be judged as virile or progressive according to its power of adjustment, but all adjustment entails suffering or loss in some elements that fail, through constitutional defect or lack of purpose, to accept the new arrangement. The acceptance of prohibition with apparent acquiescence after ages of alcoholic indulgence is reassuring, although the experiment is still young. It is obvious, however, that sacrifices by the unfit are being made and will continue to be made, though it is to be hoped in a diminishing degree. We have passed a stage in civilization when we can say coldly that it is better for society that certain of our number should not survive; that is Nature's way, but Professor Ray Lankester has well called modern man Nature's insurgent son.

Wood alcohol, or methanol as it should now be called, is one of the poisons which has been used to obtain a brief gratification by the reckless or those ignorant of the dangers. It is our duty as physicians to study the problem with a certain sympathy, as true physicians should always regard those who go wrong mentally or physically, and to determine if possible the causes and the remedy.

In view of the sweeping of the new broom of prohibition and the strenuous attempts that will no doubt be made to abolish the sources of intoxicating liquors, it will be extremely interesting to note the reaction of certain elements of society. It is possible that the condition which we are studying today may be regarded at some future time as an episode which had its historic interest, but which lost its practical importance with the sudden and astonishing wave of prohibition. It is not in accordance, however, with the history of previous reforms that there should be a complete submission to the new régime and it has been predicted that the generation which indulged will not become abstinent without the substitution of other equally pernicious vices.

As long as grain alcohol is not to be obtained, it is of even greater importance that its poisonous substitute should be eliminated in beverages or extracts or drugs, also that its use should be absolutely forbidden even in the denatured form, for external applications. Workmen who may be exposed to the fumes of wood alcohol, whether it is used as a solvent or as a means for the production of formal-

dehyde, aniline colors, celluloid and films, should be protected, as the chronic poisoning which follows the exposure is more insidious than the dramatic cases of acute poisoning which lead rapidly to blindness or death. This rests with the authorities who will enforce the laws. The laws themselves are, I believe, already in existence, although there is confusion and in many states a lack of coordination which makes the enforcement difficult. It is only just to the Wood Products Company to say that they are anxious to aid in every way in the elimination of danger, and it should be borne in mind that the industries producing and using methanol have an economic importance which must not be disregarded.

Denatured alcohol, which has been one of the causes of poisoning because of its ten per cent. content of methanol, is now to contain two per cent. This and the change of the name from wood alcohol to methanol have been agreed to by the Wood Products Company, which produces eighty per cent. of the wood alcohol used in this country. This is a long step towards the ending of a menace which has recurred for so many years in this country especially; in Germany as evidenced by the catastrophe at Sharnack in 1911; in Russia after the abolition of vodka, and elsewhere. The danger has attracted an attention which has waned as the imminence of the menace passed. This is what we have to guard against. The occurrence of a large number of cases of poisoning in Connecticut and Massachusetts has been a dramatic lesson. To many observers it may seem impossible that such a catastrophe should be repeated, but let us not be too sure that in the course of time weak human nature may not reassert itself and the same succession of events be repeated.

A great deal of important work has been done in this country and much of it by ophthalmologists. While we are proud of the earnest and successful efforts of Casey Wood and Buller, of Holden. Allport and others, we must stand back of those who have worked against odds compared with which the present situation seems comparatively simple. The limitations of space will not permit a review of the efficient work done by these men, especially by the Committee for the Prevention of Blindness, which, under the direction of Doctor Holden, for four years waged an untiring war against the wood alcohol menace, until in 1915 it seemed that in New York city at least it had been controlled. The report of that year states that there was but one case of poisoning, whereas during the four preceding years there had been fifty-nine cases of poisoning in New York city, although increasing numbers were reported from other parts of the country. The Committee for the Prevention of Blindness has been active since then. Let us quote from the *News Letter*, their publication, which brings the statistics, as far as they are obtainable, up to date:

"To the National Committee for the Prevention of Blindness the problems connected with wood alcohol are by no means new. For many years it has been carrying on a consistent campaign to educate the lay mind to an appreciation of the dangers arising from drinking the poison or inhaling its fumes. Foreseeing the possibility of an increased use of wood

alcohol upon the withdrawal of grain alcohol from the market, the committee issued a special warning in the spring of 1919, and in September of that year instituted, through the cooperation of the press, an intensive educational campaign reaching not only every city and town in the United States, but rural districts as well. A need of continued work is evidenced by reports of wood alcohol poisoning daily appearing in the newspapers. As a basis for future action, the committee is making a strenuous effort to get at the facts in the case; to this end a request for authoritative information was sent to the following: The health officer of each State, the health officer of one hundred of the largest cities, state commissions for the blind, associations for the blind, hospitals, prosecuting attorneys.

"There have been obtained to date reports of one hundred seventy-nine deaths, twenty-one for New York city in December and five in January. In practically all cases no attempt was made to answer the questions referring to total or partial blindness, the reason for the omission being that information regarding such cases was not available. It must also be borne in mind that wood alcohol poisoning is reportable in very few States, hence information must be gained from death certificates; that in many states wood alcohol poisoning is not differentiated on death certificates from other forms of poisoning, hence their statistics reporting no cases of death from this cause are probably incorrect; the cause of death is very often camouflaged on the death certificate; the number of one hundred seventy-nine deaths from wood alcohol poisoning, even in proportion to the small number of states reporting, underestimates the true number occurring."

In 1913 Professor Charles Baskerville published a report on the chemistry, technology and pharmacology of and the legislation pertaining to methyl alcohol, which contained a very careful and admirable review of the subject, including a complete bibliography, and a collection of over seven hundred cases of poisoning up to that time. It is rare to find a work so thorough and so succinct, and it is worthy of careful study by those who wish to review the history of the subject in all its phases.

It is probable that many cases have escaped the attention of the medical profession because of a lack of familiarity with the characteristic features, and especially because the symptoms of chronic poisoning are not clearly defined. It is of vital importance, therefore, that we should bear in mind the cardinal symptoms of this poison: Headache and vomiting, often with blood in the stomach contents; severe abdominal pain, cyanosis, dyspnea, convulsions, coma, and death from paralysis of respiration. All degrees of this picture, to that of a mild intoxication which would not have any characteristic features, may be seen, but partial or complete blindness, with dilated pupils, may follow even a small dose of the poison.

The persistence of the symptoms and the progress of the atrophy of the optic nerve, after a brief period of improvement to total blindness, is characteristic. In the cases I have seen—and the ophthalmologist usually sees these patients after the acute stage—the nerves were white with blurred

edges; lamina not visible; vessels much contracted; the picture of atrophy secondary to choked disc or papilledema, not of primary optic atrophy. Where the duration of the disease has been short the history of the intoxication may be obtained and the diagnosis established. There are two points to be emphasized, however:

First. Unless the patient is seen early and the diagnosis made and reported at once, there is little chance of obtaining the evidence required to convict those who have sold the poison. The law has frequently failed because of delay in obtaining evidence. Second. Patients sometimes come to our clinics with optic atrophy, the cause of which is undiscovered. Doctor Gruening ten years ago, and Doctor Gifford, stated that when there had been a history of sudden blindness with atrophy, without other discoverable cause, wood alcohol should always be suspected.

It is equally important to consider the occurrence of chronic changes due to the drinking of small quantities of methanol or to the absorption of the poison through a long period of time. Sixty such cases were collected by Professor Baskerville, in which the eyes were injured by wood alcohol used as a solvent for shellac in hat stiffening. In such cases the symptoms most often noted are chronic conjunctivitis and pharyngitis with moderately congested or atrophic nerves, suggesting a process which was not rapidly progressive. Vision was reduced often to half the normal, but none of the patients were blind and some had been exposed to the fumes for from two to thirty years before being forced to give up their occupation on account of failing vision or chronic irritation of the mucous membranes. It is striking that in six of eight cases which were examined by Doctor Stratton and Doctor Brown definite mention was made of cupping of the optic disc. Doctor Gruening also reported the late development of deep excavations as in glaucoma in a young man he had seen and treated in the acute stage from the beginning of the poisoning.

The question of tolerance or of an acquired immunity to the poisoning is exceedingly interesting and has not been sufficiently studied. It is customary to think of the formic acid into which methanol is transformed in the system, and which is slowly excreted, as a cumulative poison, but it is possible that in some instances the chemical transformation may be altered by more rapid oxidation or the tissues may be more resistant. Such acquired tolerance is found with other drugs such as arsenic and opium, and in tobacco and grain alcohol. The following letter from a physician in a neighboring State explains itself. He writes:

"We have a formaldehyde plant here, but no cases of wood alcohol poisoning from it that I know of. The purest wood alcohol is used and the natives here are used to drinking this as a regular thing. I believe there is an immunity created, as I know of patients who have taken wood alcohol for years with apparently no effects other than grain alcohol would give. As an example, I have a Norwegian working for me who about once a month will go to a hardware or drug store and get

a quart of denatured alcohol which he promptly proceeds to drink, and says he prefers wood alcohol to other whiskey, and has taken it for years."

It would seem from this that the usual denaturants which make denatured alcohol unattractive for most, add a certain pungency which gratifies the taste of others. It would be interesting to study the physical condition of those who have taken methanol more or less habitually or who have absorbed it for years. Dr. H. H. Rightor (1) shows very clearly that precisely this danger has existed for the colored race.

Harrop and Benedict (2) report a carefully studied case in which acidosis was detected and the following conclusions drawn:

1. In case of severe acute poisoning with methyl alcohol associated with a marked grade of acidosis, recovery followed the use of alkali therapy.
2. The acidosis was associated with an increase in the amount of titratable organic acids in the urine, and specifically with a marked increase in the excretion of lactic and of formic acids.
3. The acidosis, when present, furnished an indication for the use of prompt therapeutic measures.
4. On the basis of the work quoted, it was submitted that gastric lavage should probably be done over a period of several days.

This is a fine illustration of research as applied to the patient and utilized for therapeutic results.

In closing, the committee representing the section in ophthalmology reports that it has conferred with the committee on public health of the Academy of Medicine; that measures were taken at once for a conference with the president of the Wood Products Company; that the attention of the board of health was called to the fact that wood alcohol poisoning was not reportable and that urgent measures were needed to enforce existing laws.

As has been stated, the name methanol has been substituted for wood alcohol and the strength of the denaturant reduced from ten per cent. to two per cent., thereby rendering denatured alcohol innocuous.

Through the courtesy of the Committee for the Prevention of Blindness which, as has been stated had continued and intensified its campaign throughout the country, statistics were obtained from boards of health from a number of states. These are not yet complete and it is impossible to offer final statistics regarding the recent epidemic of poisoning. The casualties have diminished, so that the urgent danger of the moment is passed, but it seems desirable that there should be a standing committee whose duty it would be to consider laws and, where it is possible, their enforcement.

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WOOD ALCOHOL POISONING.

*Report of Cases at Gouverneur Hospital.*BY ALEXANDER COMORA, M. D.,
New York.

From November 17, 1919, until December 1, 1919, Gouverneur Hospital received seven definite cases of methyl alcohol poisoning. Subsequently nine cases which were suspicious of wood alcohol poisoning were reported by our ambulance surgeons. Three of the patients gave evidence of visual impairment, but all refused to be moved to the hospital and so, unfortunately, we lost the opportunity of studying the cases and of confirming the tentative diagnosis. In view of the enforcement of prohibition, Doctor Camac had cautioned us to be on the lookout for methyl alcohol poisoning and so every unconscious patient brought to the hospital was closely observed for symptoms and signs of wood alcohol poisoning.

Three of the seven patients died. Patient C. B. entered November 17, 1919, at 8.55 p. m. and died at 11.30 p. m., just two hours and thirty-five minutes after admission; patient W. H. entered November 18, 1919, at 12.10 midnight and died at 12.20, living exactly ten minutes, and patient H. N. entered November 19, 1919, at 2.30 a. m. and died at 4 a. m., living one hour and thirty minutes.

The history in brief from our patients who recovered was as follows: 1, They had been drinking alcohol; one definitely knew he was taking wood alcohol and had been taking it for several weeks preceding his collapse, when he took four ounces at one sitting; 2, vision impaired; 3, abdominal discomfort to severe abdominal cramps, and 4, nausea.

Physical feelings elicited were: 1, Unconsciousness; the patients who recovered, however, regained a clear mentality within twenty-four to forty-eight hours; 2, cyanosis; 3, pupils equal, enlarged, and in two cases markedly dilated; 4, sluggish reaction to light; 5, respirations deeper and slower than normal, varying between 15 to 20 a minute.

The clinical manifestations did not throw much light upon the subject: 1, Temperature ranged between 98.6° F., and 100° F.; 2, pulse was increased to from 90 to 120; 3, urine normal (routine examination), and 4, blood findings were normal. Where stomach contents were taken early methyl alcohol was found. Chemical analysis of an early catheterized specimen of urine may or may not show the presence of formalin.

Dr. Benjamin Schwartz performed the autopsies in all our cases. Nothing definite or pathognomonic was found. A congestion of all the organs was observed and through a subsequent chemical analysis of the brain, liver and kidneys a report was returned in all three cases of the presence of methyl and ethyl alcohol.

Visual disturbances.—Two patients recovered their eyesight completely within twenty-four hours; both patients left the hospital within a week in good condition. Of the other two, one practically regained his sight; he could differentiate colors and tell time on the ordinary watch; however, he still had difficulty in reading. The other patient, while totally blind at first, left the hospital able to see

shadows. Both of these patients have not returned for further examination, although they were asked to do so. Our consulting ophthalmologist diagnosed both of these cases as optic neuritis with incipient optic atrophy. The pupils of both were still dilated when they were discharged, but less marked than on admission.

Of interest and importance is the finding of wood alcohol poisoning in cases autopsied by Dr. Benjamin Schwartz and subsequently submitted to chemical analysis, which clinically had been diagnosed as cerebral hemorrhage or brain tumor, nephritis or some surgical abdominal condition.

CONCLUSION.

1. A definite clinical diagnosis of methyl alcohol poisoning is not always possible.

2. In every unconscious patient, due consideration should be given to wood alcohol poisoning.

3. A specimen of stomach contents should be taken immediately for a chemical analysis of wood alcohol.

NARCOTIC DRUGS AND STATE LEGISLATION.

BY A. D. GREENFIELD,
New York,

Attorney and Counsellor at Law.

In order to determine what is needed in State legislation relative to narcotic drugs it is necessary to consider first, the facts with regard to the use and abuse of these drugs and, second, the scope and effect of Federal legislation. The general nature of the legislation demanded will naturally depend on a determination of the conditions requiring remedy; and the particular scope and purpose of State legislation will depend on how far and how effectively these conditions are already dealt with by the Federal law.

THE FACTS.

The first and most important fact to be borne constantly in mind, in my opinion, is that there is a legitimate use and need for these drugs in medicine. It would not be proper for a layman to discuss this in detail in a communication intended for medical men, but my experience in the study of the subject has taught me that among physicians, as well as among lay social reformers, there is sometimes a tendency to concentrate attention on the importance of preventing abuse, and forget the still greater importance of fully protecting legitimate use. The opiates are frequently termed habit forming drugs, and I think the use of this terminology is responsible for much of the misconception which leads to the unbalanced viewpoint I have mentioned.

Experience has demonstrated that, as regards purely physical effects, the opiates are not as habit forming as cathartics, for example, often are; there are probably many more persons today physically dependent on their regular dose of cathartic than there are opiate addicts. The habit forming quality resides rather in the nervous system of the individual than in any inherent property of the opiate or other narcotic drugs. Observation and classification of addicts have demonstrated that the

majority are individuals who are abnormal or deficient in mental equipment or nervous adjustment; that this condition antedates the acquirement of addiction and exists independently of it; that the addiction is a symptom or expression of the condition or tendency of these individuals, and they will revert to it whenever opportunity offers, no matter how often they may have been cured of the actual physical craving for drugs. Normal individuals, on the other hand, who have acquired the habit fortuitously, as by legitimate medication, show little tendency to revert after the physical craving has been removed by withdrawal treatment.

The next fact to be considered is the nature of drug addiction. Much has been said in certain quarters as to drug addiction being a disease rather than a habit. As a layman I must not discuss this from the medical point of view, but looking at it as a practical question it can be easily seen that it makes little difference. The experience of many physicians in charge of public institutions handling thousands of these cases has clearly demonstrated that withdrawal of the drug results within a few days in a disappearance of the apparent physical need or craving for the drug, and that within two or three weeks the former addict is gaining weight and in all respects undergoing a rapid restoration of physical health. For all practical purposes in dealing with the problem of drug addiction, these facts, conclusively proved by clinical observation on a very large scale, are all that are essential. The question whether addiction is a habit, easily and quickly broken by enforced withdrawal of the drug, or a disease, easily and quickly curable by the same means, is purely academic.

It may be asked: If drug addiction yields so readily to treatment, why is it a serious legislative problem? The answer is that the great majority of addicts, while they are taking the drug, do not wish to be cured. Their desire to continue the habit creates a demand which it is financially profitable to supply, and for the sake of preservation of the public health and safety it is considered necessary to take means to prevent such supply.

The sources of supply to addicts have been of two kinds: first, physicians and druggists; second, peddlers. The sources of supply of the peddlers have been largely smuggled goods, and the greater portion of these were originally exported from this country and smuggled back. No opium is produced in this country, but much of the raw material is imported and manufactured into morphine, heroin and other opiates, much of which is then exported.

FEDERAL LEGISLATION.

In addition to laws and regulations dealing with importation and exportation of these drugs and their raw materials, the Harrison Law, passed in December, 1914, is the Federal law controlling all dealings in opiates and cocaine throughout the country. This law forbids all sales or other disposition of these drugs to consumers, except that a physician is permitted to dispense them in the course of his professional practice and a druggist is permitted to fill physicians' prescriptions. It will thus be seen that the second source of supply to

addicts mentioned above—the peddlers—is covered by the Federal law, and if that law could be perfectly enforced this source of supply would be eliminated.

With regard to physicians and druggists, the Harrison law itself does not limit them further than as above stated, viz., a physician can dispense only in the course of his professional practice, and a druggist only on a physician's prescription. The United States Supreme Court has held that dispensing to an habitual user for the purpose of gratifying his appetite for the drug is not in the course of professional practice. It has also held that an order for opiates issued to an habitual user for the purpose of keeping him comfortable by maintaining his customary use is not a prescription. These decisions do not affect the right of a physician to use or prescribe opiates or cocaine in the treatment of disease. The Supreme Court evidently took the view that drug addiction was a habit rather than a disease, but in one of the decisions there is language from which the inference has been drawn that it might be permissible to prescribe these drugs in the course of *bona fide* treatment for the cure of the habit.

The physicians who are engaged in the business of supplying or prescribing narcotic drugs to addicts are always ready to maintain that cure is their ultimate purpose. It is naturally to the interest of these physicians to represent addiction as a serious disease, the cure of which is very difficult and requiring much time for the preparation of the patient to undergo the dangerous ordeal of final withdrawal. It is also to their interest to maintain that the so-called disease is little understood, and that its proper treatment requires special knowledge and skill.

In prosecutions of physicians under the Harrison law the government is obliged to meet these contentions by expert testimony to prove to each jury that prescribing or dispensing these drugs to addicts who are not under control is not compatible with *bona fide* medical treatment for the purpose of curing the habit. The defence can generally produce experts to testify to the contrary, and often is aided by local conditions, such as the maintenance of a public narcotic drug dispensary by well meaning but misguided municipal authorities, or the absence of sufficient institutional facilities to care for the addicts of the locality, the number of whom is always greatly exaggerated by the defence. The outcome of these prosecutions is therefore uncertain, even though the facts as to the nature of the defendant's practice be undisputed.

STATE LEGISLATION.

Inasmuch as the Federal law, in the field covered by it, is paramount, the first requisite of State legislation is that it should not conflict with the Federal law. The next requisite is that it should supplement the Federal law in dealing with such features of the problem as are not adequately covered by the provisions of the latter law. A third desideratum—though not absolutely necessary—is that it should incorporate certain features of the Federal law, so as to make possible a better enforcement

of such provisions through the cooperation of State and Federal officers.

The first and third points mentioned above are sufficiently obvious not to need detailed consideration, so I will devote myself to the second, the supplementing of the Federal law. The weakest feature of the Harrison law, in its practical operation, is its failure to be more specific as to the limits of a physician's privilege in the treatment of drug addicts. The abuse of this privilege by unscrupulous physicians and druggists is undoubtedly a more harmful and potent factor in the maintenance of addiction than the operations of peddlers. A physician known to addicts to be specializing in writing narcotic prescriptions quickly acquires a large clientele, and by keeping three or four hundred addicts supplied he can make a very good living, even if he charges an average of only fifty cents a day to each for writing the prescriptions. The addicts get their prescriptions filled at a convenient drug store, which is open at all reasonable hours; they can usually count on full weight and pure drug; they are exposed to no personal risk or inconvenience; and they can generally afford to supply their wants indefinitely, even if in modest circumstances. Often the druggist or the physician will give them credit if temporarily embarrassed.

The peddlers, on the other hand, are doing a risky business. Their drugs have to be obtained from illicit sources, at considerable expense and some danger of detection. To compensate for this they charge as much as the traffic will bear, and add to their profits by liberal adulteration. If caught selling they are liable to instant arrest and a certain and speedy conviction, with no chance of befuddling a jury by expert testimony and pretense of medical treatment, so they have to be very careful to whom they sell, and cannot safely keep regular office hours at convenient central locations. Neither do they give credit to their customers.

In places where a stiff campaign has been made by the Federal agents against physicians and druggists, even when not much attention was paid to the peddlers, it has been found that in the course of a few weeks large numbers of addicts were anxious to volunteer for institutional treatment. So long as the easy, convenient, safe and cheap medical source of supply was open to them, very few had been willing to "take the cure"; but when forced to rely on the peddlers they found themselves unable to stand the pace of paying three or four times as much and getting their supply at considerable personal risk and inconvenience, not to say uncertainty. Some, through adulteration, had unconsciously reduced their daily consumption to a considerable extent.

CONCLUSIONS.

It is evident from the foregoing that every State law should contain a provision calculated to prevent the abuse of the physician's privilege. Such provision should be drawn with the greatest care not to interfere with medical treatment of cases other than drug addiction. The simplest way of covering this point is by forbidding physicians to

prescribe or dispense these drugs except when required in the *bona fide* treatment of a disease or condition other than drug addiction, permitting personal administration, however, in any case. To forbid personal administration would interfere with legitimate institutional treatment of addicts by the reduction method, which is considered proper by many experienced physicians. A provision of the sort outlined has been in force for several years in Massachusetts, and has also been adopted in Rhode Island, and has, I believe, been found to work satisfactorily in both States.

The practical effect of a law such as this, if adopted by all the States and strictly enforced, would be to force addicts to be cured; and as a corollary to it the States or municipalities ought to make provision for institutional treatment of their addicts. The nature of the requirements in this respect would vary with local conditions. The value of adequate facilities for withdrawal treatment lies not only in the element of justice to the addict, compelled by the law to discontinue his use of the drugs, but in the assistance given to the enforcement of the law by removing much of the demand which makes its violation profitable.

With respect to many features that would be proper subjects for State legislation, uniformity would be desirable; in others it would not be necessary or practicable. The judicious drafting of proposed legislation suitable for adoption by all the States could best be accomplished by a committee, whose labors should be based on a study of all existing State legislation on the subject. A compilation of State narcotic and poison laws was undertaken by the Public Health Bureau of the Treasury Department several years ago, but owing to the war and other handicaps has not been kept up. The first step in securing intelligent, uniform State narcotic legislation should be the resumption of this work, bringing the compilation up to date, and making it accessible to those interested.

52 BROADWAY.

THE MANAGEMENT OF EMPYEMA.

BY ALEXIUS McGLANNAN, M. D.,
Baltimore, Md.

In the management of empyema various factors relating to the character of the infection and the condition of the organs within the chest, make it necessary for the surgeon to modify his usual methods and apply in a different way the general principle of providing a free and direct outlet for pus contained in a cavity. Both Hippocrates and Celsus advise the opening of an empyema with the knife or more often by the cautery. The diagnosis rested on the presence of Hippocratic *scussation*, otherwise these ancient authorities waited for an external swelling before evacuating the pus. As time went on and methods of diagnosis improved, the evacuation of the pus was done at earlier stages of the disease. Some bad results must have occurred, because we find Purmann (1) in 1692, maintaining that all criticisms of the operation for empyema are groundless, since military surgeons

see a great many penetrating wounds of the chest which are not fatal, and in which the penetration of atmospheric air does not cause inconvenience.

Among the ancients pneumothorax, hydrothorax and hemothorax were all confused with empyema and often considered as the same or parts of the same process. This fact, no doubt, accounts for some of the bad results.

Experimental data.—At the present time we include in the term empyema, a purulent exudate within the general pleural space, limited only by the extent of the infective process (2), and therefore distinguished from intrapleural and intralobar abscesses, which are local collections of pus walled off by adhesions. With such an exudate the character of the infection and its effect on the thoracic organs, especially on the heart and great vessels, must be considered by the surgeon in planning his method of treatment.

The effect of a pleural exudate is varied. Under certain conditions it is believed to be beneficial. Asserson and Rathbun (3) reporting a series of cases of influenza pneumonia occurring in the Naval Hospital, state that the development of an effusion seemed to be an indication of an attempt at resistance on the part of the body. These observers decided that the presence of a quantity of fluid in the pleura benefited the patient by keeping the inflamed surfaces apart, thereby adding to his comfort. There is slight absorption of toxin from the pleura and this is more than counterbalanced by the lessened absorption from the immobilized lung.

With streptococcus infection of the lung, such as occurred in the recent epidemic, the pleural exudate may be compared with the serous effusion in the peritoneum about a pyosalpinx. The fluid in itself is not dangerous and disappears as soon as the inflammation subsides. With persistence of the inflammatory cause the effusion narrows down in extent and becomes a localized abscess.

In the same manner the pleural exudate in most cases disappears with the subsidence of the pulmonary inflammation, but occasionally persists as an empyema after the lung condition has healed. The pleural effusion occurring in the course of a streptococcus pneumonia should never be drained while the pulmonary inflammation remains active. The only danger of the early exudate comes from the embarrassment of respiration produced by a large effusion, and this can always be relieved safely by a careful aspiration. With the pneumococcus infection of the lung these early exudates are uncommon. The pneumococcus empyema is distinctly a sequel to pneumonia, and therefore becomes a surgical problem.

An open pneumothorax has a profound influence on the functions of the thoracic viscera. Elsberg in 1909 (4) and Graham and Bell (5) showed by experiments on animals how an opening in the thorax affects respiration and circulation. Graham and Bell proved that alteration of the pressure within the pleura of one side produced a simultaneous and practically equal alteration in the pressure on the other side. This experiment disproved the older conceptions of pneumothorax in which it was held that the lung of the unopened side

remained unaffected while its fellow became compressed.

With the pneumothorax opening smaller than the area of the inlet to the lungs, it is proved that the pressure in both pleural cavities rose from a distinctly negative one to a pressure almost entirely positive. The quantity of air entering the trachea was correspondingly diminished. At once the animal made an effort on the part of his respiratory mechanism to compensate for this lessened air supply by a marked change in his respiratory movements, usually by increase in amplitude, with a corresponding decrease in frequency. There was a limit, of course, beyond which increased amplitude and rate of respiration could not be sustained. The amplitude did not exceed the vital capacity, about 3500 c.c. The maximum rate was about sixty a minute.

If the opening was not too large, the negative pressure in the pleura would be more or less re-

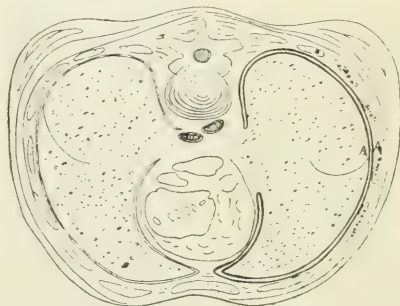


FIG. 1.—Diagrammatic cross section of thorax to show the relation of points A and A' on the visceral and parietal pleural surfaces when the lung is in normal expansion.

stored and air would enter the lungs. The ability of an animal therefore, to withstand an open pneumothorax depended on his ability to compensate by increasing the vigor of his respiration.

When the area of the pleural opening was larger than that of the inlet to the lungs, the animal passed through a stage of marked dyspnea and died in asphyxia in a few minutes. No matter how great his compensatory efforts were, air came into his pleura more rapidly than into his trachea; and as sufficient negative pressure could not be produced, enough air to support life could not enter his lungs.

In a compensated pneumothorax, the lung on the affected side could be seen to expand and contract with the respiratory movements. Through the large opening of an uncompensated pneumothorax the mediastinum may be seen to flap from side to side and in a severe expiratory effort may be ruptured. Elsberg's experiments on the influence of posture in pneumothorax, indicated that in the prone position the heart falling forward may so steady and support the anterior mediastinal septum as to prevent its flapping, and in this way relieve the respiratory embarrassment.

Graham and Bell consider the vital capacity of the lungs as 3700 c.c. and the tidal air as 500 c.c.

with the rate during rest as fifteen and the maximum sixty. Estimating the area of the glottis as two and twenty-five one hundredths square cm. and making an allowance for the friction of the air passages, they calculate that an opening of fifty-one

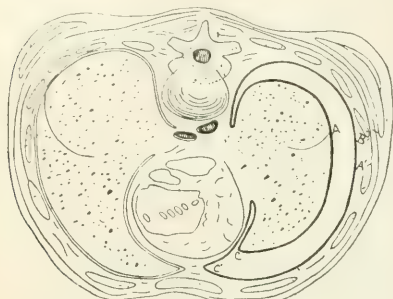


FIG. 2.—Showing the altered relation of the points A and A' when the lung is compressed by an empyema or collapsed by a pneumothorax. The lung shrinks on its hilus and is crowded in the direction of the vertebral column. Point A, therefore, is no longer opposite A', but corresponds with B' on the chest wall.

and five one hundredths square cm., i. e., about two by four inches, is the maximum for which a healthy human being can compensate.

When there is diminished air space in the lungs; or when the need for oxygen is increased by toxemia and infection; or when there is diminished muscular activity, the size of the opening must be decreased. In addition to the respiratory difficulties an open pneumothorax causes marked disturbances in the circulation. The suction power of the heart is enormously lessened, with a resultant venous stasis or even a marked intravenous pressure. There is a distinct and rapid loss of body heat, about twice as great a loss as that following evisceration of the abdomen. The danger of secondary infection of the pleura is just as great as that of primary infection from without.

The effects of an open pneumothorax on the respiration and circulation disappear almost at once, if the opening be closed. In spite of the presence of a large quantity of air in this closed pleura the dyspnea and cyanosis are promptly relieved, because when the circulation of air in the pleura is prevented, compensation can take place.

In empyema the pressure of the fluid on the lung produces a physical condition analogous to that existing in a closed pneumothorax. In the course of the operation as ordinarily performed, an open pneumothorax is produced and maintained, the size of the chest wound being more or less altered by the character of drainage tubes and dressings employed.

The healing of an empyema depends on two separate factors. First: The control of the infection, largely a biological problem depending upon the resistance of the patient and the virulence of the invading organism. Chemical disinfection of the cavity can be of very little assistance in this problem. When the disinfectant is a proteolytic agent it does help by removing the material on which the bacteria live and by destroying those organisms

with which it may be brought into contact. Second: Refilling of the cavity, a mechanical problem which may be solved by the following factors: a, bulging of the diaphragm and the mediastinum into the cavity; b, collapse of the chest wall; c, dilatation or reexpansion of the lung. As a rule all of these factors combine to obliterate the cavity, but a physiological restoration of the chest is possible only by the redistention of the lung.

During the epidemic of 1918-19, there were admitted to the Mercy Hospital, Baltimore, 422 cases of influenza, 355 cases of pneumonia and twenty-three cases of empyema. Eleven of the pneumonia cases were negro patients, but all the patients having empyema were white. In the hospital seven and one half per cent. of the total number of beds are reserved for negroes.

Three hundred and thirty-nine of the influenza and pneumonia cases were admitted during the month of October. The remaining cases came in at varying intervals until February, 1919.

The ratio of empyema to pneumonia was about six and one half per cent. This is much lower than that of certain of the Army camps, notably Camp Devens, where the empyema ratio is given by Gray (6) as sixteen per cent. The number of cases of empyema which occurred is much smaller than we expected. No doubt this smaller number may be explained by the fact that so many patients died early in the course of the disease, before they had opportunity to develop empyema. One hundred and twenty-two of the 355 cases of pneumonia ended fatally, and seven of these fatal cases were in negroes.

With so many very ill patients to attend, it is evident that the hospital staff, seriously crippled by the demands of the Army, could not undertake routine laboratory study of the exudates. For this

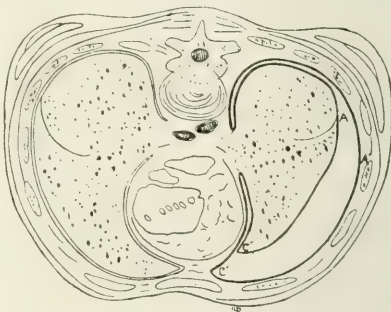


FIG. 3.—Showing obliteration of the posterior space by adhesion of the two layers of the pleura. Note that point A on the lung becomes fixed to the parietal pleura at a distance from A', and that the line C-C' is lengthened. Emphysematous dilatation of the lung or collapse of the chest wall will be required to obliterate the cavity C'-C-A.

reason we are not able to give a bacteriological classification of our cases.

OPERATIVE MEASURES.

Our first patient was operated upon on November 9, 1918, eighteen days after admission. The average duration of the patient's illness before coming to

operation was thirty-three days. This length of time was allowed to elapse because the surgeons and the medical staff of the hospital were in full accord regarding the dangers of early intervention. Until it was made plain that simpler methods, such as

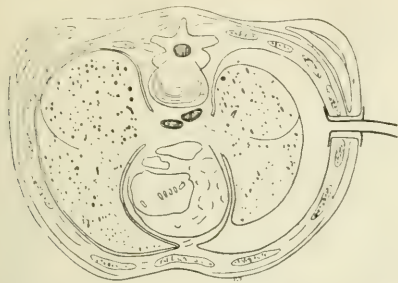


FIG. 4.—Showing the even expansion of the lung when negative pressure is provided in the pleural cavity by suction drainage.

aspiration, would not give the patient relief, operation was not considered.

In the twenty-three cases we had three deaths. One occurred in a deeply cyanosed child, six months of age, who died four hours after the aspiration of 100 c. c. of thick pus from the right pleura. The other two were in adults and followed operation for empyema. The death rate, about fourteen per cent., is much lower than the Army average of thirty and two tenths per cent. and twenty-one per cent., the mortality of the operated cases at Camp Devens.

Fourteen patients were treated by the method to be described. One patient died. This patient was a pregnant woman who was delivered during the course of her pneumonia and in whom streptococcus empyema developed. She was operated upon on the tenth day of her illness and died thirty-six hours later with marked meningeal symptoms. With this method therefore, our mortality was about eight per cent. in fourteen cases, nearly twice that of the empyema commission in twenty-three cases. We have had no recurrences in any of the patients who recovered and no persistent sinuses occurred. The average duration of the time of drainage was sixty-five days, the shortest thirty-five, and the longest ninety-four days.

COMPLICATIONS.

One patient had an adhesive pericarditis. He went through a severe attack of influenza and pneumonia, involving large areas of both lungs. The left pleura was aspirated several times, 200 to 600 c. c. of fluid containing streptococci was removed, and varied in physical character from the cloudy to milky consistency. Later an empyema developed on the right side, for which we operated on the thirty-eighth day. At this time the heart was fixed to the right of its normal position and it has remained displaced to the right ever since. In one patient there developed a perinephritic abscess after the empyema had healed and the x ray showed the lung fully expanded. The empyema and

the perinephritic abscess were on the same side. In a third patient, an infant, there developed a suppuration of the ribs adjoining the drainage opening. This was cured by excision of the infected bone.

In the management of these cases we endeavored to combine the disinfection of the cavity by means of Dakin's solution or chloramine-T, with the method of suction drainage, which I had already described (7). The apparatus required is very simple. The essential piece is the Brewer flanged drainage tube (Fig. 5), in which a small lateral opening has been made to admit a Carrel instillation tube. The combined tubes are known as the McHenry-Brewer empyema tube. The reservoir containing the disinfectant is connected with the instillation tube, while the drainage tube is connected with a long tube which ends under water in a container on the floor beneath the patient's bed.

OPERATION.

The operation was done in most cases with procaine infiltration anesthesia. A few patients were given ether. With ether there was always some cyanosis, evidence of an added burden to the respiratory effort. About an inch and a half of the seventh rib was removed, subperiosteally, the bone section beginning about the midaxillary line and extending backward. After the rib had been removed aspiration of the cavity was done by means of a needle introduced through the space made by the removal of the rib. During the time required for this procedure, mattress sutures of catgut were put through the muscles on either side of the wound. They were left long, and drawn aside to be tied later. Enough of these sutures were introduced to insure tight closure of the muscle layer. The aspiration having reduced the tension in the cavity, the needle was withdrawn and the pleura incised, the index finger of the unoccupied hand followed the blade of the knife closely, filling in the opening as fast as it was made. The wound in the pleura was made just large enough to admit the index finger, which finger so plugged the opening as to limit the passage of air into the pleura. The finger inside the pleura broke through adhesions until the lung was felt expanding with inspiration.

The Brewer tube was then made ready for insertion by folding the inner flange into as small a

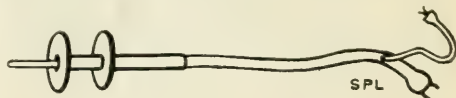


FIG. 5.—Brewer flanged drainage tube.

compass as possible and fixing it in this shape in a clamp forceps. The sliding flange was well separated and the distal end of the tube closed by some sort of clamp. As the finger was withdrawn, the tube was inserted and the forceps removed. The expanding flange was drawn against the parietal pleura and so closed the opening. The mattress sutures were drawn up and tied. The skin was closed and the outer flange brought down tight over a single layer of four ply gauze which covered the wound. Broad strips of adhesive plaster entirely covered in the

flange and the dressings, so that the contact between the outer flange and the skin was made airtight. All this time traction must be made on the tube in order to keep the inner flange in contact with the pleura.

The patient was returned to bed, and the ends of the Brewer-McHenry tubes joined to tubes connecting them with the drainage container and the reservoir of disinfectant. The clamp was then removed and the pus flowed out under the fluid in the drainage container. The end of the drainage tube being under water, no air can enter the chest through it; and the syphonage makes a mild aspiration and corresponding negative pressure in the pleura. The amount of pus syphoned off is measured.

Two hours later, a quantity of disinfectant solution equal to one half the volume of pus removed, but never greater than 200 c.c., was allowed to flow slowly from the reservoir into the chest. While the fluid was flowing in, the patient was turned toward the sound side and remained in this position for about a half hour. During this half hour the outlet tube was clamped off, retaining the solution in the chest. The clamp was then removed and the patient's respiratory movements, aided by the syphon drainage, gradually forced the fluid and pus from the chest. The instillation was carried out in this way, repeated every two hours during the day and every six hours at night. If at any time drainage is interrupted by plugging of the tube with fibrin the cavity may be flushed with the solution and this rapidly removed by connecting the outlet tube with a suction apparatus.

The progress of the treatment is measured by the quantity of fluid that can be introduced into the cavity. When this falls to seventy-five c.c., stereoscopic x ray pictures of the chest are made. If these show even expansion of the lung, the Brewer tube is removed and the patient given the blowbottles to use, so that by forced expiration the lung may be expanded quickly and obliterate the remaining cavity. The tube is not removed until the x ray demonstrates an even expansion of the lungs. If this expansion is delayed, the blowbottles are used as an aid.

During the postoperative course of the disease, it is necessary to provide the patient with a generous nitrogenous diet to overcome the emaciation and debility which result from the infection. This factor is of the greatest importance in treating the cases of streptococcus infection. The preliminary report of the empyema commission (8) contains tables showing the effect of diet in the period of convalescence.

The x ray is a great aid in the management of empyema. For diagnosis it is especially useful in providing a graphic record of the extent of the exudate. After operation, its use permits us to follow the course of the expanding lung in a manner which cannot be equaled by any other means at our disposal.

Homans (9) reports a study of healing empyemas by means of the x ray. He concludes that the plate showing the position of the adherent lung will indicate whether or not complete expansion of the lung will be possible. "If the lower angle of the lung becomes fixed well out upon the diaphragm, expan-

sion seems always to occur." Collapse and adherence of the lower circumference to the mediastinum makes expansion impossible.

In general, if attachments of the lung occur in such a way as to leave the surface of the collapsed lung convex after drainage, complete expansion can not occur. If, on the other hand, the outer face of the lung be concave, it can expand and become applied to the chest wall.

In our cases this rule of Homans does not seem applicable. In one of the cases requiring ninety-four days for healing the lung shadow shows a convex surface; while in another requiring eighty-nine days the shadow is concave. In both cases the x ray pictures were made after operation. In the course of most empyemas following streptococcus pneumonia, treated as outlined above, we have noted about the end of the second week the following phenomenon. The introduction of Dakin's solution, which previously has caused no discomfort, sets up a violent irritating cough, with expectoration of the glairy mucus, characteristic of the action of the hypochlorite on pus. In such cases we believe the empyema resulted from the opening of a small cortical pulmonary abscess into the pleura, and that the hypochlorite by its proteolytic action dissolved the fibrin protecting the opening and so formed a pulmonary fistula. In such cases the Dakin solution is stopped at once and boric acid or some similar nonproteolytic disinfectant substituted.

In one such case we attempted to disinfect the remaining small cavity by injection of two per cent. formalin in glycerin. After about five c. c. of the mixture had been slowly injected, the patient was seized with a violent irritative cough and noted that the expectorated material tasted sweet.

With young children it is not always necessary to resect a rib. In the twenty-two cases of this series there was one child, an infant, aged five weeks, the youngest empyema patient I have ever known. The pleural cavity was filled with pus, and there was marked cyanosis and dyspnea. Oxygen inhalations were necessary to bring the respiratory movements within a reasonable rate. Repeated aspirations of the pus did not give relief.

In this case we secured a cannula, the lumen of which just admitted a rubber tube the size of a No. 14 French catheter. This cannula was fitted with a well sharpened trocar. The skin of the eighth interspace in the posterior axillary line was infiltrated with one half c. c. of one fourth per cent. procaine and then incised with a sharp knife. The trocar cannula was passed into the pleura and as the trocar was removed, the opening of the cannula was closed by covering it with a finger. The rubber tube was then threaded through the cannula as this instrument was withdrawn. The pus was allowed to flow through the rubber tube under water into a bottle. The skin wound was dressed with a little gauze and an air tight junction made between the tube and the skin by adhesive plaster.

The drainage tube was then connected with a long tube ending under water in a large bottle put under the bed. Syphon drainage was thereby established. At two hour intervals fifty c. c. of two per cent. chloramine-T solution was introduced. The cavity

was quickly disinfected and the lung was completely expanded in three days. In this patient there developed an osteomyelitis of the rib as a complication.

Many observers deny the value of suction drainage in empyema, asserting that the expansion of the lung proceeds just as well from the advancing adhesions in the presence of an open pneumothorax. It is surely reasonable that this same expansion will take place more rapidly and with less exertion on the part of the patient, if he is freed from the necessity of compensating for his pneumothorax. Moreover, as the diagrams from Perthes's show, (Figs. 1, 2, 3, and 4) the relation between fixed points on the chest wall and the lung is greatly changed when the compressed lung makes adhesions to the parietal pleura. This alteration of relations makes expansion uneven and leaves a cavity to be obliterated, either by emphysematous dilatation of the lung, or by collapse of the chest wall. Those who deny the value of suction drainage point to the value of the large wet pad of dressings as a plug for the opening in the chest wall. The method as I have outlined it, spares the patient this pad of pus soaked dressing with its disagreeable odor and irritating action on the skin. Most of our patients go undisturbed for two weeks or more before the dressing is changed. Several have been unchanged until the time arrived to remove the tube. If the Brewer tube did no more than allow this flow of pus from the pleura to the bottle, its use would be more than justified, because of the increased comfort given to the patient. But it does more, it gives us a simple apparatus for maintaining a negative pressure in the pleura, thereby preventing the distress of pneumothorax, and actively aiding the expansion of the lung, so that the physiological restoration of the chest is made possible.

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- 115 WEST FRANKLIN STREET.

LONDON LETTER.

(From Our Own Correspondent.)

Prevalence of Venereal Disease in Great Britain.—Meeting of Society for Prevention of Venereal Disease.

LONDON, March 17, 1920.

According to the annual report of the English local government board for 1918-1919 it is not practicable to give any reliable estimate of the extent of venereal disease among the civil community. It is of interest, however, to note from the annual report of the Registrar General for 1917, that there was in 1917 a sudden rise in infant mortality attributed to syphilis. But while no reliable estimate of the extent of venereal disease is available in England, the prevalence of syphilis and gonorrhea in the armies was well known and it is a matter of common knowledge that venereal disease was greatly increased and is very prevalent in all parts of Great Britain and in the big towns in particular. Treatment has improved since the establishment of treatment centres in different parts of the country. Exceedingly good work has been done at some centres. The reports made by the local government board's medical staff as the result of their inspections of treatment centres suggest that where the centres are in charge of sympathetic and capable medical officers and where special efforts are made to bring the existence of the clinic to the notice of the public generally, the facilities offered are appreciated and the utility of the clinics steadily increases, but where the work is done perfunctorily attendances are small. As a matter of fact, although treatment was improved, it exercises very little influence on the prevalence of the disease and so far as tending to stamp out the disease its effect is practically nil. It is acknowledged that the only means of extinguishing the disease is by a reliable method of prevention.

The question is, is there such a method? On this point, opinions of medical men and even of authorities are divided. Some insist that direct prophylaxis or early selfdisinfection properly applied will surely prevent infection, while other practitioners and authorities aver that they are doubtful.

The medical profession of Great Britain is divided on the subject into two camps: the National Council for the Prevention of Venereal Disease and the Society for the Prevention of Venereal Disease. The first body is that originally formed to cope with the situation. The national council throughout its existence has laid most and particular stress on educating people with regard to the dangers of indiscriminate intercourse and by appeals to their moral sentiments. For long its members were deaf to the statements made, and unmoved by the statistics advanced that direct prophylaxis had given wonderfully good results among some of the armies during the war and especially among the Australian troops. The Society for the Prevention of Venereal Disease came into being in order to propagate the view that early selfdisinfection was the only mode of preventing infection on which thorough dependence could be placed and to counteract the teaching of the national council that prophylaxis was to be avoided. The somewhat unedifying situation at

Standardization of Bacterial Suspensions.—

Frederick L. Gates (*Journal of Experimental Medicine*, January, 1920) describes an instrument for measuring the opacity of bacterial suspensions. It is measured by the length of the column of the suspension required to cause the disappearance of a wire loop. A formula is described by means of which the measured opacity is translated into terms of the concentration of bacteria per c.c., and thus made comparable with that of other suspensions of the same organism.

present is that one part of the British medical profession strongly advocates early selfdisinfection while the other part opposes it just as vigorously. It is very unfortunate, as it is open to misconception by laymen, who see pamphlets and leaflets issued by the authority of distinguished physicians and surgeons warning against early selfdisinfection and also see other pamphlets and leaflets, sent out on the authority of equally great physicians and surgeons, praising the method as the sole means of prevention. Those responsible for the plan of campaign of the national council have modified their attitude to some extent, but still refuse to concede the all important point that early selfdisinfection should be employed. Thus something in the nature of an *impasse* has come about.

On the afternoon of February 5, 1920, the Society for the Prevention of Venereal Disease arranged a meeting at the Mansion House, London, with the Lord Mayor in the chair. The meeting was largely attended and on the platform were many of the best known scientists, physicians and surgeons of Great Britain.

Lord Willoughby de Broke, the president of the society, in an opening speech said in part that the prevention of venereal disease was of two kinds, moral teaching and the proper use of disinfectants. Moral teaching and the advocacy of a healthy life were desirable from every point of view, and it was a selfevident proposition that to avoid contagion one should avoid contact, but in spite of this, many people still continued to expose themselves to the risk. It was with regard to these people that science must attack the chain of infection at its weakest link. Fortunately the microbes of the disease were some of the weakest in existence, and it had been proved by Metchnikoff that they would yield to disinfection readily, if properly applied at the right time. Disinfection was of two kinds, immediate and delayed. The entire history of surgical disinfection showed that disinfection was efficacious in the exact proportion as it was immediate. It had been suggested that delayed disinfection after exposure to risk of venereal disease might be carried out at public institutions erected for the purpose. He was not aware that there were any such institutions at present, and the question of supplying them bristled with difficulties. In the meantime, venereal infection was proceeding apace. It had been proved during the war that venereal infection could be averted by immediate selfdisinfection properly applied at the time of exposure to risk; wherever this had been thoroughly carried out the results had been satisfactory. No statistics, however manipulated in a contrary sense, would ever be able to prove that disinfectants do not disinfect. It was the object of the society to give the same instructions to civilians as were given to soldiers. The use of disinfectants was already beginning among the civilian population, in an unscientific and uninstructed form, and it was necessary that, in the interests of the race, everyone should have access to the highest medical authority, with regard to the proper use of disinfectants. It was immoral to suppress the truth, and the society would not be responsible for concealing from their fellow citi-

zens one of the principal means of stamping out the terrible scourge of venereal disease.

PROPOSED RESOLUTIONS.

Lord de Broke moved the following resolution: It is obvious that the best way of avoiding venereal disease is to abstain from promiscuous sexual intercourse. It is, however, certain that a large number of persons continue, in spite of moral teaching, to expose themselves to risk, and so to incur and spread disease among the community, the chief sufferers being women and children. Venereal disease is accountable for a large proportion of cases of insanity, nervous diseases, loss of sight, and sterility. These diseases have become a menace to national health and prosperity, and infection can be prevented by means of selfdisinfection, if properly applied, immediately after exposure to risk. It is necessary, therefore, 1, to instruct the public as to the vital importance of selfdisinfection at the time of exposure to risk as a preventive of venereal disease, and the methods of application, and 2, to advocate such further steps for the prevention and ultimate eradication of venereal disease as may be deemed advisable.

Sir James Crichton Browne who is, perhaps, the only orator left in the British medical profession, for sad to say oratory appears to be at a discount in every profession even in that of politics, seconded the resolution in an eloquent and lengthy speech. He said in part that moral prevention had so far proved ineffectual as a check, and it would be wildly Utopian to hope, in view of what we know of human nature, that within any reasonable time universal continence and marital fidelity, the goal to be arrived at, would be reached. Meanwhile, millions of men; women and children, a majority of them innocent of any transgression, would perish miserably by the way. Moral prevention must somehow be reinforced and supplemented if we were to avoid the widespread and insidious deterioration of the race, and it was to insist on that, and to suggest an auxiliary aid that the society came into existence. Semiofficial bodies had proposed the provision at public expense of lavatories with ablution rooms, with a skilled attendant. To cover their retreat, for they did not always think this, these bodies would call these establishments early treatment centres, but that was a misnomer and evasion, for it was not treatment these centres would offer, but simply disinfection, the very same disinfection that this society offered, but with this difference, that while the society's disinfection would be applied instantly, theirs could only be applied after some hours of dangerous delay, and that, while theirs would be applied by a skilled attendant, the society's would be applied by the delinquent himself. These venereal lavatories, as they might be called, to which men exposed to risks might resort for cleansing, were open to the gravest objection. They would be conducted at a great public cost and only in large towns, for in rural districts they would be impracticable, their character would become known, those entering them would lay themselves open to suspicion and perhaps to blackmail, and it would only be a second rate and uncertain, because postponed, protection they would afford. Their oppo-

nents would seem to think that what would be a proper precaution at a certain hour in their ablution centre would be heinous offense if practised independently only a few hours earlier.

The general public should be informed as to the vital importance of selfdisinfection, and as to the proper use of disinfectants, so that if they exposed themselves to risks they should know what to ask for and how to use it. The time for plain speaking had come. Scientific truth must no longer be hidden under a bushel. Even now and notwithstanding the published labors of the Royal Commission, the public did not fully realize the magnitude of the evil or the havoc it was causing. Sir Ray Lankester, one of England's foremost men of science, supported the motion in a remarkably apt speech. He stated without reserve that to realize its purpose of diminishing and possibly abolishing the awful destruction and maiming of life and health due to venereal disease the society intended to spread as widely as possible an effective knowledge of the use of disinfectants in arresting venereal disease, and at the same time to take steps to insure that it should be a simple and easy matter for anyone to purchase, and to keep in a form ready for immediate use without delay of any further preparation, the two disinfectants approved by authority, namely, permanganate of potash, five grains in half a pint of water, and calomel ointment of the strength of thirty-three parts by weight of calomel to sixty-seven of a mixture of calomel and petrolatum.

HYPOCRISY AND PRUDERY.

Sir Arthur Sloggett, spoke against the hypocrisy and prudery of the British and recommended, among means to stay the progress of what may be termed the red plague, education by lectures and informing the population how best to look after themselves. Miss Norah March said, in part, that the emancipation of women and the placing of them on an equality with men had not had the effect on morality that it was expected to have. Women had not raised the morals of men but had come or were coming down to the level of men's morals. The same creed of morals for women as for men seemed to be the slogan of women's emancipation. It was not an uplift movement, but rather a downgrade. Sexual promiscuity was rife at the present and in her opinion education did little good.

Sir Arbuthnot Lane made a short speech in which he said that he did not approach the subject on philanthropic grounds but from selfish motives. It was to prevent the infection of women and innocent children. All the money and influence possible should be employed to eradicate this foul thing from our midst.

WORK AMONG THE NEW ZEALAND TROOPS.

Miss Ettie A. Ront, honorable secretary, New Zealand Volunteer Sisters, spoke in the most uncompromising fashion of the good that had been done among the New Zealand troops and the Anzac troops generally by the use of direct prophylactic measures. She was also very emphatic in stigmatizing the obstacles that had been put in the way of carrying out such treatment effectively by the "unco guid" of Great Britain, by the church and by that

part of the medical profession represented by the National Council for the Prevention of Venereal Disease. Miss Ront spoke with true colonial unrestrained exuberance and certainly did not mince her words when referring to the action of the council or of that section of the community opposed to early selfdisinfection. For instance, she had no hesitation in stating that some of the information and even statistics sent forth by the council were false or misleading and that a prominent, if not the chief reason for early selfdisinfection among the Australian troops not being nearly so successful as were identical methods employed in France, was because, although the system in England was good, adequate means were not provided for carrying it out.

She also contradicted the statement made that the incidence of venereal disease among British troops was only thirty-eight to the 1,000. She stated that in the British army there was much concealment of disease, and believed it established that the overseas rate of infection was never so high as the English army of occupation in the early part of 1919.

It is impossible to speak dogmatically on the subject where authorities differ so widely. To the unbiased person who has little or no practical experience and who gains the greater part of the information from what he reads, it seems that early selfdisinfection is effective as a preventive when properly applied. It is known that the spirochete and gonococcus are both destroyed easily in the early stage; then why not get rid of whichever it may be whilst there is the opportunity? No doubt the stumbling block is the difficulty of carrying out the method properly among a civil population.

ELIMINATION OF THE ORGANISMS.

As illustrative of the ease with which the organisms causing venereal disease can be eliminated soon after intercourse, Mr. J. E. R. McDonagh, who is perhaps, the most original thinker of the authorities on venereal disease of the present day, stated in a paper contributed to the *Practitioner*, January, 1920, that prophylaxis has engaged the attention of many, and is now relegated to a position subordinate to moral training. He goes on to say, "Although the prophylactic measures used have saved many from infection, at the best it is only shutting the stable door after the horse has been stolen. It was a pity to issue prophylactic packets when micturition and washing with soap and water were simpler and just as efficacious. Possibly because of the simplicity of this teaching, which hailed from the medical School of Salerno four or five centuries ago, it was thought that more reliance would be placed by the public upon special outfits. Because mercury has been used for syphilis since the disease came to Europe, when it was confounded with scabies, which had been treated with mercury hundreds of years before, and because Metchnikoff had found that rubbing calomel ointment on a scarified wound on a monkey's forehead prevented infection with syphilis, and because permanganate of potash had been used in the treatment of gonorrhea for so long, it was thought that the dual outfit should contain both calomel and potassium permanganate. McDonagh is of the opinion that no dual outfit is required.

Editorial Notes and Comments

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A MISNOMER.

It has been the custom to label disturbances of the glands of internal secretion with the prefixes hyper and hypo. This was supposed to signify that the amount or quality of the secretion of the gland in question had either increased or diminished. This is misleading and dangerous. It has the effect of giving us a wrong prospectus of the entire field of endocrinology and endocrine therapy.

It is well known that the various endocrine glands have a multiplicity of functions. In the past our attention was centered on the marked physiological and psychical changes caused by the malfunction of the glands. Today we give more attention to the diagnosis which can be made from the various markings indicating disorder in a certain gland or in its compensating glands. We note that we can identify gonadal difficulties by the position, shape, or absence of the lateral incisors; we can detect pituitary compensation in the male and adrenal compensation in the female as a result of these gonadal disturbances. We have come to find that many psychic habits are closely correlated with specific gland function—not necessarily malfunction, but merely the predominance of a certain gland. The pituitary, we have found, controls all functions based on periodicity—menstruation, the rhythm of poetry and music, punctuality, neatness, order, all of these have their origin in the pituitary. We find clinical corroboration of this in diseased conditions of the gland, when a sudden fondness and aptitude for music make their appear-

ance simultaneously with a new growth which activates certain secretions of the pituitary.

The point that should be emphasized is the multiplicity of function or functional control which these various glands possess. It is not safe to view a condition, in which one or more of the functions controlled by the gland may appear, as an excess of the accepted normal. There may be other functions which are not affected and still others which are markedly decreased. It would be well to regard each gland of internal secretion as a series of glands in a closely bound up chain, just as we regard each one of the glands as one of the series of the endocrine chain. It would be better to limit ourselves to the terms dysfunction or malfunction and specify the clinical findings which are found to be abnormal. This would enable us to centre our attentions more intelligently upon the finer diagnostic points of endocrine disorders and enable us to make more progress in the study of endocrine functional control. We are now in the epoch of pragmatic endocrinology and should make the most of the splendid opportunity. The cases of marked endocrine dysfunction, such as Addison's disease or acromegaly, are interesting and worthy of study, but wider fields of usefulness will be found in the more careful study of what seem to be the minor derangements in cases of malfunction of the thyroid, pituitary and other glands.

THE QUESTION OF PROHIBITION.

The medical profession is divided as to the effects of total abstinence from the viewpoint of health. Some physicians regard alcohol as a poison whenever or wherever used. These are uncompromising advocates of prohibition. Other members of the profession, although they are not such outspoken supporters of alcohol as of yore, declare their strong belief in its virtues both social and therapeutic. Perhaps the majority of medical men are somewhat inclined to sit on the fence; when asked to give their views on the subject of alcohol or prohibition they express themselves with becoming reserve and usually state that while drinking to excess is always detrimental, drinking in moderation does no particular harm and in certain circumstances may be beneficial. They are opposed to prohibition but are in favor of restrictions on the sale of alcoholic beverages.

It seems that in Great Britain the views of medical men vary regarding the drink question in much the same way as here. There is a comparatively small band, of which the late Sir Victor Horsley

was the leader, who combat the use of alcohol on scientific grounds. There is possibly a larger majority of the profession in Great Britain than in this country who oppose prohibition, partly perhaps from indifference, partly because tradition has implanted in their breasts a belief in alcohol, and partly because prohibitive laws of any description are an undue interference with personal liberty.

At the inaugural meeting of a debating society established at St. Bartholomew's Hospital, held in December last, an interesting discussion on prohibition took place. Sir Thomas Horder, an eminent London physician, opened the debate with the following motion: "That this meeting does not consider the principle of prohibition to be in the best interest of the British nation." The speaker urged that the proper way to fight drunkenness was not by prohibition, but by a sane social reconstruction, by the abolition of slums and saloons and by prohibiting the sale of filthy stuff that is sold in the public house under the name of alcoholic beverage. Dr. McAdam Eccles opposed the motion and said that prohibition would mean that all total abstainers would merely remain as they were, that all those who were doing themselves and others harm by taking alcohol in excess would be prevented from doing so, and that all the moderate drinkers would find themselves freed from that tired feeling, those rheumatic pains, and other complaints and would be capable of doing their work better than before. However, the motion was carried by ninety-four to thirty and it is more than likely that if a vote was taken at the other big London hospitals on the question, the result would be similar.

The editor of the *Medical Press*, referring to the matter, records his personal opinion as wholly in favor of prohibition and says that writing in a noneditorial capacity, and as one who is not an abstainer, he confesses he is lost in admiration of the step the American people have taken. If they intend to adhere to prohibition, if its introduction is a settled determination, and no mere passing fancy, it is in his judgment, one of the greatest moral events in the history of civilization. It stands for a great ideal, and who can doubt that a nation which remains true to such an ideal will astonish the world by its achievements.

The pros and cons of prohibition are many, and whoever wishes to judge of the question from the medical aspect cannot do better than read the work of Archdall Reid on the subject. It is wholly free from sentiment and coldly scientific from cover to cover. The question, from all points of view, is one on which it is difficult for even the wisest to dogmatize.

TRANSFUSION OF BLOOD IN HEMORRHAGE.

One of the most marked features of the war from the medical and surgical viewpoints was the discovery, or rather the definite ratification of the belief, that transfusion of blood was of the utmost service as a life saving and remedial measure in hemorrhage and to a lesser extent in shock. Transfusion had been practised long before the war, but the matter was not properly understood, nor had a suitable technic been devised. During the war great progress was made in all directions, so far as blood transfusion was concerned, and since the war further advances have been made. It has been found to be as valuable in medical as in surgical cases, and it is, perhaps, no great exaggeration to say that the scientific application of blood transfusion has opened a new era of treatment.

Mr. James M. Graham (*Edinburgh Medical Journal*, March, 1920) contributes a well written article on the good effects of blood transfusion for the arrest of hemorrhage. He points out that the great advantages of blood transfusion compared with infusion of normal saline or other artificial solutions are: 1. The blood pressure is immediately raised. 2. The blood pressure is likely to be maintained. 3. The oxygen carrying capacity of the blood is increased. Exactly when transfusion of blood should be resorted to it is impossible to say; no hard and fast rule can be laid down. According to Graham the best indication for transfusion is the presence of signs of serious collapse, such as pallor, subnormal temperature, a small fast pulse with low blood pressure, restlessness, sighing and rapid respiration, syncope or other symptoms of deficient oxygenation. The most valuable index of the gravity of a case is the blood pressure. Continuance of collapse and a rapidly falling blood pressure, when the hemorrhage is controlled, are signs of serious import and strongly suggest the necessity for transfusion, especially when saline infusions and other measures have been tried.

The following are Graham's conclusions regarding the value of transfusion of blood in cases of primary and secondary hemorrhage. 1. Transfusion is frequently life saving, when other treatment for the constitutional effects of hemorrhage has failed. 2. It diminishes the amount of shock during operations on exsanguinated patients. 3. It has a restorative effect in cases where patients are suffering from the combined effects of hemorrhages and shock, either traumatic or operative, when other treatment has failed. 4. It can raise and maintain the blood pressure, and restore patients suffering from severe shock, when other treatment

has failed. 5. It is less effective in cases of pure shock than in cases of hemorrhage. 6. The immediate response to transfusion is as pronounced in cases of secondary hemorrhage as in primary hemorrhage. 7. Transfusion may improve the patient's resistance to infection, and indirectly hasten healing of septic wounds. 8. Transfusion has a specific action in hemorrhagic disease of the newborn, arresting the hemorrhage and permanently restoring the patient to health. 9. Transfusion has a specific action in hemophilia, and is the most certain means of arresting bleeding in this disease. Immunity against recurrence of hemorrhage is conferred for a variable time. 10. Transfusion may temporarily diminish the tendency to hemorrhage in cases of purpura hemorrhagica, but there is little evidence that it can materially alter the course of the disease. 11. Transfusion will, in certain cases of secondary anemia, associated with repeated small bleedings, favor the natural arrest of hemorrhage. 12. Transfusion may save life in cases of uncontrolled gastric or duodenal hemorrhage, and in such cases encourages the arrest of bleeding by improving the quality of the clot. 13. When the bleeding has ceased spontaneously, the transfusion of a moderate amount of blood is unlikely to excite fresh hemorrhage. 14. The local treatment of septic wounds is the most important factor in preventing a recurrence of secondary hemorrhage and transfusion can only indirectly diminish the risk of bleeding.

OCHRONOSIS AND ALKAPTONURIA.

Ochronosis is characterized by a grayish black color of the cartilage—that of the ribs particularly—and occasionally also of the ligaments and joint capsules, periosteum, tendons, connective tissue, dermis, arteries and endocardium, especially where plates of sclerosis exist, and more rarely the muscles and renal epithelium. The pigment producing this hue has never been isolated in a pure state. That there is a relationship between ochronosis and alkaptonuria seems to have been proved by a number of observers and it may well be asked why ochronosis is not observed in all instances of alkaptonuria. The explanation is undoubtedly to be found in the fact that a rather large amount of homogentisic acid circulates in the blood and in the long duration of its elimination. The gray blue or black tint of the cartilages, ears, sclerotics, and cheeks indicates the possibility of the occurrence of ochronosis with alkaptonuria.

There is usually no change in the general nutrition or health in ochronosis, and this is why a diagnosis is often not made during life, but there

are three symptoms which are likely to bring the patient to the physician. First, there is pigmentation of the sclera of both eyes, but the brown or black spots are in no way comparable to the pigmentation of Addison's disease. The skin is usually untouched, while the bluish black pigmentation of the cartilages of the ears is very characteristic. In forced flexion of the hand the joints may also present a grayish blue color and the sweat from the groin or axilla may be greenish blue. The second symptom is arthritis. The change in the urine is the third which attracts the patient's attention. In a total of fourteen cases of ochronosis, three presented alkaptonuria and in two others it was suspected. A few cases of this curious affection have been reported following the use of carbolic dressing for ulcers of the legs, in which the urine offered neither the reaction of melanotic melanuria nor that of alkaptonuria.

It is therefore, clear that in certain cases of ochronosis, the nature and origin of the pigment remain obscure, but it should be noted that ochronosis cannot be present without melanuria being present at the same time. Out of a total of twenty-five cases of ochronosis in subjects varying from twenty-three to seventy-seven years of age Poulson found that alkaptonuria associated with ochronosis gave the largest proportion as shown by the following figures: Twelve patients with ochronosis presented alkaptonuria, six others had been using carbolic acid dressings, while in the remaining seven the etiology of the urinary change could not be ascertained. In seven other cases of ochronosis taken from another source, all presented alkaptonuria. Such is the present state of the question of ochronosis and although the pathogenesis of the affection is obscure, it is at least known that it is closely associated with alkaptonuria. In these cases disturbed metabolism, which brings about the formation of homogentisic acid due to insufficient combustion of the albuminoids, is probably the causal factor in the production of ochronosis and perhaps, as in the case of alkaptonuria, the hypothesis of requisite predispositions must be taken into serious consideration.

THE IMPORTANCE OF RADIOLOGY.

Radiology, although a comparatively new science, has made rapid strides since its inception. To no branch of science, did the war give greater stimulus than to radiology. Both in surgery and medicine the employment of the x rays played a great part. In the localization of foreign bodies and bone injuries and in the diagnosis of disease their use was invaluable. In the treatment also of certain dis-

eases, of cancer, for example, radium and the x rays have not only definitely proved their worth but have exhibited potentialities and possibilities in the therapeutic direction, which, if found practicable or even partially practicable, may well revolutionize treatment. But while the war has so stimulated the development of radiology, it is to be hoped now that peace has come, a reaction will not set in. Research cannot stand still, and in order that radiology shall fully come into its own, unremitting diligence in providing equipment and all the means for study of the subject, theoretical and practical must be employed. It is now recognized that the study of physics should go hand in hand with that of radiology, as physics is the fundamental basis of the former science. The possibilities of radiology are almost illimitable, positively staggering to the imagination, and it will be an act of criminal carelessness if, so far as its medical and surgical value is concerned, every effort is not made to develop it. Radiology is, to all intents and purposes, still in its infancy, but if properly nurtured and reared it should have a healthy adolescence and a lusty life from which advance is never absent and to which decay will never come. It is impossible to exaggerate the importance of radiology to the modern world in the relief of human suffering.

INTERNATIONAL RECIPROCITY.

Announcement has been made of the projected visit of a commission from Great Britain and France for the purpose of investigating the medical educational facilities in this country, with a view to the establishment of relations upon which international reciprocity of medical licensure may be established. The importance of the visit of this commission can scarcely be overestimated, and the constitution of its personnel is an earnest of the genuineness with which Great Britain and France are looking forward to a closer bond of medical unity between the Old World and the New.

Great Britain has sent Sir Humphrey Rolleston as the representative of the Royal College of Physicians of London; Colonel H. J. Waring to represent the Royal College of Surgeons of England; and Dr. Norman Walker as the spokesman for the Triple Qualification Board of Scotland; while Canada is sending the president of its General Medical Council, Professor J. C. Connell of Kingston, Ontario. The dean of the Faculty of Medicine of the University of Paris, Professor Henri Roger, has appointed as the representative of that body which passes upon questions of medical licensure for France, Professeur agrégé Gregoire and Professeur agrégé Roussy. The commission will make a tour of medical centres of the United States and will attend the meeting of the American Medical Association at New Orleans.

The thanks of the medical profession are due to the National Board of Medical Examiners of the United States for the thoroughness and foresight with which the visits of these distinguished gentlemen have been arranged, and it is hoped that out of the mutual acquaintance thus acquired may grow such a harmonious understanding that the tide of postgraduate pilgrims which formerly had as its Mecca a number of made-in-Germany clinics will be diverted to French and English points, and, conversely, that European students may be lead to recognize the advantages of postgraduate work in America.

MODERN GHOSTS.

Down through the ages there has defiled through the world an unending procession of psychologists who, according to the centuries and places through which they passed, were termed mad, or dreamers. or, at the best, seekers after something new or simply revivalists of that which was old. As they traversed what might be termed the villages of thought, crowds gathered to hear, attracted or repelled, just because the procession was a novelty.

But some villagers today are not just gazing open mouthed. They are critical and pour fluent nonsense into editorial offices, breaking scientific eggs with sledgehammers and attacking cast iron problems with penknives. Book stores have rows of pretty volumes replete with stolen wisdom and ill digested knowledge. Dozens of societies have sprung up, each with an "organ," where gleanings from the best journals are condensed to ambiguity or exsanguinated through careless cutting.

It is with relief one turns to the journals of accredited societies, such as that of the American Society for Psychical Research, to find on the cover of the December issue, such interesting men as James Hyslop, Walter Prince, Conan Doyle and Jerome Jerome waiting to turn the leaves. Jerome's assertion that Conan Doyle's facts are only conjuring tricks are, says the editor, without evidence, and "the presumption of the average literary man on this subject is a spectacle for gods and men."

News Items.

Biography of Sir William Osler.—Dr. Harvey Cushing is writing a biography of Sir William Osler, and he is anxious to receive letters or personal reminiscences from anyone who may have been acquainted with the great leader. We have a letter from him as follows:

Lady Osler has requested me to prepare a biography of her husband and I will be most grateful to anyone who chances to see this note, for any letters or personal reminiscences, or for information concerning others who may possibly supply letters.

Copies of all letters, no matter how brief, are requested, and if dates are omitted it is hoped that they may be supplied if possible.

If the originals are forwarded for copy they will be promptly returned.

HARVEY CUSHING, M. D.,
Peter Bent Brigham Hospital,
Boston, Massachusetts.

Tax on Doctors.—A tax of \$10 a year for the first ten years and \$25 thereafter on lawyers, doctors, and dentists is provided in a bill introduced in the Maryland State legislature.

Personal.—Dr. Walter H. Brown, formerly health officer of Bridgeport, Connecticut, and lecturer at Yale University, has been appointed associate director of the Department of Health Service of the American Red Cross.

Merritt Prize to Doctor Sheffield.—The Merritt H. Cash prize of the New York State Medical Society has been awarded to Dr. Herman B. Sheffield, of New York, for his essay on Infantile Paralysis.

Red Cross Delegation in Vienna.—A party of American Red Cross delegates has arrived in Vienna to observe conditions for the purpose of basing a relief program for Central Europe. One hundred and thirty-two cars of Red Cross supplies are in Vienna.

Scarlet Fever in Ohio.—Announcement has been made by Dr. Harry L. Rockwood, health commissioner of Cleveland, Ohio, that there are about 400 cases of scarlet fever about the city and that the disease is epidemic in the State, especially in Cincinnati, Columbus, and Toledo.

The Psychoanalytic Missionary.—A course in missionary psychoanalysis has been instituted at Columbia University by Agnes Learcraft Donohugh, Ph. D. The course will include the study of folk tales and the hereditary influences of the natives, so that the prospective missionary may go into the field armed with a knowledge of the customs, attitudes, and conditions of the peoples with which he is to work.

Health Department Hospital for Chicago.—Dr. John D. Robertson, health commissioner of Chicago, has announced that he will open a charity hospital on April 1st in the City School for Home and Public Health Nursing at Fulton and Ada Streets. The hospital, which will accommodate twenty patients, will afford means by which nurses may obtain a training course in three months. A charge of \$50 will be made for the course.

New York Neurological Society.—The New York Neurological Society will hold a stated meeting on April 6th. Dr. Isador Abrahamson will present a case of familial dystonia musculorum of Oppenheim, and the following papers will be read: An Analysis of the Admissions to Ward Fifty-five, General Hospital Number One, by Dr. Sylvester R. Leahy; Acute Descending Radiculitis, by Dr. Irving H. Pardee; A Study of Pubertas Præcox, and Their Mentality, by Dr. Joshua H. Leiner.

French Medical Congress.—The fourteenth French Congress of Medicine will be held May 10th to 22nd at Brussels, under the presidency of Professor Henrijean. Other officers of the congress are: Vice-presidents, Professor Bordet and Professor Vandervelde; secretary general, Professor René Verhoogen; assistant secretary general, Dr. René Sand; treasurer, Dr. Godart-Danhieux; assistant treasurer, Dr. Van Damme. The topics to be discussed are: Syphilis of the cardiovascular system; general vaccination, special vaccination of cancer and typhoid fever; therapeutic value of artificial pneumothorax; the lipoids in pathology.

Smallpox in South America.—Dispatches received by the Public Health Service report that smallpox was epidemic in Barranquilla, Colombia, during the period January 18th to 24th. From January 25th to 31st it was estimated there were 200 cases.

\$100,000 for Graduate Study.—A gift of \$100,000 to provide practicing physicians with opportunities for postgraduate study at the New York Post Graduate Medical School and Hospital has been made by Mrs. Henry R. Rea, of Pittsburgh. The gift makes available twenty or more scholarships to doctors who otherwise could not afford to suspend practicing during their postgraduate course.

University Closed by Scarlet Fever.—An outbreak of scarlet fever has caused the closing of Brown University, Providence, R. I. A press dispatch dated March 25th stated that twenty-three students were being cared for in local hospitals and that others were ill in private homes, and that there had been no deaths. Dr. Charles V. Chapin, health officer of Providence, is reported to have found the source of the outbreak to be an infected milk supply at a college lunch room. The university will not reopen before April 8th.

British Ophthalmological Society.—The next annual congress of the Ophthalmological Society of the United Kingdom will be held on April 29 and 30, and May 1, 1920, under the presidency of Mr. J. B. Story. Meetings will be held at the Royal Society of Medicine, Wimpole Street, London, at the Royal Ophthalmic Hospital, and at St. Margaret's Hospital, N. W. Among the subjects to be discussed are "Diabetes in Relation to Diseases of the Eye" and "The Prevention and Treatment of Ophthalmia Neonatorum."

Course in Fractures at Cornell Medical School.—A course in fractures will be given at Cornell Medical College, beginning April 5th and ending April 30th, at 2 o'clock, Mondays, Wednesdays and Fridays. The course will consist of two consecutive hours of lectures and demonstrations. Dr. Joseph A. Blake will give seven exercises, Dr. George W. Hawley six, and Dr. James M. Hitzrot five. In addition to the first three, Dr. Alexis Carrel will also give one lecture. Other exercises will be held by Dr. H. H. M. Lyle, Dr. Burton J. Lee and Dr. John C. A. Gerster. The profession is cordially invited.

Memorial to Sir William Osler.—At a meeting of leading members of Oxford University and representatives of the medical profession both in Oxford and London, held March 6th at Oxford to consider a fitting memorial to Sir William Osler, the following resolution was passed: "In view of the intimate association of Sir William Osler's life work with the study of the origin and prevention of disease, the most appropriate form of memorial would be an Osler Institute of General Pathology and Preventive Medicine." General and executive committees were appointed to issue an appeal. The committee working in this country consists of Dr. William H. Welch, of Baltimore; Dr. Harvey Cushing, of Boston; Dr. Frank Billings, of Chicago; President Nicholas Murray Butler, of Columbia University, and Dr. Walter James, of New York.

Yellow Fever Campaign in Yucatan.—Dr. Hideo Noguchi and his associate, Doctor Kligler, of the scientific staff of the Rockefeller Institute for Medical Research, have gone to Yucatan to study yellow fever, which still ravages certain districts and menaces our own Southern States. The expedition is managed by the International Health Board.

New Medical Journal.—*Hematologica* is the title of a new international magazine dealing with the blood and serology, published by Jovene and Co., Naples, and edited by Ferrata and Moreschi. It is the intention of the promoters that one part of the magazine shall be devoted to original articles and the other to abstracts. Contributions will appear in Italian, French, and English.

Harvard Professors in Geneva.—Dr. Simeon B. Wolbach, Dr. Frank H. Palfrey, and Dr. Monroe A. McIvor, of the Harvard Medical School, and Professor Henry Pinkerton of the Massachusetts Institute of Technology, have gone to Geneva to confer with the general medical director of the League of Red Cross Societies concerning the study of typhus in Poland. Professor George Whipple, of Harvard University, has arrived in Geneva to take up his duties as chief of the sanitary department of the Red Cross League.

Medicine Fakes Operating from Canada.—Drug inspectors of the U. S. Bureau of Chemistry have been instructed to watch proprietary medicines imported from Canada. The Department of Agriculture has evidence that some of the old sure cure medicine fakes which have been driven out of business in this country have become established across the border in Canada and are attempting to do business, particularly through the mails. Imported drugs are subject to the Federal Food and Drugs Act, and a number of shipments of proprietary medicines from Canada have been denied entry into this country.

Local Medical Societies.—The following local medical societies will meet during the coming week:

Monday, April 5th.—Clinical Society of the New York Polyclinic Medical School and Hospital; New York German Medical Society.

Tuesday, April 6th.—New York Academy of Medicine (Section in Dermatology and Syphilis); Clinical Society of Harlem Hospital; New York Neurological Society; Society of Alumni of Lebanon Hospital.

Wednesday, April 7th.—New York Academy of Medicine (Section in Historical Medicine); Bronx Medical Association; Harlem Medical Association; Psychiatric Society of New York; Society of Alumni of Bellevue Hospital; Brooklyn Society for Neurology.

Thursday, April 8th.—New York Academy of Medicine (Section in Pediatrics); West End Clinical Society; Brooklyn Pathological Society.

Friday, April 9th.—New York Academy of Medicine (Section in Otolaryngology); Clinical Society of the German Hospital and Dispensary; Eastern Medical Society of the City of New York; Flatbush Medical Society; Society of Externes of the German Hospital in Brooklyn.

Saturday, April 10th.—Medical Officers' Reserve Corps Association of the U. S. Army, New York Division.

Health Conditions Among Troops.—A slight recrudescence of both influenza and pneumonia among troops in the United States is reported in the surgeon general's summary of health conditions for the week ending March 19th. Eighteen cases of measles were reported from Camp Knox during the week. There were twenty-two deaths from disease, of which seven were reported as due to tuberculosis and six to pneumonia.

Geneva Red Cross Congress.—The first general council meeting of the League of Red Cross Societies opened in Geneva on Tuesday, March 2nd, and closed on March 9th. The proceedings began with a general assembly of the delegates at the Hôtel de Ville, followed by the inaugural meeting. The various sections met in the mornings and afternoons for detailed discussions of their separate subjects. In the evenings there were receptions of the delegates by the chairman of the board of governors, Mr. Henry P. Davison; the director general, Sir David Henderson; the secretary general, Professor Rappard; by the city and canton of Geneva, and by the International Red Cross committee. A general meeting open to the public was held on Sunday evening under the presidency of M. Motta, president of the Swiss Confederation, when M. Georges Milsom gave a lecture on the origin, organization, and purpose of the league. During the congress a letter was received from Mr. Balfour, president of the Council of the League of Nations, appealing for the organization of an effort to relieve the terrible distress in Central and Eastern Europe. It was decided to formulate plans for extension of voluntary relief upon receipt of an assurance from the League of Nations that food, clothing, and transport would be furnished to the afflicted peoples.

Sage-Machold Health Centre Bill.—Senator Henry M. Sage, of Albany, and Assemblyman H. Edmund Machold, of Jefferson County, have introduced in both houses of the New York Legislature a bill authorizing the establishment of health centres by a county, city or consolidated health district, with an appropriation of State funds to supplement the expenditures made by communities in carrying on the work. The bill makes provision for annual State grants for the construction of hospitals and clinics and for their operation, these amounts to supplement funds provided by the communities. Provision is also made for pay patients whose fees will contribute toward the maintenance of the health centres. The purpose of the bill, as elucidated by its sponsors, is to make efficient medical and surgical service more generally available, to provide more adequate compensation for medical and surgical service so that a better quality of service may be obtained, and to furnish State aid for the provision of health centres and State supervision to standardize their medical work and insure a higher quality of service. It is stated that qualified visiting consultants are to be furnished by the State Department of Health to aid local physicians in diagnosis and treatment, and modern laboratory facilities of all kinds auxiliary to the service of the State laboratory are to be provided. Local physicians rendering service in connection with the hospitals, clinics, and laboratories are to be properly compensated.

Book Reviews

PARSIFAL.

Parzival. By WOLFRAM VON ESCHENBACH. Twelfth Century.

One simple tale repeats itself beneath the apparent complexities of each individual existence. This is the conflict of the claims of reality against the idealism of phantasy and desire in which life begins, the growth from dependent childhood to independent adulthood.

Literature has clothed this tale of life in the varying fashions of succeeding centuries and in the variety of speech and form of many writers. The underlying theme is the same. Each sincere telling of the tale gives the reader a sense of fellowship in the universal struggle, reminding him at the same time that the conflict is personal, a matter for each alone. It provides a contemplative perspective difficult to obtain on the shifting battle front of one's own life. It therefore helps to separate reality and its demands from idle dreams and to set personal necessity and responsibility clear from the rationalizations with which these are too often obscured.

The revival of Parsifal upon the stage reminds us that a genuine human tale appears and reappears always with the same truth and applicability. Wagner's drama has an exalted purpose to fulfill in its rich external form. But Wagner is a master of psychology as well as of music and the psychological unfolding of his drama leads us straight back to one of the genuine stories of human life imbedded in the imperishable rocks of world literature. Wagner's profound psychological insight found the fundamental outlines for his drama in the story of Parzival told by Wolfram von Eschenbach some seven centuries ago.

The legend of Parzival was told many times and in a variety of ways. Its inner meaning was obscured in a maze of conventionalities and rationalizations. Wolfram saw beneath such externalities a simpler kernel that has the directness as well as the hardness of reality. He adopts for his tale a certain amount of the conventional form of his day. Yet much of this, as in the idealized loyalty and devotion of Parzival's mother, serves as a striking background for the very difficulties in which the mother's devotion entangles him. Allowance has to be made for lengthy digressions from his main theme common to the literature of Wolfram's day but, except in the instances where these digressions depart completely for the time from Parzival, his adventures and his development remain true to the central psychological and moral thought. This unity and consistency give the story the value which belongs to true human literature of whatever time or place.

Wolfram the author is a staunch and sturdy man of the world. This is evident in the uncompromising reality with which he sets forth the sore experience through which alone Parzival wins his way to the goal of high service as king of the Grail and redeemer of the afflicted Anfortas and his followers. Yet in his stern realism of individual responsibility Wolfram reveals also a tender appreciative insight into the forming, still uncertain, psychic life of the

child even as he understands that of the maturing man. Beauty of body and mind, truth, courage, the poet glories in these qualities of the youth but does not hesitate to picture the actual difficulty with which the ideal surroundings of childhood are exchanged for the unyielding necessities of life. There are occasional advisers and teachers but Parzival wrestles long and sorely with himself before he has finally learned how inescapable is individual responsibility for failure or success, for meeting opportunity or for blundering in folly. Long years of such discipline force the too "pure" and foolish egoism of the youth into the deeper, broader knowledge where self finds its own to pass over into pity and knowledge of others.

Parzival's life begins in a woodland shelter which a too fond mother had chosen for him. With sublime maternal selfishness she has given up for him wealth and power thinking to shield him from the dangers of knighthood, which had brought death to his father. His manhood's right, however, asserts itself in all his sports and occupations in wood or meadow. Simple and childishly ignorant though he appears, he makes a ready response to the intrusion of a knightly group and at once demands to be sent to the outside world of which they have told him.

At once he is no longer a child and with the necessary selfishness of the awakening to independence, his thought is all for the world before him and he is in cruel haste to be gone. The poet, true to psychological realities, allows him to depart ignorant for a long time to come that the mother's heart had broken and she had not survived her son's departure. There is a symbolic psychology in this complete separation and removal of the mother from the child's life. Yet with equal insight and truth the poet has represented the overshadowing of the boy's career by the effects of that mother's too great devotion and the natural reluctance which still surrounds the child on his forward journey. The separation between the love and care and peace of the past and the pitiless endeavor of the future is never easily made.

The mother's selfish fondness discloses itself in the ludicrous child's garment and the wornout, home bred horse with which she sends forth the would-be knight. These are to the modern analytical mind painfully symbolic of the unconscious interference on the part of parents with the proper adult equipment of their children for an independent life. Their apparent fondness conceals the unconscious wish that the child will find himself unequipped for the greater world and compelled to turn back to their shelter. Thus in his mother's counsel and in her preparation, as also in Parzival's later struggle, the inclination toward the past and the desires of self tend to hinder progress into a world of activity beyond.

Parzival has turned his face forward however his unreadiness interferes with his progress. It is but a little while before he wins a knight's horse and armor in combat, although he has to be shown how to put the latter on. Even then he arrives at the castle of Gurnemanz holding his lance in unknighthly

fashion. This and other marks of his inexperience cannot disguise his true nature and he is counted worthy of instruction by his host. But here the great mistake is made. He proves himself still the dependent child for he gives literal obedience without the power to think and judge for himself. He merely makes Gurnemanz the substitute for parental authority so that when soon after he is confronted with the critical test for his life work he fails miserably.

This is at his entrance into the Grail castle, where he is destined for deliverer and king. Gurnemanz had warned him against overofficial questioning and so he checks his spontaneous interest and scarcely allows the play of natural emotion at sight of the wonders displayed through the Grail and of the unexampled anguish of its wounded king and his knights. In modern terms again we see the hindered child development, the repression of emotion and therefore of ready efficient service through unnatural, unreasoning obedience to authority and dependence upon it.

The youth has failed at the outset and is doomed now to a long wandering burdened by a sense of disgrace, until he shall at last be able as master of himself to approach the castle again. His determination to redeem his failure never leaves him, but his success has to be won first by a long process of self discovery. We might examine more carefully his many knightly adventures, when we would doubtless find under the conventional chivalric tale a wealth of symbolism which expresses this long psychic trail which he must follow.

More briefly considered, it brings him into a black despair in which the hero has chosen the most common course of men. He has projected his difficulties outside himself, attributing them to any cause but his own personal responsibility. He blames God for them and bitterly bewails his lot. Then the aged Trevizent, a holy hermit, wisely and patiently wins him to an acquaintance with his own soul, its own accountability, through his ignorance and simplicity, for his mistake and its sore consequences to himself and others. Objection might be raised that a man so pure and noble, so well intentioned, should not have suffered so innocently. The poet, however, is too uncompromising a realist to miss the inexorable-ness of psychic facts. In the whole of the psychic life the sins of omission pursue man as relentlessly as those of commission. Rationalizing idealism often attempts to conceal this truth, but our truer writers have always recalled us to it. Wolfram is one of these. He leads his hero along a long and troubled pathway, filled with years of sorrow, until he shall have learned this lesson and through it found himself. Then at last Parzival's pathway is upward to the kingdom of service and of honor; as king of the Grail he comes at last to his own.

Woven through all this tale of a man's conflict and awakening are the threads of the hero's love to woman. The entire tale, although in the service of a definite mystical religious theme of the day, is essentially a human one. So do all Parzival's relations toward women escape the definitely mystical or the too conventionally chivalrous and remain on the plane of warm human ties. They follow the

outline already given of the hero's struggles, partial defeats, and full manly victory. There is the imminence of the mother fixation. He makes a first boorish excursion into love, with which the poet enlivens the young hero's earliest attempt to prove himself and yet stick literally to the mother's instructions. The gradual breaking of the mother tie is represented through a cousin who forms a link with the past at the same time that she aids in the hero's progress into the world. Then there is the real woman who early becomes his wife but from whom his wanderings separate him for long periods. She is welcomed to his side at last when the man, victorious over his earlier failure, is also the complete adult lover.

Nor must the strange Kundry be forgotten, hateful in appearance yet wise in counsel, chiding, rousing, guiding. Wagner has developed her as a marvelous consummation of the double aspect in which love appears as it rises doubtless out of the craving already nurtured in the child heart. The unconscious craving after the indulgent love which the child knows leads to a selfseeking which may end in all that is base and hateful in love; or it becomes the very inspiration of independent seeking to make love actual in another object of the external world. Kundry stands as the symbol of these two possibilities for Parzival and he passes with her to the side of victory.

Wolfram's poem is too great, it serves too wide a purpose to be comprehended from only one point of view. Even its psychological development would admit of more than one interpretation. Yet the light it throws upon present day psychology justifies and repays an examination into a development which lies close to the fundamental development of any life. However unconsciously the writer himself may have thus touched these deeper aspects of his hero's life, he forces a conviction of the keenness of his insight and his truth of expression in regard to these inner realities.

FACIAL NEURALGIA.

On Facial Neuralgia and Its Treatment. With Especial Reference to the Surgery of the Fifth Nerve and the Gasserian Ganglion. By J. HUTCHINSON, F.R.C.S., Surgeon to the London Hospital; Examiner in Surgery and Lare Hunterian Professor at the Royal College of Surgeons. Illustrated. New York: William Wood & Co., 1919. Pp. viii-216.

We are presented with a carefully compiled essay which is the outgrowth of an original monograph previously published. The subject covered is an extremely important one, one which has puzzled many physicians when they have encountered cases in which the patient's condition has not been improved by any of the known methods of treatment. Many diverse opinions and methods of treatment have been advocated for the relief of facial neuralgia. In order to avoid many of the serious complications which may accompany the operation upon the Gasserian ganglion the anatomy of the neighboring parts is described in detail. As a prevention for facial paralysis following operation on the ganglion the author has taken special care not to detach the dura from the hiatus. This has prevented further occurrence of this complication. The facility

with which the facial nerve becomes paralyzed is little understood. It is stated that while the subject of facial neuralgia includes many interesting problems, the surgeon's chief concern has been the cases which were most amenable to operative treatment and what means should be employed. The differential diagnosis of the various conditions which caused similar pains was often puzzling. An outline is then given as an aid in differentiating the various possible causative factors. This should prove useful to the clinician who has not had wide experience in this particular field and who may encounter ill defined cases from time to time. Various neuralgias are listed, including those due to anemia, gout, malaria, and so-called hysteria and neurasthenia, when the neuralgia is a marked symptom. These are not the more severe forms and operation is contraindicated. Then there are those due to a true neuritis following herpes, syphilitic inflammation and postinfluenzal neuralgia. The third group consists of the ones in which the pain is a referred one from a local cause, such as a buried tooth, or eye strain.

In the epileptiform group, where no local cause or favoring condition can be discovered, the pain is spasmodic and the attacks occur with shortening intervals. In this type removal of the Gasserian ganglion is advocated, as this is almost always followed by a permanent cure. The technic of the operation is described in great detail. The resulting complications and their causes are also set forth. The author states that it yet remains to be seen whether the ultimate operation will be injection of alcohol into the Gasserian ganglion or a form of the cutting operation. It is thought that more possible danger to the eye attends the alcohol injection.

FEET AND SHOES.

Foot Care and Shoe Fitting. By W. L. MANN, Ph.B., A.M., M.D., and S. A. FOLSOM, M.D. For Officers of the U. S. Navy and U. S. Marine Corps. Illustrated. Philadelphia: P. Blakiston's Son & Co. Pp. i-124.

The information upon which this handbook is based has been gathered from the careful study of a great number of cases. From the general makeup of the book the impression might be gained that the findings were only applicable to military men. To retain this impression would tend to obscure the main usefulness of the book. It is only recently that our attention has been called to the numberless ills which arise from inadequate attention to the ills of the foot. In armies, where so much depends on the marching ability of the men, attention was naturally focused on the subject. Many of the foot deformities which were encountered by draft boards were caused by the inattention to proper footwear and posture.

In making a diagnosis of disorders of the lower extremities and general bodily diagnosis it is often necessary to make a thorough examination of the patient's shoes and his gait in walking. Many avoidable deformities are encountered in the various trades and occupations, as among waiters, or among other workers who are obliged to stand on their feet throughout the day. The work presented by Mann and Folsom is extremely helpful in obtaining an understanding of the fundamentals

underlying foot troubles and while all of the technic described cannot be followed by the general practitioner he can modify the procedures to the extent of being able to help his patients avoid foot troubles and deformities.

ORGANOTHERAPY.

Practical Organotherapy. The Internal Secretions in General Practice. By HENRY R. HARROWER, M.D., F.R.S.M. (Lond.). Glendale, Cal.: The Harrower Laboratory, 1920. Pp. v-268.

A most wearisome book with a decidedly commercial flavor. It seems pathetic that this extremely important subject should be so jumbled and so poorly presented. The finer and more salient points of modern endocrinology are lost in the maze of words which have been gathered from who knows where. There is a call for more information on the subject of endocrinology, but no aid can be obtained from a confusing mail order catalogue.

New Publications Received.

Rational Sex Ethics—Further Investigations. By W. F. ROBBE, M.D., M. R. C., Superintendent, Pine Terrace, Baldwinville, Mass. Boston: Richard G. Badger. Pp. iii-330.

The Diseases of Infants and Children. By J. P. CROZER GRIFFITH, M.D., Ph.D. Professor of Pediatrics in the University of Pennsylvania, Pa. 436 Illustrations, Including Twenty Plates in Colors. In Two Volumes. Philadelphia: W. B. Saunders Company, 1919. Pp. vii-885; i-657.

Principles and Practice of Physical Diagnosis. By JOHN C. DAcOSTA, Jr., M.D. Member of the American Therapeutic Society, etc. Fourth Edition, Thoroughly Revised. Philadelphia: W. B. Saunders Company, 1919. Pp. iii-602.

Beyond the Horizon. A play in three acts. By EUGENE G. O'NEILL. New York: Boni and Liveright. Pp. i-165.

Darkwater. By W. E. BURGHARDT DU BOIS. Author of *The Souls of Black Folk*, and *The Quest of the Silver Fleece*. New York: Harcourt, Brace and Howe, 1920. Pp. v-276.

A Laboratory Manual of Physiological Chemistry. By ELBERT W. ROCKWOOD, M.D., Ph.D. Fourth Edition, Revised and Enlarged. Illustrated. Philadelphia: F. A. Davis Co., 1919. Pp. i-316.

Laboratory Manual of Pharmacology including Materia Medica, Pharmacopedics and Pharmacodynamics. By A. D. BUSH, B.Sc., M.D. Professor of Pharmacology, University of North Dakota. Illustrated. Philadelphia: F. A. Davis Company, 1919. Pp. i-251.

Standard Educational Tests. By M. E. HAGGERTY. University of Minnesota. World Book Company. Yonkers-on-Hudson, New York, 1920. Pp. iii-59.

The Bishop and Other Stories. By ANTON CHEKHOV. Translated from the Russian by Constance Garnett. New York: The Macmillan Company, 1919. Pp. iii-302.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

RECENT GLEANINGS IN DIPHTHERIA PROPHYLAXIS.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

(Continued from page 500.)

According to some, a sufficient degree of accuracy in the differentiation of the true diphtheria bacillus and of the more virulent forms of this organism is obtainable by simple morphological study of the stained specimen. The material obtained is lightly spread on slants, usually of Loeffler's medium, which consists of beef blood serum, three parts, and one per cent. glucose meat infusion bouillon, one part, and are examined twelve to twenty-four hours later—after incubation—for typical colonies and diphtheria bacilli. Other students of the question, however, remain unconvinced that serious errors may not occasionally arise through dependence on somewhat indefinite and conventional morphological features of the suspected germs. Attempts have therefore been, and are still being, made to work out some improved cultural test which will definitely disclose whether any given germ specimen is virulent or nonvirulent.

The importance of early bacteriological diagnosis of diphtheria cases and carriers in the prophylaxis of the disease has been emphasized. Part of the difficulty in properly distinguishing the true diphtheria bacillus arises from its marked morphological similarity to the diphtheroid group of bacilli, which, moreover, are also gram positive, nonmotile, frequently exhibit metachromatic granules, and do not produce spores. As shown by Bloomfield and Fox and by Hiss and Zinsser, organisms of these strains, similar to the diphtheria bacillus, can be isolated from the skin, from the lymph nodes of normal as well as diseased persons, from ascitic fluid under various conditions; and even from supposedly sterile tissues. Even after differentiation of suspected diphtheria bacilli from diphtheroids has been accomplished, further selection among the diphtheria organisms themselves may be advantageous, from the practical viewpoint, in that some are of such low virulence as to be practically negligible as sources of danger to the community, while others are more virulent and must be taken into account in all attempts at prophylaxis among the family of the patient or carrier as well as in relation to the community in general. Were all carriers of germs of a diphtheritic morphology to be isolated, even where such germs are of low virulence, unnecessary hardships would be imposed on many individuals and useless expense incurred. The most reliable method of determining the virulence of given samples of germs consists in injecting them subcutaneously in guineapigs. Where a certain standard amount, e. g., two mls of a forty-eight hour broth or ascitic broth culture of the isolated organism, kills a guineapig in three to five days, the organism is considered virulent, and

isolation of the person harboring it insisted upon. Intracutaneous injection of suspected bacilli in guineapigs has been recommended as an improved procedure, whereby several tests may be conducted in a single guineapig, thus reducing the number of animals used. In this test the determination of virulence is based on the appearance of a circumscribed local infiltration at the point of injection, with superficial necrosis taking place in two to three days. Even upon employment of this method, however, guineapig testing is too costly and time consuming for application to all cultures collected from a community. The plan has therefore been sometimes adopted of defining the virulence or avirulence of the different specimens according to certain morphological appearances of the germ, some forms having proved of little or no virulence when tested out repeatedly in guineapigs while others have proved nearly always fatal to the test animals. In this way relatively few animals are used and much time in the reporting of culture results is saved, the physician being informed usually within twenty-four hours of the relative virulence of the specimen submitted; the germs exhibiting forms previously found to be almost always harmless to the guinea pig are classed as "negative."

Some students have sought to avoid dependence upon morphological characteristics as guides to the decision, and to substitute for it special chemical means of differentiation, free from the element of uncertainty introduced in the other method by the personal equation. Thus Martin and Loiseau have discovered and called attention to the fact that in the so-called Veillon tube the diphtheria bacillus behaves as an anaerobe germ, whereas the bacillus of Hofmann exhibits the characteristics of a strict aerobe. In a deep medium of agar with glucose and litmus, the diphtheria bacillus shows a growth from the top to the bottom of the medium, fails to spread on the surface, and by acting on the glucose sets free acid which turns the litmus to a red color. On the other hand, most of the so-called pseudodiphtheria bacilli fail to grow deeply in such a preparation, yielding instead a creamy growth on the surface; they also fail to produce acid from the glucose, but instead alkalinize the medium, thereby causing the litmus to assume a bluer hue than that shown in control tubes. An exception, however, to the rule just mentioned is the *Bacillus cuti communis*, which develops deeply in the medium, like the diphtheria bacillus, and also attacks the glucose, though less markedly than does the diphtheria germ.

An improvement over the above described procedure appears to have been secured by Costa, Troisier, and Dauvergne, 1919, who agree with various other observers that the use of culture tubes facilitates contamination of the medium, reduces its selective property, and is less adapted for inspection and study of bacterial colonies than the Petri dish.

(To be continued.)

Applying Heat to Patients in Surgical Shock.—S. L. Freeman (*American Journal of Obstetrics*, November, 1919) describes a procedure he has adopted because of the ease and efficiency with which the required amount of heat can be evenly distributed over the patient's entire body. An ordinary hospital bed is elevated at the foot, with shock blocks, to a height of twelve inches. The patient is covered, in addition to the ordinary bed clothing, with three double blankets. The first blanket is placed up to the patient's chin, covering the chest, neck, and upper abdomen; the second blanket covers the legs and feet and is so arranged as to hang over the foot of the bed and down to the floor. The third blanket is so placed as to overlap the first and second. All the blankets should reach to the floor, in order to enclose the space under the bed. To obtain this result, all the blankets are placed with their greater length transverse to that of the bed. If single blankets only are available, however, a fourth blanket is placed lengthwise with the bed and with its end extending down over the foot to the floor. The necessary heat is supplied by an ordinary resistance coil heat generating electric lamp, obtainable in any electrical supply store. The lamp is of medium size, and covered by a guard. It is placed on the floor, under the centre of the bed, and therefore at a point equidistant from all the blankets. The nurse watches the patient carefully and removes the lamp as soon as his temperature has reached normal or slightly above. The bed may, if desired, be heated before the patient enters it. The procedure does away with hot water bottles, which require frequent changing, with considerable disturbance to the patient.

Vaginal Hysterectomy in Puerperal Infection.

—F. M. Cadenat (*Presse médicale*, January 14, 1920) states that the discredit of late attaching to hysterectomy for acute puerperal infection is due to the fact that the surgeon is called only when the patients are already moribund. The operation must be carried out before the pathological condition has perceptibly extended outside of the uterus and while the patients are still in a sufficiently resistant state to be able to withstand anesthesia and some degree of operative shock. Faure's dictum as to the indications for hysterectomy in these cases is that the uterus should be removed where, twenty-four hours after curettage, no distinct improvement has occurred, viz., the temperature has not fallen, the pulse rate remains high, and especially, chills continue to occur. Local examination is only of secondary importance, having for its purpose to show whether any contraindication to the vaginal route exists. If there are fixed lesions of the annexa, adhesions, or doughiness indicative of thrombosis of the uterine or uteroovarian veins, the question whether abdominal hysterectomy is appropriate will come under consideration. Usually, however, the uterus is movable and can be readily drawn down, the vaginal operation thus being advantageous because it is less time consuming, is simple, entails no risk of spreading the infection, and provides free drainage at a dependent point. The successive steps in the operation consist in fixation of the cervix, liberation of the vagina and subsequently

of the bladder, section through the anterior aspect of the uterus, traction of the annexa into the vagina, and ligation of the pedicles. At the close of the operation the wound remaining after removal of the uterus is left open in order to permit free drainage of the pelvis. No drain need be inserted, but a Pezzer sound should be left in the bladder, to be washed daily and changed every four or five days. Postoperative general treatment consists in glucose solution, camphorated oil injections every three hours, electrogal intravenously in massive doses of fifteen mils and allied supportive measures. The author reports the case of a woman who had had her pregnancy artificially terminated in the fourth month and whom he was called to see on the sixth day; the temperature had been 39.5 to 40° C. for two days. Curettage and iodine irrigation were performed, but next day the temperature had not descended and the patient was having chills. Vaginal hysterectomy was performed on the same day; the uterus contained malodorous fluid, without placental debris, uterine abscess, or perforation. On the morrow the temperature fell to 37.5° C., and recovery followed in a week. True, this was a postabortion infection, but the clinical picture is the same in the puerperal cases. Under irrigation treatment this patient would not have recovered.

Ligation of the Common Carotid in Traumatic Exophthalmos.—F. de Lapersonne and Sendral (*Bulletin de l'Académie de médecine*, December 30, 1919) have had under observation for over two years two cases which seem to prove that the only effectual treatment of exophthalmos due to injury of large vessels resulting from direct or indirect fracture of the base of the skull is ligation of one or both common carotid arteries. Pressure with the finger or instruments for several hours, even when kept up for several hours and supplemented with gelatin injections, always fails eventually, though temporary improvement may follow. Experience has now definitely shown that ligation of the internal carotid alone is insufficient and, moreover, causes immediate or late cerebral and ocular disturbances as serious, and even more serious, than ligation of the common trunk. Immediate harmful effects are uncommon on account of the rich vascularity, and many anastomoses of the carotid system. Three early fatal cases were recently reported, however, and there have also been instances of partial or complete blindness, passing off in a few hours, and due to ischemia of the central retinal artery. Late fatalities are always due, according to Fourmestreaux's recent studies, to infection causing an ascending thrombosis which extends from the site of ligation to the cerebral and ophthalmic arteries. In the first personal case, unilateral exophthalmos following a traumatic aneurysm of the internal carotid was cured by ligation of the common carotid on that side; the operation was done nearly two years after the injury. In the second case, bilateral exophthalmos following arteriovenous aneurysm due to rupture of the carotid into the cavernous sinus was successfully treated by ligation of both common carotids. The first ligation was done three months after the injury, and the second five months later.

Thermotherapy in Gangrene Due to Atheroma.—Vignat (*Presse médicale*, January 3, 1920) reports the case of a man aged fifty-four years, with urine free of sugar and albumin, whose right great toe had been amputated for gangrene due to atheroma. The gangrenous process recurred in the resulting flaps, and severe pain was experienced, necessitating daily morphine injections. When the patient was first seen by the author arterial pulsations could not even be felt in the femoral artery, the patient was sleepless from pain, the limb was slightly atrophied, and the foot was cold and waxy. Hot oxygen gas was used to carbonize the gangrenous tissues and the extremity of the first metatarsal bone which projected through the wound. A douche inducing local hyperemia was administered daily for three quarters of an hour. Light massage was practised, and passive and active movements of the foot and of the leg on the thigh were carried out. One month after the beginning of treatment the wound had healed. Morphine had been stopped after the first few days of treatment, all pain having disappeared. The foot was warm and pink. The leg, previously somewhat atrophied, measured one centimetre more about the calf. The outstanding features of the case were the rapidity of recovery and the improved nutrition of the limb.

The Surgical Treatment of Empyema by a Closed Method.—Arvine E. Mozingo (*Journal of the Indiana State Medical Association*, February, 1920) gives the details of his method, the chief features of which are: 1, A single, early, minor operation with trocar and cannula, without danger of shock or collapse of the lung; 2, intermittent removal of secretion and antiseptic treatment given through a small rubber tube with a bulb syringe; 3, rapid partial sterilization with Dakin's solution, followed by complete sterilization with a two per cent. dilution of liquor formaldehyde in glycerine; 4, maintenance of negative pressure in the empyemic cavity tending to early obliteration of the cavity; 5, one dressing which will last several days with no skin irritation or constriction of the chest; 6, rapid permanent cures with small scars and seldom any chest deformity; 7, a greatly lowered mortality rate. He asserts that early operation by this method has the following advantages: It can be done regardless of the presence of acute pneumonia; it provides complete evacuation of the empyemic cavity and relieves respiratory and cardiac embarrassment; it provides perfect cleansing of the empyemic cavity and prevents absorption of toxins; it lessens the usual thickening of the pleuræ; it prevents the lung, compressed by the exudate, from becoming fixed in compression; it decreases the probability of complication usual in empyema. The method is said to be productive of great economy of time, labor, and dressings, while it causes the minimum of pain and discomfort to the patient and leaves no large scar or chest deformity. In uncomplicated cases of empyema the patients are not kept in bed, and secondary operations are not needed. Most cases which have become chronic after an open operation can be cured by this method. In acute bilateral empyema, with bilateral pneumonia, both sides can be operated on at the same time.

Filiform Drainage in the Treatment of Chancroidal Bubo.—A. Floquet (*Presse médicale*, January 3, 1920) lauds this form of treatment, which seemed to give the most rapid and permanent results among all the methods tried in the French military forces. Usually within a week secretion ceased, the walls of the abscess cavity came together and the external opening closed. Two points essential for success are, however, emphasized. The filiform drainage should be instituted at the periphery of the pus pocket, at the very margin of the infected area. Secondly, the filiform drains must be removed at precisely the proper moment. If left too long, the strands cut the tissues and may be the starting point of sinuses or actual open wounds which may take a long time to heal. The appropriate time to cut the strands is as soon as the pus pocket has become flattened down, viz., about the fourth or fifth day. The bubo terminates its discharge through the openings remaining in about an equal period of time, and the condition as a whole is healed in eight to ten days.

Comparison of Methods of Administering Arsenobenzol.—H. E. Gibson (*British Medical Journal*, January 24, 1920) reports the results of two methods of administering arsenobenzol in a series of one hundred and eighty-nine cases. The concentrated course consisted of one 0.3 gram dose of kharsivan followed by 0.6 gram doses to a total of 2.7 grams, at weekly intervals, save for a fourteen day interval between the third and fourth doses. If the Wassermann was still positive, potassium iodide was given for fourteen days and then two more 0.6 gram doses at weekly intervals. In the prolonged course, three 0.3 gram doses, two 0.4 gram doses, and two 0.5 gram doses were given weekly, except for the fourteen day interval after the third dose. Further treatment usually consisted of two doses, 0.3 gram and 0.6 gram, respectively, of novarsenobillon into the muscle. These doses were not strictly adhered to in the second series. The results in eighty-nine cases treated by the concentrated course and in one hundred cases treated by the prolonged course show the advantage to be with the prolonged course, because the reactions were less severe and the Wassermann became negative in more cases and with smaller doses, especially in secondary syphilis.

Severe Dermatitis in Novarsenobillon Treatment.—L. G. Leonard (*British Medical Journal*, December 13, 1919) reports a case of severe reaction in the treatment of secondary syphilis with novarsenobillon. The primary lesion had occurred four months previously and at the time of treatment there was a well developed macular syphilitic and general adenitis. Three doses each of 0.45 gram of novarsenobillon and 1.0 grain of mercury had been given intravenously at weekly intervals and a fourth dose of 0.60 gram of the arsenic compound with mercury was given two days before the man was taken ill with shivering, headache, pain in the back and diarrhea. He was treated with sodium salicylate and quinine and in six days was apparently all right. Nine days after the last injection, however, the temperature suddenly rose to 105° and the general symptoms again appeared.

Also a generalized skin eruption appeared which in various parts took on a maculopapular, a scarlatiniform, or an urticarial character. The diarrhea became much more intense and for nearly two months there were more or less severe general symptoms followed by jaundice. There was at the end of this complete recovery and the patient, in spite of the prolonged illness, had lost only one half pound in weight. A general adenitis of marked degree was noted early in the condition. The Wassermann test was negative six weeks after the last dose of novarsenobillon though it had been strongly positive before treatment had been given.

Effects of Restricted (Socalled Ulcer) Diets upon Gastric Secretion and Motility.—Burrill B. Crohn and Joseph Reiss (*American Journal of the Medical Sciences*, January, 1920) find that in only thirty-eight per cent. of ulcer cases do the patients react to medical treatment by showing a reduction of acid produced during digestion, while clinical improvement can take place independently of whether the hyperacidity is relieved or the patient remains acid fast. As regards hypersecretion they find that medical treatment, consisting of restricted diet and rest in bed, causes the cessation of hypersecretion in forty-five per cent. of the cases, while clinical improvement takes place as often in patients with persistent hypersecretion as in those relieved of their excessive flow of gastric juice and apparently is not dependent on it. Medical treatment succeeded in improving gastric motility in eleven out of thirteen patients in whom it was delayed, and these were clinically relieved. The remaining two, in which the motility was unimproved, were not relieved clinically.

Traumatic Aneurysm.—R. E. Flannery and Albert R. Tormby (*Military Surgeon*, February, 1920) report that out of six cases of traumatic aneurysm reported, three were arteriovenous, one arterial, one venous, and one diffuse. Of these cases four were discharged cured, one died of meningitis, secondary to compound comminuted fracture of the skull, and one died of shock, following loss of blood at operation.

All vessels involved were ligated following long periods of complete rest, immobilization and pressure over mass. The period of rest, varying from eleven to sixty-two days, was sufficient to allow collateral circulation to become fully established, thereby diminishing the risk of postoperative gangrene. It is essential that all clots be removed, thereby relieving pressure on the remaining vessels and lessening the chances of gangrene from the interference of circulation below. Postoperative treatment is very important: a, The wound should have a large, soft, sterile dressing applied. b, The extremity should be allowed to lie in its natural position. Splints are contraindicated, as pressure necrosis is likely to occur. c, No hot water bags should be used, except to warm the bed before the patient is returned from the operating pavilion, as sloughing may occur in those parts of the extremities in which collateral circulation is not fully established. d, If heat is thought necessary to aid the circulation in the extremity, the therapeutic light is advised.

Varieties and Treatment of Retroversion of the Uterus.—Aleck W. Bourne (*Practitioner*, January, 1920) says that congenital retroversion should not be replaced. Retroversion with menorrhagia and pelvic pain should be treated for endometritis, or chronic metritis, and the uterus replaced manually. Retroversion as a part of prolapse needs treatment. One associated with relaxed ligaments and a flabby pelvic floor may need correction on account of prolapsed ovaries. The unusual form in which the uterus is held down by contracted posterior ligaments can be treated properly only by hysterectomy. Associated with chronic salpingoophoritis, rectification of the retroversion is unimportant except after the removal of tubes and ovaries, if that operation is being done. In short, retroversion requires treatment when it is a cause, direct or indirect, of dyspareunia, or is associated with prolapse of the uterus, vagina, or ovaries, and in some cases after the removal of the tubes and ovaries for chronic inflammation. In other cases correction of the displacement is a useful adjunct to such treatment as curetting.

The Subcutaneous Metallic Loop in Prolapse of the Rectum.—L. Tavernier (*Lyon médical*, February 10, 1920) thinks this relatively simple procedure well deserving of trial before the more serious operations are undertaken, as it will frequently remove the necessity of the latter. A man aged forty-two years had a rectal prolapse of the size of an apple which descended at each act of defecation and discharged much blood stained mucus. Submucous circling of the anus with a metallic wire cured all the functional disturbances in this patient. In two out of four cases the author obtained completely successful results with this procedure. In a third case only the mucous membrane prolapsed; in this instance the circling method failed; it is, in fact, contraindicated in this type of case. The fourth case was that of an old woman with a very large prolapse. Defecation being somewhat hindered after the operation, and slight suppuration setting in, the wire loop was removed after six weeks. In spite of its removal, the functional disturbance was greatly relieved and the prolapse no longer descended during locomotion. Apparently the loop, even if in place only temporarily, leaves behind it a ring of cicatricial tissue which partly serves the purpose of the wire.

Treatment of Empyema by a Closed Method.—Frank M. Manson (*Minnesota Medicine*, March, 1920) reports forty-three cases of empyema treated by Mozingo's method, with a mortality of four per cent. The essential points of this method are: a, a single early operation without danger of shock or of collapse of the lung; b, the intermittent removal of pus and antiseptic treatment applied through a small rubber tube which fits airtight in the chest wall; c, rapid partial sterilization with Dakin's solution, followed by complete sterilization with a two per cent. formalin solution in glycerin; d, maintenance of negative pressure in the empyemic cavity tending to early obliteration of the cavity; e, one dressing which will last several days without skin irritation.

Miscellany from Home and Foreign Journals

Hospital Prophylaxis in Influenza.—A. Lesage (*Bulletin de l'Académie de médecine*, December 30, 1919) concludes from experience with influenza in a children's ward in the Hérold Hospital, Paris, that the placing of influenza cases together in an open ward leads to deplorable results. Individual isolation, even if merely by the cubicle system, is essential to forestall the dangers from overcrowding and promiscuity; this applies to transmission of both the primary disease and secondary infections. Many instances were noted of influenza patients who, placed in an open ward, transmitted the disease to others and themselves contracted dangerous secondary infections. Recent statistics of Netter from an open children's ward containing virulent influenza cases revealed a mortality of twenty-two per cent. In Lesage's service the mortality among 301 cases admitted after institution of the cubicular system was 11.29 per cent. Of the thirty-four fatalities, fourteen took place within twenty-four hours; the mortality after twenty-four hours was but 6.96 per cent. Eight deaths were due to malignancy of the influenza and twenty-six to various pulmonary complications already existing at the time of admission. Mortality by age was as follows: Ten to fifteen years, seventy cases, mortality ten per cent; five to ten years, ninety-seven cases, 8.24 per cent.; three to five years, sixty-seven cases, 7.46 per cent; one to two years, thirty-three cases, 18.18 per cent.; below one year, thirty-four cases, 23.52 per cent. The last mentioned figures indicate that the prevalent view that infants are relatively resistant to influenza is an error. The high mortality among infants in this series might lead to the thought that the cubicle system is ineffectual; these infants, however, were mostly under weight and were all artificially fed. After the second year, the good results from cubicle isolation were unmistakable.

Bronchomoniliasis.—A. J. Chalmers and N. Macdonald (*Journal of Tropical Medicine and Hygiene*, January 1, 1920) have lately been able to demonstrate the existence of Castellani's bronchomoniliasis and other forms of bronchomycosis in the Sudan, and of the former affection in Egypt. The moniliasis was met with as a primary infection in its mild and severe forms and also as a secondary infection. The authors believe further researches, even perhaps in temperate climates, may reveal that bronchomycosis in some form is not rare. In a case of the mild type met with in Khartoum the patient, a native, was subject to attacks beginning with fever—temperature about 103° F. and pulse rate about 120—associated with persistent cough and a whitish, frothy expectoration which becomes greenish on the second day. During attacks moist râles could be heard all over the chest. The first Egyptian case, met with in Alexandria, was in a manufacturer aged fifty-seven years, who had had in the course of two years a series of attacks of fever with hemoptysis and rusty sputum. The cough was at first dry, with fever, but after a few days the tem-

perature dropped and hemoptysis occurred. The patient did not feel very ill during the attacks, but was rendered somewhat anemic, the hemoglobin descending to fifty-five per cent. The left lung showed a large area of dullness, with vocal fremitus diminished in its upper part and abolished at the base. Subcrepitant râles were heard in the axilla. In this patient the monilia disappeared temporarily from the sputum and considerable benefit resulted from series of injections of two mils of lipiodol for four consecutive days, repeated at intervals. Potassium iodide by mouth is also effectual in this disease. The diagnosis is made by placing fresh sputum on Sabouraud's maltose agar and examining the twenty-four hour growth for yeast like organisms, which, if present, are subinoculated on other slants of maltose agar, to obtain cure cultures. The monilia is easily defined when thus isolated.

Recrudescence of Epidemic Lethargic Encephalitis.—A. Netter (*Bulletin de l'Académie de médecine*, January 6, 1920) saw twelve cases of this disease in Paris between November 26, 1919, and January 6, 1920, and had knowledge of twenty other recent cases. The twelve personal cases were sparsely distributed in different quarters of the city, and no connection between them could be traced. Of the three cardinal signs of the disease, two, viz., fever and somnolence, were uniformly present in these cases. Diplopia, followed by temporary paralysis of accommodation, was, however, lacking in one third of the series. Hypoglossal involvement was observed in three instances, and facial involvement in two. Three patients showed tremor and one, general convulsions. Copious salivation occurred in two cases. All these symptoms are among the customary manifestations of the disease; the oculomotor disturbances seemed, however, to be less marked than in cases the author had previously seen. In most of the patients under treatment the condition was of over three weeks' standing. Two patients had completely recovered at the time of writing, and two had died.

Syphilis and Tuberculosis.—E. Marino and J. C. Mussio-Fournier (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, December 4, 1919) emphasize the frequency with which members of syphilitic families show the "lymphatic status," with such conditions as enlarged tonsils or lymph glands, obesity, adrenal and ovarian insufficiency, Stiller's asthenic habitus, characteristic thorax, gastropotosis, colopotosis, drop heart, etc. Even where, in the presence of such manifestations, actual stigmata of inherited syphilis are not found, it is often of marked advantage to give antisyphilitic remedies in small, cautious doses, after measures such as arsenic, iodine, antituberculous medication, hormone therapy, etc., have failed. Stress should be laid on congenital syphilis as a factor strongly predisposing to pulmonary tuberculosis. In many cases of the latter affection, confirmed by discovery of the tubercle bacillus in the sputum, marked improvement results from addition of mercury in

small doses to the treatment, where the history gives indications of probable syphilitic infection in the family, yet in the absence of signs of congenital syphilis in the patients themselves. In numerous instances of minor headache, gastralgia, vertigo, colitis, Poncet rheumatism, hyperthyroidism, insomnia, loss of weight, anorexia, slight chlorotic anemia, asthma and pericollitis, anti-tuberculous or anti-syphilitic treatment, administered alone, is a complete failure, but mixed treatment by means of fresh air, sunlight, arsenic, iodine, tuberculin in small doses, and cautious use of mercury yields very gratifying results. Many of the patients thus treated, after being lost sight of, returned with manifest pulmonary tuberculosis, showing that they had actually been instances of latent tuberculous infection gradually developing upon a syphilitic substrate. In some cases of the type referred to, the authors have alternated nearsphenamine injections with the mercurial treatment.

Home Treatment of Pulmonary Tuberculosis.

—W. E. Brown (*Virginia Medical Monthly*, January, 1920) advises sanatorium treatment whenever possible, even if only for a few months, in order that the patient may get a proper start on the road to recovery and become trained in taking care of himself and preventing transmission to others. The number of cases, however, is so far in excess of the available beds in sanatoria that the great majority of cases have to be treated at home or receive no treatment at all. Cough is usually benefited by rest, and can be controlled to a marked extent by exercise of will power. If drugs prove necessary, they should be used sparingly. In severe hacking cough without much expectoration, it is well to examine the ears for wax deposits causing reflex cough and the throat for enlarged lingual tonsils. Indigestion complicating active tuberculosis is often markedly relieved by giving ten to twenty minims of dilute hydrochloric acid in water after each meal. As regards the diet, three good, substantial meals a day, with a glass of milk at each meal and one between meals, are best in the average case. As for climatic treatment statistics show that the average patient can do as well in his home climate as elsewhere. The chief factor in treatment is rest—rest in bed, with absolute relaxation. While the symptoms are pronounced the patient should study constantly how to relax completely and make as little physical exertion as possible. A fact to be remembered is that between the active stage, with cough, expectoration, high pulse and fever, and the point at which the disease has become definitely arrested, there is a stage of quiescence of symptoms, too frequently taken to mean that the patient is able to return to his usual duties. When symptoms have subsided only very moderate exercise should be allowed, e. g., fifteen minutes of slow walking once or twice a day. After a week or two, if all is well, this may be increased to thirty minutes, and thereafter very gradually further until finally the patient can do a fair day's work. A case is never considered arrested until it has gone at least six months without any physical signs or symptoms. It is best not to let a patient consider himself cured.

Sunlight in the Sterilization of Tuberculous Sputum.—H. Tecon (*Paris médical*, January 3, 1920) placed sterilized sand, gravel and dust on a terrace with Southern exposure at Laysin, Switzerland, and dropped upon it sputa from consumptive patients, previously examined for tubercle bacilli. Meteorological data were recorded at short intervals throughout the experimental period. Sputa thus exposed to the mountain sun in the summer for periods of from two to over fifty-two hours—the experiment in the latter case extending over nine days—all gave positive results when subsequently inoculated into guineapigs; in some instances, however, the onset of tuberculous disease was considerably delayed. All the experiments but one were conducted in cloudless weather. In another series of tests sputum was exposed to the sun on beaten snow. In these tests the sputum was regularly rendered sterile in less than twenty-nine hours. The marked discrepancy between the temperatures by day and night in this series is thought to have been a factor in the sterilization, but there are other possible factors, such as reflection, ultra-violet rays, etc. In one experiment sputa from the same patient, and with approximately equal bacterial content, were exposed simultaneously on snow and on the above mentioned reproduction of an ordinary footway. After twenty-three hours of isolation on the latter medium the sputum gave positive results in guineapigs, while after like exposure on beaten snow inoculations were negative. This shows that the difference between temperatures by day and night cannot be the sole factor in the more rapid sterilization upon exposure over snow. The general conclusion from the experiments is that the sterilizing value of sunlight on tuberculous sputum discharged upon public highways is practically negligible in the summer time; it is more marked on sputum discharged on mountain roads during the snowy season.

Failure in the Treatment of Acute Empyema.—Tuffier (*Presse médicale*, December 6, 1919) reports seven deaths in twenty-eight cases of acute purulent pleurisy with operation. In five of these cases the patients were subjected to operation within the first eight days of acute illness and in the presence of a severe systemic disturbance characterized by high fever, cyanosis, dyspnea, and marked infection and toxemia. He thinks it might be well, in such cases, to dispense with thoracotomy and confine the treatment to a few simple punctures and appropriate vaccine therapy. In the less severe, nonlethal cases, with prolonged suppuration and delayed recovery, Tuffier has found sometimes small, miliary, subpleural abscesses keeping up the infection. In other instances there were external ulcerations of the lungs, or deep, honeycomb foci, inaccessible to antiseptic fluids. In one case the disturbance was being maintained by an obscure putrid interlobar pleurisy, overlooked even in the x ray examination. Finally, a circumscribed area of gangrene at the surface of the lung was met with, corresponding to the sloughing away of a bronchial cartilage, which remained dry for a time and kept up the suppurative process, owing to the slowness with which it was eliminated.

Aseptic Pleural Effusions Following Influenzal Pulmonary Lesions.—G. S. Coskinas (*Presse médicale*, January 17, 1920) gives an account of clinical and cytological investigations demonstrating the fact that influenzal lesions of the lungs—congestion, bronchopneumonia, etc.—are often accompanied by the formation of very small, aseptic pleural effusions. The fluid constituting these effusions is either serohematic, serofibrinous, or less commonly puriform in type. The effusions may be either evanescent or more lasting, and generally occur during the first few days of pulmonary involvement, at the height of the febrile period, and only infrequently appear later. Septic transformation of the fluid may occur, but the ratio of such cases in the author's series was only thirteen per cent. The aseptic pleural effusions may develop consentaneously with encysted or interlobar purulent, septic pleuritis. The cytology of the aseptic effusions is very polymorphic, both quantitatively and qualitatively.

The Clinical Application of the Carrel-Dakin Method in Cases of Acute Appendicitis Requiring Drainage.—Elbert T. Rulison (*Surgery, Gynecology, and Obstetrics*, March, 1920) lays great emphasis upon the necessity of thoroughly mastering the details as well as the principles underlying the introduction of such antiseptics as Dakin's fluid into deep, infected abdominal drainage tracts. While a single accidental admission of five to ten c.c. of Dakin's fluid through an infected tract into the free peritoneal cavity would probably not result fatally, it would certainly be productive of intense pain and alarming symptoms. He believes that the probability of such a complication is slight if the treatment is carried out along some such precautionary lines as have been found safe in our cases. If one is not willing to give the time necessary to gain a correct theoretical understanding, and is not willing to give the cases his careful, personal attention at daily dressing, the method should not be employed as it will probably not only prove disappointing, but may result in serious complications.

Faciocranial Dysmorphoses Due to Disturbed Endocrine Functions in Children.—Pierre Robin (*Presse médicale*, January 14, 1920) holds that poor functioning of the ductless glands is capable, according to the age period during which it develops, of inducing more or less pronounced aberrations of form and size of the bones of the face and cranium. These disturbances are associated with loss of balance of the patient's vegetative and psychic processes. He always presents a more or less sickly appearance. Additional endocrine disturbances may result from altered functioning of the thyroid gland and hypophysis, the latter being affected by direct *contre coup* from the faciocranial dysmorphoses to the induction of which they have themselves contributed. Apart from opotherapy, which manifestly cannot fail to be very useful, functional treatment of the facial abnormalities should be undertaken as soon as they are noticed, even if the child is but three years old. Faulty esthetics of the face are thus corrected, and the disturbance of the thyroid and hypophysis by *contre coup* directly antagonized.

Problems in the Control of the Acute Infectious Diseases in the Army.—Frederick F. Russell (*Southern Medical Journal*, January, 1920) finds that urban dwellers are relatively immune from all of the acute infectious diseases, probably because of an active immunity acquired through an attack of the disease or through the carrier state, while rural persons are susceptible to many of these diseases, not through any lack of resistance but because of the absence of a specific immunity. In certain diseases active immunity can be supplied by vaccination, and investigation should be directed to increase the number. In the absence of a vaccine the best thing to do is to improve the physical condition of the population in the hope that this may lead to fewer typical and more mild cases and temporary carriers. He urges that patients be sent to hospitals whenever possible in the earliest stages of infectious disease in order to diminish the severity of the attack and prevent complications, thus lowering the mortality; to develop a ward technic in the medical wards comparable with that in the surgical wards, and to prevent cross infection and the transfer of organisms from one patient to another. No single measure will suffice, but all measures, which will tend to reduce the total death rate, must be applied by the health authorities.

The Heart as a Factor from the Clinical and Therapeutic Viewpoints.—Lapicque (*Bulletin de l'Académie de médecine*, November 25, 1919) notes that the so-called bundle of His was discovered by Gaskell in the lower vertebrates ten years before His detected it in mammals. Studies in the frog, toad, turtle, and fish showed that the rate of propagation of impulses in the bundle of Gaskell was always about three times slower than in the muscle tissue of the auricles or ventricle proper. The rate of propagation in the auricular and ventricular tissues is the same throughout the heart in a given individual—though varying in different individuals and especially in different species—and under normal conditions the rates in these tissues and in the bundle of Gaskell always show approximately a definite ratio of three to one. Various drugs, however, are capable of changing this ratio, and whenever the ratio departs from the normal more than a certain amount, intracardiac conduction is profoundly interfered with or even arrested, and arrhythmia results. Thus atropine decreases the rate of propagation in all portions of the heart, but to a greater extent in the bundle of Gaskell than elsewhere. In progressive atropine intoxication of the heart, the rate is always five or six times slower in the bundle than in the ventricle or auricles. Certain clinical disturbances are probably accounted for by functional alterations of this nature. Therapeutic measures, as well as diagnostic drug tests, should take into account, as regards each drug administered, the effects of the drug on impulse propagation previously demonstrated in the laboratory. While the author's experiments were conducted exclusively in the lower vertebrates, the results were so uniform and universal as to suggest that the same conditions exist likewise in the mammalian and human heart.

Proceedings of National and Local Societies

AMERICAN LARYNGOLOGICAL SOCIETY.

*Forty-first Annual Meeting Held in Atlantic City
N. J., June 16, 17 and 18, 1919.*

The President, Dr. CORNELIUS G. COAKLEY, of New York,
in the Chair.

President's Address.—Dr. CORNELIUS G. COAKLEY, of New York, in his presidential address quoted General Munson, in an article presented to the fifteenth annual conference of the Council of Medical Education of the American Medical Association, held in Chicago, March 3, 1919, who gave the procedure employed for the selection of physicians who volunteered their services in the Medical Corps. He stated first the manner of their selection. After candidates for the army had been accepted, many of them were found not to be qualified to perform the medical duties assigned to them.

General Munson said that one deduction was that the general reputation of a man was not necessarily a criterion of his actual qualifications; another, that in their estimates of each other gained by ordinary contact, physicians were not infallible; another, that a large number of men actually practising as specialists in this country, and generally accepted as such, were not duly qualified as the experts they were supposed to be. The latter point was one of special interest and concern to those interested in postgraduate and specialist education in this country.

With these facts before him, the surgeon general took steps to remedy the deficiencies by two methods: First, by farming out small squads for special instruction in a number of hospitals in the large cities. Many of these hospitals had never before been used for teaching purposes, and since the termination of the war had relapsed into their former policy of not utilizing for teaching purposes the abundant clinical material at hand. Second, schools of instruction for medical officers were established at several camps; these were later combined into one large school at Fort Oglethorpe, at which many of the specialties were taught. The training given to these medical officers was of an intensive and practical character.

General Munson stated that seventy per cent. of the alleged otolaryngologists, after the establishment of the school at Fort Oglethorpe, were rejected. The speaker said that in a book purporting to give the names of those who in the United States regard themselves as specialists in diseases of the eye, ear, nose and throat were found approximately 15,000 names; deducting from this number those who devoted themselves solely to diseases of the eye or the ear, there were approximately 13,000 specialists in otolaryngology who also treated the eye. If seventy per cent. of this number was incompetent, it meant that there were in this country 9,000 so-called otolaryngologists whom the War Department would not consider competent to care for soldiers.

These men were surely no better fitted to care for the civil population. Until the war there had

never been anything to uncover the deficiencies among otolaryngologists. That there were such deficiencies was known. That they existed in such numbers was a revelation. The principal reason for the incompetence of a large number of otolaryngologists was the insufficient training acquired before the individual bought an office outfit and began to spray noses, cut out tonsils and wash out ears. At many of the postgraduate schools a six weeks' course of instruction was sufficient for the granting of a certificate, which was beautifully framed and hung up in the office as testimony of the competency of the individual. The best trained men were those who had been fortunate enough to serve as interns for a year or more at one of the hospitals devoted to otolaryngology. These interns were usually recent graduates who had previously had an internship in surgery or medicine at a general hospital, quick to learn, enthusiastic and capable. It was probable that less than fifty such interns were graduated each year from the hospitals devoted to otolaryngology. The wealth of clinical material and the opportunity of learning diagnosis and performing operations, both minor and major, under the supervision of the several visiting surgeons, sent the men forth with an initial training that was good and an incentive to continue in this high grade work. The six weeks' specialist, on the other hand, was usually a much older man, slow to learn, who never got beyond the rudiments of professional work. There were, of course, brilliant exceptions to this latter picture.

There were manifestly two problems to consider: First, how to afford young men desirous of making otolaryngology their life work the best facilities for doing so; second, how to bring up to a higher plane work done by substandard specialists. Doctor Coakley said that he believed it was far easier to plan for the first than for the second group. For the solution of either problem two things were necessary—money and time. The expense of educating an otolaryngologist and the time required to lay the foundation were the main reasons why existing postgraduate schools had not been able to afford the kind of instruction that was desired. Well equipped laboratories, including anatomical material, an abundance of clinical facilities, and a quantity of expensive, short lived modern instruments, placed the cost of education at a high figure. Our present day postgraduate school gave all it could afford for the tuition it charged. Undergraduate schools found that it cost more to educate medical students than the income from tuition. Much of the laboratory instruction of the undergraduate school might with but slight added expense be used in teaching graduates. The most economical arrangement was for the graduate school in medicine to be a part of a university and stand in the same relation to the undergraduate school in medicine as the graduate school in philosophy to the college.

The graduate school must be endowed either by individuals or the State. The schools would then be in a position to accept or reject candidates who de-

sired to pursue any special graduate course of instruction by determining in advance whether they were qualified to receive such instruction. They would also be able at any time during the course of instruction to drop registrants for inefficient medical progress. The teaching in such an institution should be supervised by the leaders in the profession, who should have conferences and quizzes with the students and instructors at frequent stated times. The bulk of the actual teaching must be performed by the younger men who had not yet reached that stage in their professional career where their private practice occupied nearly every available minute of their time. The instructors should be adequately paid for their services. Such an association with the university would prove highly attractive to the instructors and result in bringing the best young men to the university centres, where the opportunity for research and study would be greater. If funds were provided by which any one university was able to establish a graduate school in medicine in all the specialties on the lines indicated above, it would not be long before other universities would find it necessary to seek and secure the funds to establish similar schools.

Streptococcus Infection of the Larynx.—Lieutenant Colonel JOSEPH H. BRYAN, Washington, D. C., reported the case of a patient who was admitted to the Walter Reed General Hospital, on October 8, 1918, with double pneumonia following influenza. He was critically ill, but made a satisfactory recovery as far as the pneumonia was concerned. During his convalescence it was noticed that his voice became very husky and he complained of pain in the region of the larynx, and pain referred to the ears. He was then transferred from the medical service to the ear, nose and throat section. On admission to this section his voice was raucous, and there was some cough and pain in the larynx. Examination showed both tonsils hypertrophied with some exudate from the crypts on pressure; smears showed positive streptococcus. The larynx was congested, the congestion extending well down into the trachea. There was a marked ulcerative condition noted along the free margin of the epiglottis. The character of these secretions was unique in that the mucous membrane covering the cartilages was not actually broken through, but there was an undermining of the submucous tissue leaving marked depressions with the cupshaped and everted margins. This was especially true along the margins of the epiglottis.

The laboratory findings showed no tubercle bacilli after numerous examinations. Streptococcus hemolyticus was the prevailing organism found in cultures from secretion from the tonsils and middle ear. The tonsils, which might have been the primary source of the infection, were enucleated with marked improvement in the patient's general and local condition. After a month's furlough Doctor Bryan saw the patient, and on examination of his larynx found the ulcerations completely healed, only white cicatricial lines remaining. The abscess in the ear had healed and the patient had gained about twenty pounds in weight.

Discussion.—Dr. THOMAS J. HARRIS, New York, said that he had seen two cases at Fort Oglethorpe which were diagnosed as streptococcic laryngitis, the clinical picture of which resembled a little but not markedly, the description in Colonel Bryan's case. These occurred in two officers, and both were, as he remembered, cases of influenza pneumonia. The picture in these cases was that of diphtheria. They were both streptococcus pneumonia. Both patients were aphonic, both had some dyspnea, and when the examination, which was made with some difficulty, was accomplished, intense engorgement of the mucous membrane of the larynx was found with a partial pseudomembrane. There were spots of pseudomembrane over the false cords, over the epiglottis and over the aryepiglottidean folds.

Dr. HENRY L. SWAIN, of New Haven, Conn., said that in two patients he had seen with streptococcus throats, there had been a marked false membrane in the larynx, and in a number of croup cases this year it had been difficult to diagnose between diphtheria and the croup, which they really were. He had had one case of dry croup, where the whole larynx was dry, and the trachea was dry with subglottic swelling requiring intubation. There was at the top of the epiglottis an ulceration similar to that which was found in Doctor Bryan's case. The patient made a good recovery with simple inhalation in the ordinary hospital treatment.

Sir ST. CLAIR THOMSON said that he was absolutely ignorant of these streptococcal infections when they were more or less of a subacute character. He had only dealt with streptococcal infections in the larynx in the form of what we called acute septic laryngitis, which of course was accompanied by extreme prostration and was generally fatal within a few days, sometimes within forty-eight hours; cases in which even with considerable stenosis of the larynx, a tracheotomy did not cure the patient, because he died of toxemia and heart failure. Such cases were not common. One had to recognize them and distinguish them from the present type of streptococcal infection, so that the streptococcus was not our guide. In acute septic conditions, the temperature was sometimes normal, and nothing helped us but our clinical knowledge in recognizing that the patient was a very sick man and going to die and this was done by the prostration, cyanosis and congestion with a pseudomembrane in the larynx.

Lieutenant Colonel JOSEPH H. BRYAN said that the question was whether the streptococcus was the cause of the inflammation or whether it was the pneumonia. The particular case he had reported started as influenza, followed by pneumonia of the streptococcus type. When the patient was able to come to the clinic the tonsils were found to be of positive character, a triple plus, and it was his belief that after the influenza had affected the patient there was a descending infection producing pneumonia, and also an ascending infection in which the middle ears became involved. With regard to the temperature, when this patient appeared at the clinic, he was in the stage of convalescence. Although complaining of the ear, there was a slight inflammation, not sup-

puration at that particular moment, and the temperature was normal, but as the activity of the ear symptoms increased and suppuration set in, there was a slight rise of temperature. In this case no treatment was given except to exercise the tonsils. As soon as that was done and the patient sent off for a month's furlough, there was an immediate recovery, the ulcerations completely closing in, leaving, as stated, a mere cicatricial line. All the abrasions at the edges had closed in, so that the parts had practically healed without local treatment.

The Prognostic Importance of Tuberculosis of the Larynx.—Sir ST. CLAIR THOMSON, of London, England, said that tuberculosis was one of the most common and deadly scourges of humanity. There was no other which destroyed so many of our people in the very prime of their lives, for it caused one third of the total mortality during the chief working years of life. It killed 53,000 individuals annually in England and Wales. It was the greatest cause of disablement in adult life. It led to more loss to the family and to the nation than any other single disease. It was one of the saddest afflictions.

At the present moment the tuberculosis question was of ever increasing urgency, for a study of statistics would tend to demonstrate that the death rate had not only ceased the steady decline it had been pursuing for many years, but since the year 1912 it had been steadily rising. He believed that every case of pulmonary tuberculosis and every suspected case should be examined by a skilled laryngologist, not once only, but at regularly recurring periods; every tuberculosis sanatorium should have a laryngologist on its regular staff; and every laryngologist should embrace any opportunity that may come his way of examining the throat in consumptive patients. In a few cases tuberculosis could be diagnosed in the larynx before it had sufficiently advanced elsewhere to cause any physical signs.

At the King Edward VII Sanatorium at Midhurst, there was a well worked system by which a report was obtained as to each patient's condition once every year after his discharge. Every patient was therefore followed all the years of his life, and till his death was recorded. In England this task was doubtless easier than on large continents. The afterhistory of 888 patients examined between July, 1911, and June, 1918, was presented. They were divided into laryngeal and nonlaryngeal cases and into three groups, as follows:

A patient was placed in Group I, if the disease was limited to a small area of one or both apices; these were the slight cases. Group II embraced cases more extensive than Group I, but affecting, at most, the whole of one lobe, or severe disease extending at most to the half of one lobe; such cases would still be called of slight severity. Group III included all cases of greater severity than Group II and all those with considerable cavities; these are the more serious cases.

Statistics were given of the mortality from laryngeal and nonlaryngeal tuberculosis which showed the importance of a skilled examination of the larynx in every case of tuberculosis.

(To be continued)

Births, Marriages, and Deaths.

Died.

ATKINSON.—In Brooklyn, N. Y., on Monday, March 22nd, Dr. Jerome Gill Atkinson, aged seventy-seven years.

AYER.—In Owego, N. Y., on Thursday, March 25th, Dr. Warren L. Ayer, aged seventy-seven years.

BALDWIN.—In Calera, Okla., on Saturday, February 14th, Dr. John H. Baldwin, aged sixty-one years.

BACHELOR.—In Cleveland, Ohio, on Thursday, March 18th, Dr. William A. Batchelor, aged sixty-four years.

BRADSHAW.—In Marmaduke, Ark., on Sunday, February 8th, Dr. Robert Edward Bradsher, aged forty-four years.

CAMPBELL.—In Albany, Mo., on Tuesday, February 10th, Dr. Malcolm Munroe Campbell, aged eighty years.

CAMPISI.—In Brooklyn, N. Y., on Thursday, March 25th, Dr. Vincent Joseph Campisi, aged thirty-three years.

CARTER.—In Bessemer, Ala., on Saturday, February 21st, Dr. John Watson Carter, aged seventy years.

CLARKE.—In Poughkeepsie, N. Y., on Friday, March 26th, Dr. Robert E. Clarke, aged sixty-six years.

DEAS.—In Richmond, Va., on Tuesday, February 17th, Dr. William Allen Deas, aged eighty-five years.

DISHARROON.—In Roanoke, Ala., on Monday, February 9th, Dr. Henry Beauregard Disharoon, aged fifty-nine years.

ENSING.—In London, England, Dr. George Henry Ensing, of Vashon, Wash., aged thirty-eight years.

FLETCHER.—In Jenkins Bridge, Va., on Wednesday, February 25th, Dr. Frank Fletcher, aged seventy-four years.

GENDRON.—In Ware, Mass., on Sunday, March 7th, Dr. Joseph Alexander Gendron, aged fifty-eight years.

GIPSON.—In Oklahoma City, Okla., on Wednesday, February 11th, Dr. Herbert H. Gipson, aged forty years.

HARRISON.—In Columbia, Tenn., on Thursday, February 12th, Dr. William Benjamin Harrison, aged eighty-nine years.

HERTICH.—In St. Louis, Mo., on Wednesday, February 11th, Dr. Charles J. Hertich, aged seventy-one years.

LASSEN.—In Brooklyn, N. Y., on Thursday, February 25th, Dr. Helene Siverine Lassen.

LINDSAY.—In Fort Smith, Ark., on Sunday, February 8th, Dr. Edgar Lee Lindsay, aged thirty-four years.

MCCREADY.—In Baltimore, Md., on Thursday, March 18th, Dr. James M. McCready, of Sewickly, Pa., aged sixty years.

RALSTON.—In Houston, Tex., on Tuesday, February 3rd, Dr. Joseph C. Ralston, aged forty-five years.

REED.—In Atlantic City, N. J., on Friday, March 19th, Dr. Talbot Reed.

REGISTER.—In Charlotte, N. C., on Wednesday, February 18th, Dr. Edward Chauncey Register, aged sixty years.

TROUT.—In Fairfield, Pa., on Wednesday, March 24th, Dr. Nicholas C. Trout, aged fifty-four years.

WALLING.—In Millbridge, Me., on Tuesday, March 2nd, Dr. Justin A. Walling, aged sixty-two years.

WILLIAMSON.—In New York, N. Y., on Monday, March 22nd, Dr. Phoebe Thorne Williamson, aged seventy years.

WRIGHT.—In Oteen, N. C., on Monday, February 22nd, Lieutenant Crispin Wright, Medical Corps, U. S. A., aged thirty-seven years.

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Original Communications

PSYCHOPATHIES AND NEUROPATHIES OF CARDIOVASCULAR DISEASES.

By THOMAS E. SATTERTHWAITE, M. D.,
New York.

Some twenty years ago Head (1) stated that a disturbed action of the heart might so affect the circulation in the brain, or alter the character of its blood, as to produce psychic changes in the individual. He tabulated sixty-two instances of cardiac disease where there was an association of mental depression in twenty-seven; suspicion in eighteen; optical hallucinations in nine; hallucinations of hearing in nine, and of smell in one.

Altogether in his sixty-two patients he found the sensorium or sensory centres involved seventy-four times, there being obviously two or more abnormalities of function in the same person. Most important for the purposes of this paper, however, was his finding mental depression in twenty-seven, or forty-three and five tenths per cent. These tables are valuable in so far as Head opened up a new vista in cardiology; but the number of his cases was too limited for purposes of generalization and his data were too meagre in details; for they failed to exhibit many of the psychopathies that are now recognized as frequently associated features in cardiovascular diseases.

More recently France (2) of Baltimore, has contributed further to this interesting subject, holding that "persistent irregularity of the heart's action does in almost every case produce a mental or an emotional state deviating in some important respect from the normal, which abnormality may be occasional, slight or transitory, or so marked and permanent as to constitute a distinct psychosis." His general conclusions as to this interrelation can, if I have understood them correctly, be briefly summarized as follows:

A defective heart valve, producing cardiac strain and irregularity, may of itself cause depression, anxiety and fear. Such results are found whenever there is a marked deviation from the normal in the activities of the cardiac machine. Among the earliest symptoms are night terrors or nightmares; but as the disease progresses these mental disturbances may occur during waking hours. An alteration of the rhythm can also exercise a profound influence on the sensorium. Neuralgias of the fifth nerve and tenderness of the scalp over the areas supplied by its branches may also be the precursors of disturbed

compensation. A neurasthenia associated with anxiety, fear, or depression, especially in persons over forty or fifty years of age, may be due to some cardiac disorder. With respect to France's views I may say that I believe persistent cardiac irregularities do sometimes produce all the psychic manifestations he has enumerated; though I do not agree with him as to their relative frequency, from the viewpoint of the data furnished in this article.

And yet on this point too, I am willing to believe he may possibly be as near or nearer the truth than I have been, in the matter of my private patients, for in them I may have failed to register some of the psychic abnormalities which he personally might have felt justified in recognizing. Even alienists would naturally disagree as to laying down any sharply defined line between the manifestations of a normal mentality and the psychopathic one. At this point it may be well to state that in some neurotic persons cardiac strain and pulse irregularities resulting from it are mentally depressing, while others may not be materially upset by them. In fact, cardiovascular disease can be very pronounced and yet the patient little disturbed by it, provided compensation has been established. Again, night terrors and nightmares are in large measure due to indigestion, though aggravated by the constitutional disease.

There should be no disagreement on this point. It is during the night, generally towards morning, at a time when the functions of the heart are at a low ebb, that irregularities are most prone to occur. Also, in the recumbent position external pressure from the abdominal contents is most likely to bear on the heart, the pressure being then from without, the weight of the intestines acting with the gas, to bring pressure upon the organ, causing embarrassment in its activities. For this reason, France stands on firm ground, I feel, when he insists that commencing heart disease is likely to be heralded by disturbed sleep or dreams. Failure to realize these points may lead one to overlook very important subjective signs of heart disease.

It is the purpose of this paper to present such statistics on this matter and also on the relations of neuroses to cardiovascular diseases, as I have available, with a view to comparing them with the experiences of Head and France on the same points. For this purpose I have taken one hundred histories of cardiovascular patients from my office records, selecting those with fairly complete data, and in the

order of their filing. The particular problem before me was, in the first place, to discover the interrelation as to frequency between the arrhythmias and the psychopathic states in cardiovascular diseases as they were noted in my records. I have used no special classification.

ARRHYTHMIA.

The results were as follows: With arrhythmias, taking them as predominating features in my cardiovascular cases, of the first fifty the following abnormalities were noted in seven: Morbid apprehension, one; depression, four; defective mentality, two; total seven, or fourteen per cent. Of the second fifty the following abnormalities were noted in three: Depression, total three, or six per cent. Total in the 100 cases: Psychopathies in ten, or ten per cent. The range was six to fourteen per cent.

WITHOUT ARRHYTHMIA.

Of the first fifty cases the following abnormalities were noted in ten: Morbid apprehension four; depression two; neurasthenia three; hyperexcitability one; total ten, or twenty per cent. Of the second fifty cases the following abnormalities were noted in ten as follows: Depression six; melancholia two; hysteria one; defective mentality one, total ten, or twenty per cent. Total of arrhythmias without psychopathies twenty per cent., as against ten per cent. of arrhythmias with psychopathies.

I have also noted that in the same series with respect to tachycardias six per cent. were associated with psychopathies, while in eleven per cent. of the cases there were no psychopathies. Evidently then there is no reason for me to believe that either arrhythmias or tachycardias are etiological factors of any great moment in the psychopathies. On the other hand, the interrelations between a large number of psychic manifestations and cardiovascular diseases have been given in the reports for 1917 and 1918, of the Manhattan Hospital for the Insane on Ward's Island, N. Y., and are worthy of special note. In this connection I may say that from my personal observation as a member of its consulting staff, I know of no hospital, in this vicinity at least, where the physicians in immediate charge are better qualified for effective and scientific work in their several departments.

For me, therefore, these reports have a very unusual value. I submit two tables derived from their records in 1,509 cases. In respect of classification twenty-one different psychopathic anomalies are utilized out of a total of twenty-four varieties recognized by the hospital.

In the report for 1917 of the hospital referred to, relations between the several psychopathies and the associated cardiovascular and respiratory diseases, are summarized in Table I, which gives the primary and contributing causes of death as determined in each case by postmortem findings.

From this tabulation it may be seen that in the psychopathic cases cardiovascular disease was present in 32.3 per cent.; respiratory disease in 31.5 per cent.; in other words, about one third of the psychopathic patients had cardiac or vascular disease or both.

In Table II the interrelation just referred to is

further shown by the summary of the records from the same hospital for 1918.

From Table II we also gather that its percentages are practically the same as those of Table I in demonstrating the interrelation between cardiovascular diseases and the psychopathies. For, in

TABLE I.

Primary causes of death	Psychopathies	Contributing causes of death Respiratory	Cardio-vascular
Senile psychoses	199	20	89
Psychoses with cerebral arteriosclerosis	74	9	7
Dementia paralytica	20	42	2
Dementias with cerebral syphilis	5	3	2
Psychoses with brain tumor	5	1	0
Psychoses with other brain and nerve disorders	8	1	0
Ante-mortem psychoses	3	10	0
Intoxic exhaustive and allied psychoses	2	6	0
Autotoxic psychoses	5	10	0
Manic depressive and allied psychoses	31	11	24
Hypertensive melancholia	2	3	2
Symptomatic psychoses	2	1	10
Dementia praecox and allied psychoses	87	24	10
Paranoid conditions	1	0	0
Epileptic psychoses	27	5	2
Constitutional inferiority	5	3	2
Mental deficiencies	3	2	10
Unclassified	47	2	20
	594	254	250

Table II, the former represents thirty-five per cent. of the latter. Respiratory diseases, however, were less closely related to the psychopathies, existing in only twenty-one and four tenths per cent. of them. But we should also note that in two special instances this interrelation was astonishingly close; for in 218 individuals with senile psychoses the incidence of cardiovascular disease was 168 or seventy-seven per cent., while in 149 psychoses with cerebral or other varieties of arterioscleroses, the incidence was 120, or eighty per cent.

Taking up now the neuropathies, my one hundred private histories uncover the following facts: In

TABLE II.

Primary causes of death	Psychopathies	Contributing causes of death Respiratory	Cardio-vascular
Traumatic psychoses	none	none	none
Senile psychoses	99	12	79
Psychoses with arteriosclerosis	70	5	58
General paralysis	214	7	7
Psychoses with cerebral syphilis	1	none	none
Huntington's chorea	1	none	none
Psychoses with brain tumor	1	none	none
Psychoses with other brain and nerve diseases	3	none	2
Alcoholic psychoses	31	9	18
Pollara	1	none	none
Psychoses with other somatic diseases	27	9	7
Manic depressive	54	12	18
Involution melancholia	8	4	3
Dementia praecox	142	23	40
Paranoid conditions	4	1	1
Mental deficiency	2	none	2
Constitutional psychopathic inferiority	4	1	1
Epileptic psychoses	17	7	2
Unclassified	26	11	7
	705	151	247

my first series of fifty there were: Anginoid attacks one; migraine one; pain in back of neck one; paresis two; restlessness one; intercostal neuralgia one; neurotic constitutions seven; hemiplegia one; chorea one; familial tremor two; total eighteen, or thirty-six per cent. In my second fifty: Precor-

dial pain three; general neuralgias two; headaches two; chorea one; pain in head one; familial tremor two; anginoid attacks two; hemiplegia one; drug addiction one; total fifteen, or thirty per cent.

We may see then, with respect to these one hundred cases of cardiovascular disease, that neuropathies were represented in thirty-three, or thirty-three per cent. Now, how far these latter were direct or indirect manifestations of nervous disease, was difficult and often impossible to determine. Some of them resulted from direct action of the heart or blood vessels, some from reflex causes, of varying character. Precordial pain is often a direct result of dilatation, when it can be dissipated by a powerful heart stimulant like amyl nitrite. On the other hand, a pseudoangina, due possibly to spinal irritation, or to a general neuralgia, may be promptly dissipated by the radiant electric light or other measures. Again, in cases of tremor, the heart may exhibit merely the local manifestations of a family trait. Headaches may be due to an increased or an inadequate blood supply to the brain. Cholecystitis, or even a full gallbladder causing arrhythmia may also produce local neuralgias. It is often difficult, and as I have said, impossible to discover whether or not the neuropathies are dependent on a cardiovascular disease, but by careful and repeated studies of the case one's patience is likely to be rewarded. In this matter successful treatment is of great help in the diagnosis.

We now approach the topic of a final verdict on the problems of this paper. Unfortunately,* at this point we face difficulties that are unsurmountable, if we desire extreme accuracy, because we cannot delimit psychopathies. Circumstances may alter the character of a supposed mental obsession. An apparently mad act may turn out to be logically proper. Let us take an example.

Homicide, as a rule, is not regarded as indicating a mental or moral lapse by people in general (and even our brethren of the clerical profession, in particular) provided an obvious enemy is the victim, and the homicidal act is committed with a weapon of war in the heat of conflict; but to kill one who has done no harm, and does not contemplate doing any, in time of peace, would be regarded as an insane act, to be punished with the full weight of the law. In fact, time, place, age, sex, education, environment and other conditions have to be taken into account, in order to decide in a given case, whether a supposed psychopathic act, is or is not the product of an abnormal mind.

In the matter of neuropathies it should be recognized also, that all of us, from time to time, have them, of some sort or other, independent of any visceral or vascular disease. And yet, both in psychopathies and neuropathies, even if we cannot obtain absolutely correct percentages of incidence, we can, at least, formulate some general conclusions which will be useful in prognosis, and to some extent in diagnosis.

And so from what has been shown in this paper we may safely state: 1. Arrhythmias are not active factors in causing psychopathies. 2. Tachycardias are even less so. 3. The incidence of cardiovascular disease in causing psychopathies in general, and

in being contributing causes of death in them is from thirty-two to thirty-five per cent. 4. On the other hand senile psychoses may be associated in a similar manner with cardiovascular disease in seventy-seven per cent.; psychoses with cerebral arteriosclerosis in eighty per cent. of the cases. 5. With respect to the incidence of such neuropathies as migraine, anginoid attacks, neuralgias, pareses, or paralyses and tremors, my figures put it at thirty-three per cent. 6. Most of such neuropathies, however, are either incidental or accidental associates of the cardiac or vascular diseases.

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WHAT FEARS AND STATES OF ANXIETY IN A PATIENT MEAN TO THE GYNECOLOGIST.*

BY S. WYLLIS BANDLER, A. B., M. D.,
New York,

Professor of Gynecology, New York Post-Graduate Medical
School and Hospital.

Nothing can contribute more to the valuable study of human nature, to a proper understanding of psychology, and to an explanation of mental states and psychoses than adequate proof of the fact that the instincts and the emotions have a neurophysical basis, and are not produced solely and entirely through psychic effect. If the instincts of flight, pugnacity, gregariousness, repulsion, suggestibility, contrasuggestion and other emotional states, are each in their turn an evidence of and the result of definite and specific endocrine activity, much that seems wonderful will be made simple.

I might begin now with the question: Why is it that a red rag irritates a bull? The pigmented retina, because of its pigment, must be in close association with the suprarenals. In regard to the adrenal connection, there are certain retinal cells and fibres which are connected through the autonomic system with the adrenal medulla; there are certain cells connected through the same system with the adrenal cortex, and, therefore, as the retina in different animals, races, and individuals differs in its structure and sensitiveness, so in the bull the connection with the adrenals, especially the cortex is such that red, as a color, immediately stimulates and rouses the adrenals, especially the cortex and associated glands, with the resulting production of the instinct of pugnacity and the emotion of anger.

The possibilities of such interpretation lead us to readily understand why black and darkness depress and frighten, since the connection with and influence on the adrenal medulla and chromaffin system is a neurophysical one. The negro race with its fondness for bright colors illustrates this physical basis. As the skin pigment calls our attention to such a possibility, it can be readily appreciated that the retinal composition and sensitiveness differ from that of the white races, and for that reason the retina is extremely sensitive to bright colors. It

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is not enough to say that this race, because of its lack of education and training, is, for that reason only, naturally sensitive to certain bright pigments. The negro race is extremely susceptible to fibroids or fibromyomata. If this is true, it points to an excessive activity of the posterior pituitary lobe since this gland, with or without the aid of the anterior pituitary, is responsible for these uterine tumors. This excessive action of the posterior pituitary in the negro race, plus the adrenal makeup, would readily account for their emotional character, for their susceptibility to superstitions, and religious fervors. If we add to this a gonadal relationship different from that in white people, the genital differences will be readily understood. Since the thyroid is less efficient in the negro he is less energetic.

The same difference in sensitiveness and attraction holds true with the impressions made through the ear and the sense of hearing, and likewise holds true of the other senses. So the music of the negro differs from that of the whites, and the music of various races shows equally great differences. Music, characteristic of the different races, has therefore, not only a psychic but a physical basis for its character and type, since both physical and psychic states are due to the endocrines.

And so races differ primarily in color, facial character, body form, mental attitude, suggestibility, pugnacity, education, tastes, customs, wisdom, energy, according to the lines of endocrine correlation and interrelationship, and numerous differences in skin pigment, in instincts, emotions, mental ability, pugnacity, fear, the gregarious instinct and other instincts, emotions and characteristics are to be found among the individuals of each race. There is not an instinct or an emotion, whatever divisions or classifications a psychologist may make, that cannot be readily accounted for on an endocrine basis, and psychoses are simply exaggerations of an abnormal character of any one or more of the simple and ordinary instincts and emotions with which the human being and especially the physician has to deal.

People who are away from the normal line in music (ear), the appreciation of colors (eye), and to combination of colors (as in certain schools), are likely to be away from the normal in their instincts and emotions, since the physical basis for the one as it runs back to the endocrines presupposes a different endocrine relation at the bottom of the instincts and emotions. This being away from the normal as to tastes, dependent on any of the senses, presupposes a like deviation in instincts, emotions and psychic reaction and behavior.

Life is a struggle in many ways. One of the important contests is that between the endocrines, which are the main factors conferring immunity on the one hand, and bacterial infections and physiological processes on the other. In this way the survival of the fittest results. In addition to bacteria the storm, the stress and the accidents of environment and of life play an all important part.

In this short paper I wish to direct attention first to the thyroid gland, second to the adrenals, and finally, to that structure in the ovary known as

the corpus luteum, for it is the thyroid and the adrenals which are the end organs most closely related to fears, anxieties and phobias. But the little devil physically responsible, as a primary factor, is the corpus luteum. I have said physically responsible advisedly, and I now come to the question of psychic responsibility.

Impressions made during the early years of childhood are the most lasting as concerns the instincts and the emotions, even though they are not remembered. Stimuli through any of the senses without consciousness, but especially when associated with consciousness, follow definite neuroendocrine paths and result in emotions and the typical behavior associated with these emotions. Of all the elements through life which produce injurious effects and lasting harm, fear stands at the head.

Some children are not easily frightened; others are more readily frightened and still others are of an extremely fearful or fearsome nature, and to call these neurotic or psychopathic, and to say that they have inherited these conditions may be only too true, but it explains nothing which the parents can understand, and hope to correct. These terms do not show that the physician recognizes that there is something wrong which may be corrected. Parents must and should do everything possible with their children to avoid inculcating fear, and should remove any element of fear as much as possible from the mind and consciousness of the child. At a later age fears, though not remembered as having been experienced earlier, may and do persist as sensitive paths and so continue throughout the whole life of the affected individual.

Little Red Riding Hood, Grimm's *Fairy Tales* and stories relating to death, and to fearsome things, should be entirely abolished from the life of the child. Threats and punishments, which rouse fear, are a most criminal part of the so-called disciplinary methods introduced into the life of the child. Some children are not readily frightened, others very easily. What do we know of the dreams of the child, filled often enough with fear and terror, thus reproducing, during what should be restful sleep, the terrible and horrible imprints made upon the mind and psyche.

In fear, the adrenals are the endocrine organs especially associated with this emotion. The less the response of the adrenal cortex, and the more sensitive the adrenal medulla, the more likely will the child experience fear. The more active the glandular thyroid and the more sensitive its reaction, the more will the tendency to the emotion of fear and the instinct of flight be enhanced. When a child wakes in fear or terror, or without this evidence wants to go into the bed of its mother or its nurse, that child is anxious and frightened. When a child, on retiring, makes excuses to call its mother or nurse to the bedside, wants a light in the room, or a light in the hall, that child is frightened. When I realize how little understanding there is of this fact among parents and physicians, I, in my turn, shudder at the injustice done to myriads of children by the different disciplinary methods of "teaching that child to behave."

I marvel at our slow pace in recognizing the im-

portance of all the endocrines from the date of birth of the child. We know how necessary the anterior pituitary and the thyroid are to mental and physical development. We are beginning to realize the value of the adrenal cortex; we are beginning to realize that the thyroid has two totally distinct secretory structures, but where do we stand on the question of the ovary? The interstitial ovary and the glandular ovary are functioning all the time and are most important to the physical, mental and psychic welfare of the child and of the adult. If attention were paid to what I am now saying, we would find in thousands of little girls a regular premenstrual monthly wave noticed in the sphere of behavior and psychic reactions where now no attention is paid to such a possibility since little girls do not menstruate. This observation is of tremendous importance in the treatment and management of girls of any age. But even when they do begin to menstruate, and at the stage of puberty do present symptoms pointing to hyperthyroidism and other symptoms resembling these monthly, but due to hyperactivity of the adrenal medulla, even then very little attention is paid to the premenstrual, constitutional and psychic phenomena.

The two secretions of the ovary and the two secretions of the thyroid stimulate each other but are at the same time antagonistic. This relation of stimulation or production of normal balance between any two glands or between the two parts of each gland, is essential to the normal action of those glands or parts of each gland on the body, visceral functions, and psyche of any individual. For perfect health there must be a normal balance between the anterior and posterior pituitary, between the adrenal cortex and the adrenal medulla, between the interstitial ovary and the glandular ovary, between the interstitial and glandular pancreas, between the interstitial and glandular kidney. For perfect health there must be a normal balance between these glands and the parathyroid and the thymus and the pancreas, the pineal, and other glands. In my experience the importance of the parathyroids has been grossly underestimated and this gland and the pineal are now receiving from me, as the other glands have long received from me, more and more attention from the therapeutic point of view.

But of prime importance in this chain is the corpus luteum of the glandular ovary. The only secretions which the female has, which the male has not, are the corpus luteum, the mammary glands, and the placenta. This latter gland extract has been used therapeutically by me in several hundred cases, so that I can now affirm that it is one of the most important additions to our therapy, and it seems to be an antagonist able to put many of the endocrine glands, especially the posterior pituitary, to sleep. But thyroid diseases and overactivity of the adrenal medulla are peculiar to women, and we know the thyroid diseases are far more frequent in women than in men. The war has shown how profoundly shell shock affects the adrenal medulla and the chromaffin system, producing, among other symptoms, cardiac palpitation.

Thyroid affections, especially hyperthyroidism, vary in severity and in symptoms, according to the degree to which other glands, especially when the adrenals are involved. Thyroid diseases vary, likewise, according to the degree to which the interstitial or the gland element of the thyroid is involved. One reason why women are so susceptible to thyroid affections is that they produce and retain within their ovaries persistent corpora lutea. For years I have lectured, and proved by therapy, that the corpus luteum is a totally different secretion from that of the ovary itself, and that the indications for its administration are directly the opposite of that for administration of ovarian extract, and of ovarian residue. Therefore my therapeutic results of the last twenty years can be explained.

In 1906 I published an article in which there were reported twenty-eight cases of hyperthyroidism. The condition of these patients was made worse by thyroid extract administered to verify diagnosis. The important point was that ovarian extract, whole gland, was the specific therapy. In several publications I pointed out that persistent corpora lutea inhibited ovulation and were the responsible factors in many cases of sterility; that many of these patients were cured by the administration of ovarian extract with small doses of thyroid and other extracts, while others conceived only after surgical removal of the retained cysts and corpora lutea. I have prescribed corpus luteum once in comparison with ovarian extract with or without ovarian residue fifty times, and now many who have prescribed corpus luteum extract as a routine for amenorrhea and dysmenorrhea are at last seeing light. The corpus luteum of the glandular ovary, as stated, is the only secretion which can be made specifically the primary responsible factor for this tendency to hyperthyroidism in women, and since we know that ovarian extract and ovarian residue are antagonistic to the corpus luteum, we may the more readily understand why ovarian extract and suprarenal extract, which contains the cortex, are of such undoubted value in the various forms of hyperthyroidism.

So far as adrenalin is concerned, I long ago discontinued its routine use in the emergency complications occasionally seen in postoperative cases, feeling that it was not beneficial and often did harm. As soon as an extract of the adrenal cortex (which I am now using) is in our hands we will have one of the several new extracts which will save life and tide patients over the critical periods in the infectious diseases, and in postoperative complications. The anxious facies which is noted in pneumonia, in infectious diseases and in peritonitis has a meaning of great significance. It points distinctly to the adrenals.

Coming back to the title of this paper, I hope to make my point clear by quoting at a subsequent time the history of several cases. Before doing so, let me say that an actual or relative inadequacy of the adrenals or of the adrenal cortex may be congenital or acquired. It may result through the infectious diseases of childhood, particularly through influenza; it may be caused by pregnancy and labor, and frequently by lactation, but I believe that

psychic experiences, such as mental shocks, are just as able to injure a sensitive endocrine gland or part of an endocrine gland or to stimulate an endocrine gland, or part of an endocrine gland, as are the infectious diseases or normal processes. On the other hand, influenza or any infectious disease, or a physiological function or a physiological process, may arouse or stimulate a gland or glands or part of a gland to increased activity, so that even after an influenza or an infectious disease, and certainly after pregnancy, some patients are in better health than before.

It must be remembered that the addition of other extracts, such as testicular and anterior pituitary, the value of which has been explained in previous papers, has a powerful influence in aiding the correcting of the states of terror, fear and anxiety.

It might be wise to call attention again to the marked diuretic and soporific action of placental extract in certain forms of pituitary overactivity. Placental extract acts on the choroid plexus which regulates the composition and flow of the cerebro-spinal fluid. Thus the posterior pituitary is directly responsible, with other glands, especially thyroid minus, for the toxemia of pregnancy and for eclampsia. Normal action of the posterior pituitary regulates kidney excretion. Overactivity diminishes kidney excretion and causes the typical headache running down the neck and back of the ears. Underactivity causes diabetes insipidus and if the pancreas and other glands are involved, pituitary changes are related to high blood pressure and to certain forms of diabetes mellitus. Thus the solution of the treatment of renal diseases (not tumors, as yet) is in our hands. The pituitary gland is related, as to etiology, to the production of fibroids and myomata of the uterus, to prostatic growth, and to the psychoses. This is so apparent that I shall soon report cases which will give us the greatest confidence in our ability to cure many conditions now little understood as to their causation. The relation of the posterior pituitary to the psychoses is most intimate. While corpus luteum has a decided curative value in certain types, placental extract is much more promising. That an affection of an endocrine or part of an endocrine or endocrines may in several different individuals produce totally different conditions and diseases is the truly remarkable feature. That such an endocrine condition may cause physical or visceral or psychic changes according to the varying susceptibilities or attractions of individuals, even of the same family, is still more remarkable.

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HEART DISEASE IN ADULTS.*

By LOUIS I. DUBLIN, Ph. D.,

New York,

Specialist in Medicine, LINDENHURST HOSPITAL, NEW YORK.

There are today two outstanding public health problems in America, namely, tuberculosis and heart disease. Both are responsible for about the same amount of sickness and death. There are about two million persons in the United States who are seriously impaired from heart disease and also from pulmonary tuberculosis and approximately one hundred and fifty thousand of them die each year from each of these two causes. These two fields of public health work have been very differently exploited. That of tuberculosis has for over a period of thirty years received the greatest public attention. Many millions of dollars have been spent annually in the campaign against this condition. Thousands of doctors have been trained in the special diagnostic and therapeutic work for the tuberculous. Large numbers of sanatoria and of hospitals for the care of the tuberculous have been established. In fact, a well defined, nationwide program has been in operation against this disease. The results obtained have been commensurate with the effort expended, for during the same period the death rate from tuberculosis has been reduced about a third. On the other hand, in the campaign against heart disease, virtually nothing has been done. The Association for the Prevention and Relief of Heart Disease is only a few years old and is the pioneer in the field of preventing heart disease. The surface has hardly been scratched, but we have come to realize how large a field of public health work is presented by the incidence of heart disease.

The evidence upon which these statements are based is derived from various sources. In the first place, about two per cent. of persons examined by the insurance companies are rejected each year because of various organic heart defects. This agrees with the findings in the examination of industrial workers, such as those of Dr. J. W. Schereschewsky, of the United States Public Health Service, among garment workers in New York; of Robinson and Wilson among employees in various industries in Cincinnati; and of Harris and Dublin among food handlers in New York. About the same results were obtained by the army medical examiners in connection with the draft and camp examinations, 2.6 per cent. of the men examined having been rejected on account of heart defects. Likewise children in the schools of New York show on examination an incidence between one and one-half and two per cent. of important cardiac defects. We may, therefore, summarize with the statement that about two per cent. of the population or, in continental United States, over two million persons of all ages, suffer from heart impairments.

Medical research has also shown that the presence of heart disease seriously curtails the longevity of persons thus afflicted. Studies of statistics of the New York and the Metropolitan life insurance companies indicate that insured persons suffering

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from well compensated mitral regurgitations at the time of their insurance have a subsequent mortality varying from fifty to 100 per cent. in excess of the normal for persons at their respective ages. It should be remembered that these cases of mitral regurgitation were carefully selected as to every other physical character and that this form of heart disease is probably the least serious of the more important cardiac impairments. Similar results were shown for females in these insurance studies. For other heart impairments, such as aortic regurgitation and aortic stenosis, the excess mortality is much higher than for mitral regurgitation.

It should not surprise us, therefore, in view of the heavy incidence of heart impairments and of their serious effect on longevity, to find high death rates from heart disease. In 1917, the figures for the registration area showed organic heart disease to be the first cause of death, with a rate of 153.1 in 100,000. In 1918, the year of the epidemic, the rate for heart disease was 152.3, second only to pneumonia and influenza. Among the insured lives in the industrial population, organic heart disease is second only to tuberculosis.

These are very high death rates and if they have risen to first place in the list of causes of death, it is because the mortality from heart disease has remained high for a number of years, while that from tuberculosis has steadily declined. A remarkable condition as to the death rate from heart disease in 1919 is disclosed by the experience of the Metropolitan Life Insurance Company. The rate for the first time in years dropped about twenty-one per cent., compared with the preceding year. But this drop is probably only a temporary one and may only reflect the result of the influenza epidemic of the preceding fall and winter. It should be remembered that during the last three months of 1918 and the first few months of 1919 the influenza pneumonia epidemic carried off a large number of persons who had impaired hearts who would have lived for some time longer had not the influenza prevailed. The heart disease death rate went up sixteen per cent. in the last three months of 1918 coincident with the epidemic. Many deaths from heart disease, which would normally have occurred in 1919, took place in 1918 and the 1919 rate accordingly dropped. It is interesting also to find that during 1919 the improvement in the death rate from heart disease was felt at every age period.

The death rate from heart disease varies considerably with the age period of life, being lowest at the early ages and highest at the advanced ages. But it must not be supposed that deaths from heart disease are of rare occurrence even in early life, for the death rate under twenty-five years is as high as that from typhoid fever. For ages between twenty-five and thirty-four years, the death rate from heart disease is as high as for lobar pneumonia; between thirty-five and forty-four years, it is higher than for Bright's disease, and after forty-five years the death rate is higher than for any other cause of death. The accompanying table presents the rates in 100,000 for persons insured in the Industrial Department of the Metropolitan Life for the period of 1911 to 1916 inclusive.

The death rates, it will be observed, are very different for the two races and the two sexes. Colored persons suffer much more seriously than do white persons. This is especially marked during the first years of life and during the period of thirty-five to fifty-four, when the rates for the colored are almost double those for the whites. Almost without exception the rates for females are higher than for males up to and including the age period of twenty to twenty-four years. After this age period, however, the situation is reversed, the death rates for males being much higher than for females. This is uniformly true for white persons but there are a

MORTALITY FROM ORGANIC DISEASES OF THE HEART CLASSIFIED BY COLOR, SEX AND BY AGE PERIOD.
Death Rates in 100,000 Persons Exposed, 1911 to 1916.

Age Period. All ages—one and over	Persons.	White		Colored	
		Males.	Females.	Males.	Females.
1 to 4.....	140.1	25.9	137.0	191.0	202.0
5 to 9.....	7.3	7.0	6.4	14.1	14.6
10 to 14.....	10.2	14.0	18.2	11.4	14.1
15 to 19.....	29.7	22.7	31.4	19.9	28.3
20 to 24.....	30.2	28.7	31.2	29.4	34.9
25 to 29.....	30.0	28.5	30.4	32.2	42.8
30 to 34.....	54.3	51.6	45.0	89.6	72.8
35 to 44.....	121.8	120.1	92.6	201.2	211.7
45 to 54.....	253.6	259.0	201.1	416.0	433.1
55 to 64.....	604.8	641.2	526.8	885.4	787.8
65 to 74.....	1523.1	1624.2	1443.1	1702.2	1530.3
75 and over.....	2808.1	3033.1	2703.1	2647.8	2613.2

few exceptions among the colored. It would appear, therefore, that these organic heart diseases in their higher incidence among adult males strike heavily at the chief or only income producers of families, often after long periods of sickness in which the wage earner has been unable to work actively all or part of the time. These diseases thus bring about hardship and distress which cannot be shown in figures. In fact, if it was possible to calculate the money loss to the country through deaths from the heart affections and the long periods of sickness which precede them, the importance of cardiac disease economically would be much more impressively demonstrated than is possible by the publication of mere numbers of deaths and the corresponding death rates.

I believe I have presented sufficient evidence to justify the statement with which I began this paper, namely, that heart disease is as important as tuberculosis as a public health problem. A splendid opportunity awaits the medical profession in its attack on this disease. A carefully planned program must be developed by Federal, State, municipal and private agencies against this disease. The older organization of public health activities, which was directed toward sanitation of the environment, must be augmented by activities aimed at improvement of the physical state of the individual. The conquest of heart disease and the related disorders of the vascular and renal systems will depend in a measure upon the continuation of time tried endeavors in public hygiene, but more so upon the knowledge of personal hygiene disseminated by the educational arm of health services. Especially promising is the development of the routine annual physical examinations of children and young adults. In many instances these will disclose incipient heart lesions which instruction and treatment may either abort or control.

CARDIOSPASM FROM THE MEDICAL
VIEWPOINT.*BY EDWARD A. ARONSON, M. D.,
New York,

Associate Professor, Department of Gastroenterology, Mt. Sinai Hospital.

By cardiospasm is meant a spasmodic contraction of the cardia without any underlying organic disease. Normally there is a spasmodic contraction of the cardia by which solids and even liquids may be delayed in their entrance into the stomach. Such a contraction may be increased when there is an organic lesion of the cardia or when there is an underlying functional basis. Secondary to such a cardiospasm a diffuse esophageal dilatation is produced. The etiology of cardiospasm and the secondary dilatation of the esophagus has been a matter of dispute. Mikulicz and Meltzer believe it to be due to the failure of the central inhibitory influences controlling contraction of the cardia; Rosenheim believes that the dilatation is due to a weakness of the musculature; Krause believes it to be a functional disturbance of the innervation of the esophagus causing cardiospasm as well as weakness of the muscular wall; Kronecker and Openkowski succeeded in isolating branches of the vagus controlling the contractility of the cardia.

Etiology.—Cardiospasm at times accompanies a functional disturbance. It may occur as a result of swallowing hard and insufficiently masticated food, or after swallowing food too rapidly. Occasionally mental excitement is a causative factor. It may occur after habitual gas swallowing. It occurs at any age, most frequently in females.

Symptoms.—Cardiospasm may be either acute or chronic. When acute it is of short duration, with a sudden onset. The patients complain of a burning sensation and substernal pressure or pain and dysphagia. Pressure is required to force the accumulated food through the esophagus into the stomach and when this is not possible regurgitation of food follows. At times it is impossible to swallow food and regurgitation brings relief. The condition may come on periodically with intervals of freedom between attacks. In the chronic form the dysphagia may be marked. An effort is required to force the food into the stomach, less difficulty being encountered with liquids and semi-solids. These patients masticate their solids rather thoroughly and often water is required to help the swallowing. As these symptoms persist a rather diffuse dilatation of the esophagus follows which may hold enormous quantities of fluid. The severity of the symptoms varies from time to time so that the patients may be able to swallow a solid meal occasionally. The substernal pain and pressure is rather a common symptom, the patient believing that the food was lodged at this site. The regurgitated food contains no free hydrochloric acid, signifying that it is not from the stomach. Owing to lack of nourishment, the patient's general health fails and there is a gradual loss of weight.

Diagnosis.—The diagnosis of the acute form is often made by the introduction of an esophageal

bougie with difficulty, there being less resistance from a large bougie than from a small one; the absence of the second deglutition murmur, and the inability of the patient to vomit. In the chronic form the dysphagia lasts a longer time and there are symptoms referable to the dilated esophagus. Upon introduction of the bougie a condition similar to that in the acute form is found. The best diagnostic method, however, is by means of the x rays. The esophagoscope is also often used for diagnosis. Rosenheim, at whose clinic I had the opportunity of seeing a few patients esophagoscoped, describes what he terms a characteristic picture: "Sharply rising folds of mucous membrane, which converge toward a point in the middle of the lumen and form a rosettelike, more or less rigid closure; the lumen, if it can be recognized at all, is narrow. The mucous membrane of the contracted portion of the esophagus shows abnormal intense reddening." Several years ago I had an opportunity of esophagoscoping a patient at the Mt. Sinai Hospital, in the service of Dr. J. Rudisch, presenting the picture described by Rosenheim. Incidentally, the frequent introduction of the esophagoscope in this patient had a marked effect in alleviating his symptoms.

Treatment.—In the acute cases special attention should be given to the nervous system and the nutrition of the patient. In order to overcome the spasm, large bougies are introduced and allowed to remain for a considerable length of time. Internally sedatives have been employed. Rosenheim recommends the injection of a three fifths per cent. solution of eucaïne at the seat of the affection, at first twice daily, then less frequently. Hypnotic suggestion has also been used by some. In the chronic forms special attention is paid to the food, in some cases feeding through a tube, preceded by lavage of the esophagus, being required. Large bougies are also introduced and allowed to remain for a time. Several dilators of various types have been used to produce a dilatation of the contraction.

Incidence.—Cardiospasm either acute or chronic is of rare occurrence. In a gastroenterological clinic where we have observed about five thousand cases of digestive disturbances, and also in my private practice, I do not believe I have seen more than five cases; what I have reference to, is the true cardiospasm without any organic lesion. Some observers (Plummer, Sippy, and Einhorn) have had the opportunity of collecting many more cases. Plummer in 1912 reported ninety-one cases of diffuse dilatation of the esophagus without anatomical stenosis (cardiospasm), and I believe it would suit our purposes best if I included an abstract of his report.

"The purpose of the paper is to report the result of treatment by dilating the cardia with a hydrostatic dilator. As to the etiology the following has been advanced: 1, Primary cardiospasm (Meltzer and Mikulicz); 2, primary atony of musculature of esophagus (Rosenheim); 3, simultaneous development of cardiospasm and paralysis of the musculature (circular) of the esophagus brought about by degenerative changes in the vagi (Krause); 4, congenital disposition (Fleiner, Zenker); 5, primary esophagitis (Martin); 6, kinking at the hiatus eso-

*Read before the Metropolitan Medical Society, February 24, 1920.

phagi; 7, gross lesions of the esophagus or stomach, e. g., ulcer and carcinoma; 8, congenital or acquired asthenia. That some disturbance of the nerve muscle mechanism of the esophagus and cardia is responsible for the diffuse dilatation of the esophagus without anatomical stenosis seems to be the consensus of opinion. Most American authors, following Mikulicz, have reported these cases under the heading of cardiospasm. The adoption of this term is premature and confusing, as the part that cardiospasm plays in the production of diffuse dilatation is by no means established and there are many cases in which there is spasm at the cardiac orifice without dilatation of the esophagus.

One hundred and thirty cases have been grouped by Plummer as follows: 1. Diffuse dilatation of the esophagus without anatomical stenosis, ninety-one cases. No gross gastric lesions were found here and only five of the patients were of neurotic type. 2. Severe cardiospasm without diffuse dilatation of esophagus, two cases. Both patients had periodical attacks of three to fourteen days' duration when they were not able to swallow liquids. Plummer believes that diffuse dilatation would have ultimately developed here. 3. Cardiospasm without diffuse dilatation but with gross lesions in the stomach (ulcer, carcinoma), twelve cases. 4. Mild cardiospasm without diffuse dilatation or gastric lesions, twenty-four cases. Almost without exception these patients were of neurotic type and many were distinctly hysterical. Plummer believes these groups are of different origin and not definitely related.

"As to therapy, Russell (1898) was the first to demonstrate efficacy of dilating the cardia with silk covered balloon. Sippy (1906) reported a number of cases treated by this method. Of the ninety-one patients in the present series of diffuse dilatation of the esophagus without anatomical stenosis, seventy-three have been completely relieved of dysphagia and eleven are not completely cured; four have died (one from ruptured esophagus and the other from general diseases) and three cannot be traced. The cured patients have been free from dysphagia as follows: Three patients six to seven years; twelve patients five to six years; nine patients four to five years; fourteen patients three to four years; thirteen patients two to three years; twelve patients one year; ten patients less than one year.

"In the earlier work the degree of pressure was determined by tolerance of the patient as indicated by pain. The pressure was raised at successive treatments. In the first thirty cases, pressure of dilatation was 500-575 mm. mercury. In the next thirty-one cases pressure was 675 mm. In one case the esophagus ruptured at 720. A pressure of 575 is relatively safe. Pain is not a reliable index, as a patient whose esophagus ruptured did not complain of pain till after the dilator was withdrawn. In five patients in whom a pressure of 575 failed to relieve the dysphagia and in three in whom pain prevented using this pressure I resorted to dilators of gradually increasing size. A pressure of 675 has invariably given relief and in a majority of cases a complete cure. It has been routine to give two or three treatments with instructions to return in case of recurrence of dysphagia. In three patients I had

opportunity to demonstrate that the dilated esophagus returned to normal size."

Held and Gross in 1916 gave a résumé of the whole subject of cardiospasm. They believed that from an etiological standpoint, cardiospasm in the vast majority of cases was of a purely functional nature. They believed also that cardiospasm was primarily the outcome of a hyperirritability of the vagus and they divided such cases into five groups. In the first group were the patients whose vegetative nervous systems were below par through inheritance. Although physically perfectly healthy, such people were found to have evidences of vagotonia or sympathetico-tonia, or the two mixed. In the second group were cases in which the vegetative nervous system became involved because of an inborn status asthenicus or status thymicolymphaticus. The third group contained the cases due to reflex irritation from other diseased organs (ulcer, carcinoma of the stomach, gallstones, and kidney stones). The fourth group included the cases of cardiospasm due to infections by toxic and metabolic agents (nicotine, lead, uremia, parasites, gout, chorea). In the final group belonged the cases in which a local esophageal disease was the causative factor (fissure, erosions, scar, tissue formation, peptic esophageal ulcer).

The most valuable diagnostic aid, as mentioned above, is the x ray examination. Carman states that "the chief röntgenological characteristics of typical cardiospasm are the blunt or regularly conical obstruction at or near the cardia, and the secondary dilatation of the esophagus above it. The smooth, symmetrical termination of the shadow, usually at the hiatus esophagi, less frequently at the cardia, is rarely seen in any other condition. The dilatation is often extreme, involving almost the entire esophagus. It may thus attain a capacity of a pint, or even more. Because of the dilatation, peristalsis is not effective in its effort to propel the esophageal contents into the stomach, and the patient depends upon increasing the esophageal pressure by adding to its contents and by energetic contraction of the pharynx.

I recently saw a patient, a young woman, in whom the symptoms extended over several years and in whom the diagnosis had repeatedly been made of cardiospasm. I had the opportunity of fluoroscopic this patient and found on examination that the barium was arrested at the hiatus. The esophagus was dilated to an extreme degree and the patient informed me that she could not take any more of the barium meal without causing distress, and asked me whether she could not press or force this down into her stomach. I assented to this and under the fluoroscope I saw the contents squeezed with a rush into the stomach accompanied by a loud gurgling sound. The esophagus was then entirely empty.

In a consideration of the treatment of cardiospasm, and appreciating all the factors which may have an etiological influence, we must concentrate our efforts on removing all disturbing elements. Drugs are absolutely worthless. Instrumental means, such as bougies and dilators, have been successful in a large number of cases in the hands of some men. It is still undecided whether surgery

would be more advantageous in bringing about a permanent cure. One patient, a woman, whom I referred to Dr. A. A. Berg for surgical treatment, as a result of the operative procedure described by him, has, since operation, had a complete alleviation of all her symptoms. The number of cases in which operations have been performed, i. e., operations other than plastic and stretching from below after gastrotomy, have been too few to draw any permanent conclusions as to superiority of surgical over medical treatment.

120 WEST SEVENTIETH STREET.

HYPERCHLORHYDRIA.

BY ROBERT H. ROSE, M. D.,
New York.

DEFINITION.

Hyperchlorhydria is a functional disease of the stomach, characterized by an increased secretion of hydrochloric acid during the process of digestion to a point above normal or sufficient to produce symptoms. It occurs as a distinct disease or is present with other diseases, such as ulcer, chronic appendicitis or stasis. The symptoms may be present with a hydrochloric acid content slightly above normal or absent with a much higher content. The gastric mucous membrane varies considerably in its sensitiveness to hydrochloric acid and this is why the symptoms do not always correspond with the degree of acidity. Acid gastritis, although similar, involves inflammation and the presence of mucus, varying from mild forms which are little more than hyperchlorhydria, to severe ones, which may be differentiated from ulcer with difficulty.

OCCURRENCE.

Time of life.—It is more common up to the age of fifty, though it may occur at later periods of life, but less and less frequently. This is because with the advance of years the glands of the stomach lose their power to respond to stimulation. Subacidity is more often present during later life. Gastric subacidity is due to gastric weakness.

ETIOLOGY.

Diet.—Seasonings and condiments, which are not essential to the diet, are common causes of hyperchlorhydria, especially when excessively used. They irritate the mucous membrane of the stomach causing an undue amount of acid gastric juice. Examples of these condiments are mustard, pepper, tabasco, chilli sauce, paprika and ginger. Acids of fruits and vinegar are similar in action to spices.

Habits of eating.—Rapid eating, improper mastication, rapid ingestion of very hot or cold dishes, large boluses of food in which the cellular capsules are not broken by sufficient cooking. Excessive drinking of coffee, sour or sweet wine and excessive smoking are frequently responsible for this disease. Violent emotions, mental strain, worry, overwork, fatigue, indoor life and lack of exercise are important etiological factors. Appendicitis, ulcer and gallstones are responsible for many cases of hyperchlorhydria. Intestinal stasis may also produce hyperchlorhydria.

PATHOLOGY.

At first there is no pathological change, the acidity being due to stimulation of the glands. Later there is proliferation of the glandular elements.

SYMPTOMS.

Some patients with increased hydrochloric acid content present no symptoms. In others, after long periods of wellbeing, symptoms develop which may be of short duration and return from time to time under certain exciting causes or may at once become persistent. In some cases the symptoms appear after every meal, in others only after the ingestion of those articles of food which are especially irritating, such as coffee, spices and gingerbread. The symptoms are not alone in direct proportion to the degree of acidity but also in proportion to the sensitiveness of the mucous membrane. Symptoms are delayed one or two hours after eating, depending on the meal taken. They continue for a time and then disappear. The symptoms may be relieved by eating articles rich in albumen, such as eggs, milk, cheese and meat without gravy. The symptoms are increased by seasoning, rich food and irritants. The distress appears sooner after meals of carbohydrates and light meals.

INDIVIDUAL SYMPTOMS.

There is nothing characteristic about the degree or the kind of pain. It is rather the time of occurrence which is significant. There may be only a feeling of discomfort or burning. As stated, some cases of hyperchlorhydria are unaccompanied by pain. The patient generally feels better after meals. The length of time that elapses before pain develops is longer after a large meal than after a short one. It is earlier if the degree of acidity is great. As soon as the albumen in the meal is saturated with hydrochloric acid and a sufficient surplus has accumulated the symptoms begin. The more albumen the meal contains, given food of the same irritating qualities, the longer the symptoms will be delayed. After the incidence of pain it is generally relieved by eating an egg, drinking milk, taking alkalies, and to a certain degree by taking water. If the pain becomes so severe as to merit the term *cardialgia*, it is due to spasm and the alkali or albumen does not so certainly relieve it. If, however, the alkali produces vomiting it may relieve the *cardialgia*. Such attacks may be of a few minutes' duration or may last for hours. At these times the sensitiveness is most severe in the region of the cardiac end of the stomach or the pylorus where the spasm is greatest. The appetite is above normal owing to the activity of digestion. In addition to or instead of actual pain the acid gastric juice frequently causes a burning sensation in the pit of the stomach or in the lower esophagus under the sternum. If the food is regurgitated into the mouth a sour taste results. Spasm in the upper part of the esophagus seldom produces pain, but rather the sensation of a lump or a feeling of suffocation. A slight difficulty in swallowing the first few mouthfuls of a meal may be experienced by those who have a tendency to spasm here. Vomiting is rare, occurring occasionally when *cardialgia* is present. In these cases if vomiting empties the

stomach it may afford relief. Constipation is frequently associated as a symptom and may be an underlying cause. The latter is particularly true of cecal stasis.

EXAMINATION.

Generally the stomach is tender only when pain is present. This tenderness extends over all that area of the stomach which is in contact with the abdominal wall. This is in contradistinction to gastric ulcer, in which the pain is localized. The nutrition of the patient is usually well maintained. Little, if any, weight is lost. Often a gain may result because of increased appetite.

After an Ewald test breakfast, two slices of white bread without butter and a glass of water, the normal value for free hydrochloric acid is twenty, i. e., it requires twenty c. c. of decinormal sodium hydroxide solution to neutralize the free hydrochloric acid which is contained in 100 c.c. of the gastric contents removed an hour after the test breakfast. The normal amount of combined acid is twenty. The normal total acidity is sixty. In hyperchlorhydria the value for free hydrochloric acid is increased to from thirty to eighty or more. The combined hydrochloric acid is the same as normal because that is determined by the combining power of the food; and finally the total acidity is increased to from seventy to 120 or even more.

With a few drops of Lugol's solution (iodine) in water we may test the extent to which starch digestion has been carried in the following manner: The addition of a drop of gastric juice to Lugol's solution in the presence of starch gives blue, dextrin gives blue, erythro-dextrin gives red, anchro-dextrin gives no change, sugar gives no change. The formation of dextrin is the first step in the digestion of starch. More erythro-dextrin and dextrin are found than normal signifying that starch digestion is impaired by hyperchlorhydria.

COMPLICATIONS.

Hepatointestinal toxemia, atonia gastrica and intestinal stasis are the chief complications. Hepatointestinal toxemia symptoms show a coated tongue, poor appetite, icteroid discoloration of the sclerotics, headache, vertigo and drowsiness. As atonia gastrica is a muscular weakness it is better to employ the term *myasthenia gastrica*. The symptoms for this disturbance are poor appetite, feeling of weight and distention after moderate meals, early satiation, belching, headaches, retention of liquids and a splashing sound. Intestinal stasis symptoms consist of a marked constipation with palpable fecal masses in the colon in varying amounts, headache, depression, distention, sallow complexion and dry, unhealthy skin.

DIFFERENTIAL DIAGNOSIS.

There are two conditions which might be described as variations of hyperchlorhydria, but which for the sake of clearness I prefer to place under differential diagnosis. First, gastritis with increased acidity, so closely resembling hyperchlorhydria that it is difficult to draw a line which accurately separates the cases which belong to these two diseases. Acid gastritis is simply hyperchlorhydria plus inflammation, excessive mucus in the gastric contents

being sufficient to indicate that there is inflammation. From the viewpoint of symptoms and treatment the difference may be stated as only one of degree. The more severe cases are easily recognized but mild cases are often confused with hyperchlorhydria. Since, however, symptoms and treatment are similar this difficulty is more a theoretical than a practical one. The more severe the symptoms the more rigid the diet and the more careful the management of the case must be. The presence of mucus is an indication for lavage, or some other method for its removal. In hyperchlorhydria lavage is also used but for different purposes, i. e., lessening the sensitiveness of the mucous membrane and, by the employment of astringent solutions, reducing secretion.

The second condition which is also closely allied to hyperchlorhydria is continuous secretion of gastric juice. It differs from hyperchlorhydria through the fact that this secretion occurs between periods of digestion as well as during them, and symptoms of distress occur during the night and in the period just preceding meal time. Exacerbations of this trouble frequently produce vomiting of large quantities of gastric juice. This disease is more likely to have an underlying cause of surgical nature, such as ulcer, chronic appendicitis, and gallbladder trouble, than is hyperchlorhydria.

The symptoms of *ulcus ventriculi* are circumscribed epigastric tenderness, circumscribed dorsal tenderness, pain radiating to the back, influenced by character of the food, but not so easily influenced by alkalies. Occult or visible blood will be found in the stools, though this occurs in other conditions. Cholelithiasis is marked by very severe pain during the attacks, disappearing suddenly for a long period of time, not relieved by alkalies, radiating to the right hypochondriac region and shoulder or to back and both sides; has no relation to meals; jaundice, tender liver and gallbladder.

PROGNOSIS.

The prognosis depends on the removability of the cause. Relief of the symptoms is quite easy and commonly obtained, but if the exciting cause is not removed, there is danger of return. The acidity generally remains above normal and the sensitiveness easily reappears after it has once been present. This may even be true in cases where the cause has been entirely removed. It is frequently difficult to remove permanently the various etiological factors, dependent as they are upon the mode of life and environment. When the patient improves a little he is likely to go back to the old manner of living. Return of the trouble is a natural result. When accompanied by atonia the latter must be carefully treated. Continuous secretion of gastric juice generally has an underlying cause of a surgical nature and is cured by operation.

TREATMENT.

Prophylaxis consists in avoiding the causes as described under etiology. All nervous causes should be eliminated. Worry must be controlled. Responsibility must be carried with the minimum amount of strain. This may prove difficult to attain but is most essential for curative results. Dancing, golf,

tennis, swimming and outdoor exercise will go a long way toward relieving the strain of indoor life and mental fatigue. They induce relaxation and restful sleep, interrupting continued mental work at high pressure, which is most wearing. Change of scene and the environment which has brought about the condition may afford immediate relief for hyperchlorhydria, even though it is of long standing. How often one sees instances of city patients whose symptoms disappear a day or two after they reach the country only to reappear when the vacation is over and they are once more in the city environment.

DIETETIC CAUSES.

* The use of vinegar, lemon and all acids should be prohibited. This includes crabapples, cranberries, sour grapes, apples, grapefruit, pineapple and many other fruits. In the beginning of the treatment it is better to stop fruit altogether and later to allow one article at a time as they are found to agree. Spices and hot seasonings must be omitted from the food. No mustard, pepper, tobasco or hot sauce can be taken. Onions and garlic should be avoided both as food and as flavoring. Radishes, cucumbers, lemon or pineapple ice, ginger bread and highly seasoned turkey dressing are forbidden foods. Rich gravies, peptonoids and beef juice are stimulating to gastric juice and therefore should be prohibited.

Coffee is a gastric irritant. Some patients having accustomed themselves to its use may drink a large quantity without feeling ill effects. To the majority of patients however, an excessive amount is irritating, while others are injured by coffee even when taken in moderation. Sufferers from hyperchlorhydria should abstain from its use. Concentrated sugar solutions, such as oversweetened articles, including candy, cakes and sweet desserts, are bad. Though many dishes may disagree a great variety of food is admissible. In fact the great majority of foods are desirable if prepared without the addition of acids, pepper, hot seasonings, onions, garlic, mint or excessive salt or sugar. The following are the foods which diminish secretion, combine with large amounts of hydrochloric acid, or are nonirritating and should therefore be chosen to make up the diet. We desire that diet which combines with the greatest amount of hydrochloric acid and is at the same time the least irritating to the mucous membrane.

Fats not only diminish secretion, but are nonirritating and in the absence of hepatointestinal toxemia may be given freely. They also exert a salutary effect upon the constipation which exists in one third of the cases. Olive oil, cream and unsalted butter may be used with benefit. The oil when given shortly before meals supplies valuable nutrition, is soothing to the mucous membrane and lessens the pain. Crisp bacon is advisable.

Concentrated forms of carbohydrates are best. Potatoes, mashed or baked, bread twice baked and therefore partly dextrinized should be used. Finely divided cereals, as cream of wheat, farina, rice and well cooked hominy agree, and dry cereals are well taken. These are good with cream or butter and sugar. Asparagus, peas and spinach strained and eaten in the form of purées are more likely to agree than coarse vegetables in severe cases. In mild

cases all green vegetables which are not pungent, provided they are not seasoned with anything prohibited, are well taken, such as string beans, romaine, carrots, parsnips, lettuce, celery, lima beans and squash.

Milk, eggs, white meat of chicken, fish, well cooked lamb, veal, mutton and beef are useful foods. Avoid all rich gravies. Swiss, cream, American, Camembert and cheddar cheese are good if they agree, owing to their power of combining with hydrochloric acid.

Milk, cocoa, weak tea, water and the alkaline mineral waters such as apollinaris, Vichy and seltzer agree. (The carbonic acid often has a sedative effect.)

SAMPLE DIET.

Breakfast.—Cereal, soft cooked egg, toast, whole wheat bread or breakfast biscuit and weak tea.

Lunch.—Toast, butter, white meat of chicken or cold roast beef, boiled rice and custard.

Dinner.—Fish or well cooked lamb or mutton, puree of spinach, string beans, mashed potatoes, zwieback, milk with lime water if necessary, baked apple or rice pudding.

When the distress is regular and annoying before the midday meal it is best to give milk or matzoon, toast, or a roast beef sandwich or egg at 10:30 a. m., 4:30 p. m. and before retiring. Avoidance of worry at meal time, the dismissal of business or professional cares and thorough mastication are essential. After improvement reduce the amount of protein so that it is not excessive.

MEDICINAL TREATMENT.

Drugs are used to counteract the effect of acidity by neutralizing the hydrochloric acid and by soothing the mucus membrane and relieving constipation. Thus they diminish secretion and lessen the sensitiveness of the mucous membrane. Alkalies combine with the excessive hydrochloric acid and afford immediate relief from heartburn, pain, headache and other symptoms. If they are employed in sufficient doses for several weeks permanent relief is obtained in uncomplicated cases. Magnesia usta neutralizes twice its weight of hydrochloric acid and is four times as efficacious as sodium bicarbonate. Because the former is laxative and the latter is not these two drugs may be used in varying proportions according to the requirements of the individual case. Bismuth subcarbonate is very soothing and useful to combine with magnesia when a change from soda is desired for less constipated patients.

The following is a good prescription for average use:

Magnesia usta.	1	.....	aa ½ oz.
Natrii bicarb.	1	.....
M. et Sig.:	One quarter to one teaspoonful	one half to one hour	p. c.

When the free hydrochloric acid is forty to sixty or more these remedies may be given six or more times daily. Doses of the alkalies should precede the times when symptoms occur by fifteen to thirty minutes. It is important to give sufficient medicine to relieve symptoms thoroughly at first and decrease the dose from time to time but not too rapidly. If constipation is more marked than acidity, pulverized rhubarb may be combined with the alkalies. If constipation is a probable cause it should be dealt with

accordingly. Extract of belladonna leaves, one thirty-second to one eighth grain, may be employed to decrease secretion. It may be used alone or combined with alkalis.

Silver nitrate may be used in doses of from an eighth to a half grain in a glass of water half an hour before eating, so as to reach the mucous membrane when the stomach is empty. It may also be used as a wash in one to twenty thousand down to one to ten thousand solution, but this is seldom necessary, it being more often resorted to in cases of acid gastritis. Silver tends to reduce secretion and the sensitive condition of the stomach. Pain may occasionally be severe enough to require codeine. Frankly nervous patients are benefited by the following prescription:

Natrii bromide, ½ oz.

Glycerine, 3 drams

Aqua. distillat., 3 oz.

M. et sig.: One teaspoon in water before meals.

Detailed inquiry into the habits of the patient and the food eaten for breakfast, dinner and supper requires considerable time and patience, but will often elicit information as to faulty habits of life or of eating, without which successful management of these cases is impossible, and with which it becomes easy.

40 EAST FORTY-FIRST STREET.

UPPER ABDOMINAL DISEASE.*

Differential Diagnosis and Treatment.

BY MOSES BEHREND, M. D.,

Philadelphia.

The diagnosis of disease in the upper abdomen will always occupy a prominent place in the daily routine of the physician. As long as medicine is not an exact science mistakes are bound to occur. The elimination, as far as possible, of these errors of judgment ought to be the goal and one of the best means is to study the individual under consideration. The history of the case is more important than the correlation of the symptoms and their comparison with those of other patients we have observed in the past. It is an individual failing of some to put entirely too much stress on symptoms which occurred in former patients as a means of making comparisons with the patient under our immediate care. The following case is an example:

CASE—A boy twenty years old was admitted to the Mt. Sinai Hospital. He had been sick for four days on account of an indiscretion in his diet. He complained of pain in the right upper quadrant, with diarrhea, bowel movements occurring every few minutes. He vomited occasionally. The abdomen was rigid from the right border of the ribs to the region of the appendix. This rigidity varied in degree and extent for several days. The boy looked very sick and had the facies of an acute peritonitis, but without other signs of this condition. One of the internists diagnosed perforation, with which we disagreed on account of the absence of that universal boardlike rigidity, rapid pulse, and fear of impending death so characteristic in these cases. A

diagnosis of cholecystitis, probably associated with appendicitis, was made. An operation was performed in the upper right quadrant. The gallbladder, which could not be emptied, was removed, and on opening it a viscid dark colored bile was noted. The patient made an uneventful recovery.

Naturally one looks now to the various laboratories for assistance in making a diagnosis, but I regret to say that the cases are not studied sufficiently before the tests are made. A diagnosis should always be attempted and not, as is too often done, allow the laboratory to grind out the diagnosis for us. Students of today do not avail themselves of the opportunity to study the physical signs and symptoms thoroughly, but resort to the various instruments of precision. A very definite idea of the blood pressure, for instance, can be ascertained by a study of the pulse.

Intuition is an important faculty at times, one might call it experience; be that as it may, one's first impression on hearing symptoms related, together with an inspection of the facies of an individual, will often make the diagnosis. While I do not advocate snap diagnoses they sometimes are of great assistance. Early in November I saw a patient, in consultation, for an inguinal hernia. While he was lying on the table I noticed that there was more or less flabbiness of the abdominal wall, with emaciation, which made me question him further concerning any other lesion. He admitted that he had lost considerable weight. Palpation in the epigastric region elicited considerable tenderness, and on deep inspiration a mass was felt. A diagnosis of gastric carcinoma was made. We operated on him within forty-eight hours, no laboratory tests being made because we felt certain that he was suffering from a malignant condition of the stomach. Distinct induration and ulceration were found in the pyloric region, a pylorotomy was performed, both ends were closed, and a posterior gastroenterostomy was made. The herniorrhaphy was also performed. The patient left the hospital in less than two weeks following the operation. The laboratory reported benign ulcer of the stomach.

The following case was that of a patient who walked into the hospital with head bent low, his body in a stooping position, his hand supporting the abdomen. Tenderness was elicited in the right umbilical region. The patient stated that he had been sick the day before and that he had other attacks of pain similar to those experienced on admission to the hospital. A diagnosis of acute appendicitis was made. On opening the abdomen the following day carcinoma of the ascending colon was found. A resection of the ileum ascending and part of the transverse colon was performed; the patient died on the sixth day after operation. In this instance a further study of the case would have given us the correct diagnosis, though the treatment would have been the same.

In acute conditions it becomes at times impossible to separate the symptoms of gallbladder disease from those of appendicitis. This is especially true when the tip of the appendix is high, when there is ptosis of the liver, or when the fundus of the gallbladder, on account of its distention, reaches beyond

*Read before the Mt. Sinai Hospital Clinical Society, January 22, 1920.

the umbilicus. There is no way of making a positive diagnosis in these cases unless one can feel the distended gallbladder. We may be assisted by the cardinal symptoms of appendicitis, namely, generalized pain which becomes localized and is followed by vomiting and rigidity, while in gallbladder disease vomiting usually comes first, then the typical pain which is referred to the back and right shoulder. If jaundice occurs it will be of assistance in making the diagnosis, but in the great majority of cases it is absent. Jaundice occurs only when the common duct is obstructed. It is especially where the cardinal symptoms are absent, when the position of the gallbladder and appendix infringe on each other, that a positive diagnosis cannot always be made. As the treatment is the same the mistake is not a serious one.

About ten days ago a woman was admitted to the hospital. A diagnosis of appendicitis was made, though the abdomen was not as rigid as is usual in such cases. We accepted the diagnosis, however, and operated, especially on account of the high leucocyte count. Opening the right iliac fossa we discovered an obliterated appendix. The finger was thrust upwards when a much distended gallbladder was found. It was thickened and the walls were mottled, suggesting areas of gangrene. We removed it with some difficulty, on account of the edema surrounding a short cystic duct where it was inserted into the common duct. The patient left the hospital twelve days after operation. Macroscopically the gallbladder showed numerous patches of gangrene. This was confirmed by the laboratory.

While some cases may not have been studied sufficiently, there is a possibility of overstudy in some cases. All laboratory examinations should be performed with dispatch; to continue the study for weeks is unpardonable. It borders on procrastination, and we feel certain, from our observations, that more patients are sacrificed by this means than by a timely operation. In how many cases of gastric ulcer or gallbladder disease does death occur from malignant degeneration on account of overstudy on the part of the internist? How often do patients leave the hospital disgusted because nothing has been done for them? These cases are unintentionally neglected and the condition goes on to malignancy.

This naturally leads to the discussion of exploratory laparotomies, which have been decried the past few years, unnecessarily so, it seems to me. The operation *per se* does no harm if no pathological lesion is found, while a great deal of good may come from a timely operation. It is needless to remind you that these cases assigned to the surgeon for exploration have been thoroughly studied. It is not a confession on the part of the clinician that he has reached the limit of his resources; it is an honest disposition of the case to allow the surgeon to demonstrate the pathological condition with the aid of the scalpel. This is well illustrated by the history of a patient, a man, on whom we operated a few days ago. He had been sick for a year, complaining of pain in the epigastric region. There was loss of weight; he was afraid to eat. The attending physician diagnosed duodenal ulcer. My first im-

pression was that the patient was suffering from cancer of the stomach, but after a careful study I thought the gallbladder the cause of the gastric symptoms. At operation we found an adherent appendix, as well as a developmental band continuous with the gastrohepatic omentum and running from the gallbladder to the hepatic flexure of the colon. The x ray did not reveal an ulcer of the stomach or duodenum. The Wassermann was negative.

At this juncture the laboratory comes in for its share of abuse as well as commendation. While the leucocyte and polymorphonuclear counts are of considerable value, too much stress must not be put on their aid to diagnosis, a negative examination meaning nothing and a positive finding not meaning everything, as some are wont to interpret it. The sensation imparted to the examining fingers of the surgeon is of great importance to him.

Much reliance is placed on the laboratory findings in the diagnosis of gastric and duodenal ulcer. In only forty per cent. of these cases will hyperacidity be found, while the cardinal symptoms mentioned as indicative of ulcer do not always present themselves. For instance, in duodenal ulcer one expects hunger pains relieved by food. In gastric ulcer the pain should appear at once after the ingestion of food. Hematemesis is almost positive evidence of its presence. I must confess that the x ray has disappointed me in recognizing ulcers of the stomach and duodenum. This depends, it seems, on the interpretation of the plate and the findings with the fluoroscope. A wider experience with this method of examination will no doubt eliminate mistakes in the future.

About two weeks ago we operated on a patient who presented symptoms of gastric cancer. The symptoms were pain after eating, not constant in character, and loss of weight. X ray findings were negative. At operation an ulcer was found on the posterior wall of the stomach. The sensation imparted to the finger when palpated through pressure on the anterior wall of the stomach is one that is always distinctive. When one palpates these ulcers there is a sensation of dropping into a deep abyss. It has also been my experience that ulcers on the posterior wall of the stomach are much larger in diameter than those found in any other portion of that organ, and are usually in an advanced stage and adherent to the structures beneath. In this case the ulcer was excised with the cautery through an incision in the transverse mesocolon. An ulcer on the posterior wall can also be reached through the anterior wall of the stomach, the gastrohepatic omentum, or through the great omentum.

A subject that has not attracted the attention of physicians sufficiently is the occurrence of carcinoma of the stomach between the ages of twenty-five and thirty-five. We were always taught that carcinoma after forty was to be expected, but I want to assure you that there are many cases between the ages mentioned above. It has been my experience in the past few months to encounter several cases of carcinoma of the stomach in young individuals. Some were already inoperable, and those that were will no doubt have a recurrence on account of the great malignancy of cancer when it

attacks the young. Overstudy in these cases will surely result in disaster. You will be called upon to differentiate between syphilis and cancer of the upper abdominal organs, and it would be good judgment in every case to have a Wassermann performed first. As an illustration of this point let me cite a recent case. A young man had been brought to me with the history that for two months he had been vomiting after every meal, some pain was present, but vomiting was the most prominent symptom. Physical examination revealed a mass in the epigastric region. Strange to say, no laboratory examination had been made in this case after two months' study by physicians in a neighboring city. A Wassermann revealed a plus four. After the appropriate treatment had been given the symptoms vanished. The mass felt was apparently a gumma of the stomach.

Pancreatitis, whether acute or chronic, is difficult of diagnosis. In acute conditions the pain is usually intense, requiring a larger dose of morphine than is required in cholelithiasis. Vomiting is often persistent and the patient is usually found in profound shock. In the latter part of August, 1919, I was called to Atlantic City to see a case in consultation, which seemed to be cholelithiasis. The patient had been given one and a half grains of morphine during the night to allay the pain. There was distinct fullness in the right hypochondriac region but more especially in the epigastric region. Five days later we opened the abdomen and found hemorrhagic fluid in the lesser peritoneal cavity, and a black grumous looking pancreas. Fat necrosis was present. A drain was put in the gastrohepatic and gastrocolic omenta. The gallbladder was also drained. The patient recovered after a stormy convalescence. She has never had sugar in her urine and digests meats and fats perfectly. In those patients who recover from the acute symptoms a mass usually develops in the upper abdomen giving rise to the so-called pancreatic cyst. This may continue for a long time simulating all the symptoms referable to the other organs in the upper abdomen. The indication is to drain these cysts and if possible drain the gallbladder, but this is not as important as in acute pancreatic disease.

The treatment can be disposed of in a few words. Ulcers of the stomach should be treated medically from six to eight weeks in selected cases and then if no relief is offered operation should be performed. One must not forget that in treating ulcers of the stomach medically there is always the danger that these ulcers may undergo malignant degeneration. Cancer of the stomach that is not too far advanced, or where there is not too great an amount of glandular involvement, may be excised. I have removed more than half of the stomach with good results. One patient is still living six years after operation. In cases of inoperable cancer at the pylorus a posterior gastroenterostomy affords remarkable relief, giving the patients for the time being a new lease on life. They gain in weight for a time and feel better in every respect. In inoperable cancer of the stomach daily washings of the stomach by means of a small tube, as recommended by Rehfuess, make these sufferers more comfortable,

improving their appetite and relieving the toxemia by removing pus and foul discharges that exude from the ulcerating surfaces.

In all cases of cholecystitis, cholelithiasis, empyema of the gallbladder and gangrene of the gallbladder, a cholecystectomy should be performed. It may seem too radical to recommend cholecystectomy in cholecystitis, but I firmly believe that a gallbladder once infected is always infected and belongs in the same category as appendicitis. Drainage of the gallbladder will not remove the infection because I have often removed gallbladders on account of the return of symptoms. It has been my practice since the operation of cholecystectomy has become popular to remove the gallbladder at all ages whenever the indication presents itself, the youngest patient being a girl of fourteen whose gallbladder was removed on account of gallstones. If the removal of the gallbladder is performed technically correct there is no more mortality than in cholecystostomy, but to those who are not familiar with the technic, as well as to those who operate occasionally in this region, I would recommend that they drain the gallbladder. I perform the operation of cholecystectomy only in cases of pancreatitis. In all other conditions cholecystostomy is the operation of choice.

In conclusion I would warn against the overstudy of your cases. Exploratory laparotomies are essential. It is better to use the physical methods of diagnosis before resorting at once to the laboratory. The laboratory is necessary but it must be considered only an aid in making the diagnosis. Cancer of the stomach in the young has been neglected in the belief that it does not exist. A Wassermann should always be performed to differentiate it from syphilis.

1427 NORTH BROAD STREET.

THE INTEREST OF THE STATE IN THE HEALTH OF ITS CITIZENS.*

BY WILLIAM A. GROAT, M. D.,
Syracuse, N. Y.

Before directly discussing this topic, it may be well to recall that the State or government of which we shall speak, our own, is a democracy. It is a representative democracy, and it was erected on the foundation principles of individual rights. The individual was declared to be entitled to life, liberty and the pursuit of happiness. The government was set up to insure these individual rights. It was calculated to safeguard his life, maintain his liberty of action and grant him opportunity to pursue happiness in his own fashion. It does not, by the way, assume to grant him happiness. Merely the right to pursue it; to obtain it is his own business. These guarantees, however, are equally bestowed. That all men are created equal was likewise declared. One man's life is not to be protected by the legal sacrifice of another. One man's pursuit of happiness must not be at the expense of a fellow's. Life, liberty and the pursuit of happiness are grouped

*Address of the retiring president, Syracuse Academy of Medicine, January 6, 1920.

If there is any precedence, however, it is in the order in which they appear. Surely, therefore, the pursuit of happiness by one, or by the many, must not interfere with the health of another.

These are the great warranties of our constitutional government. They are to be put into effect by laws in accord therewith, such laws being made by representatives who are supposed to carry out the wishes of their constituents. Contrasting with this type on either side are two extreme types. First, the autocratic with its paternal care, now practically obsolete, in which there are no constitutional rights. The life, the liberty and the happiness of the individual come from what he is permitted or told to do.

On the other side, the socialistic. Here we find as certain and complete loss of personal liberty and individual responsibility as one could wish. Individual property rights, the rights and the responsibilities of family, and the right to work or study for one's own benefit, seem to disappear into a common pool, supposedly for the common good. I am not speaking of anarchists, of bolsheviks, of I. W. W.'s. These are also despots. I am speaking of the theoretical socialist ranging from parlor to auditorium size, but scarcely larger. This incomplete and superficial discussion of governments would be out of place as my preface, were it not that, in a consideration of the interest of the State in the health of its citizens, one must touch upon various paternalistic or socialistic plans which some clean thinking, but not clear thinking, people wish to have added to and enforced by a constitutional democracy. The fundamental interest of the State in the health of its citizens is that the State is to be perpetuated, defended and expanded, and that health and reproduction of a healthy race are the means to that end.

Governments have shown great and tremendously increasing interest in general education, the fundamental reason being similar—an intelligent citizenry is necessary for the perpetuation, defense and expansion of a government. Public health education is of equal importance, touching both.

The development of State medicine has been largely along a line perfectly sound, but of secondary status—that of public safety. It has developed defenses against epidemic disease as a method of protection superficially of the individual, but deeper of business; and deeper still, the development of the State and the conservation of defenders. It has developed along charitable lines. The State assumes care of the indigent sick, theoretically, at least, as a charity. It assumes almost wholly the care of the mentally incompetent. It looks to the health welfare of its citizens in a variety of ways not ordinarily associated in our minds with State medicine; child labor, street cleaning, garbage removal, sewage, and the like, are all touched by, or touch upon, public health principles.

As to treatment of disease, our New York State Department of Health has, ostensibly, at least, kept clear, except on a charity basis. As to diagnosis, it has kept to the so-called contagious diseases within the domain of public safety, except for certain laboratory methods which might be considered as a beginning.

The interesting situation directing my thoughts to this topic, however, is that brought out by the discussion of the health insurance legislation among medical men, the attitude of the State department of health to that legislation, and the proposals said to have been made by the State department to the committee of the State society appointed to consider the matter of health insurance.

There is proposed the alternative of developing medicine along one of two lines—either along the line of so-called health insurance or of State medicine. The former has been frequently discussed and at great length. The objection to it, its false basis and still more erroneous theories as to benefits granted, have been clearly put before you. You understand them as well as I. What I want to emphasize is that this unwieldy expensive, and unproductive plan is the natural result of an attempt to adapt socialistic theories to everyday conditions, little by little, and bit by bit, beginning with the practice of medicine, such action requiring the making of laws by a democracy to enforce socialistic measures—a wholly ridiculous situation.

That the health and welfare of the populace may be greatly improved we as physicians know. That the State is indeed interested in the health and welfare of its citizens on a purely selfish basis, I believe is also clear. There is no need to arouse public sentiment by mawkish appeals for the downtrodden or submerged. There is need to arouse public opinion to the fact that public health pays, that health preservation is a fundamental requirement of a successful government. Public sentiment and public opinion are not synonyms. A very good illustration of the necessity to a State of a sound public health policy is the fact that neglect of public health measures by either side alone in the World War would have brought it to disaster.

How should State medicine be expanded? Should it invade the field of medical practice, do general or special diagnostic work, or treat all the sick as a matter of public safety? If this would be for the public good, I would say yes; but I do not for one moment believe it would be. I do believe that there is a distinct tendency in that direction and that that tendency should be opposed. The reason for objection is not a selfish one. It is a practical one, a scientific one.

The important, the attractive, the productive side of medicine today is the prevention of disease, not the curing of it. It is impractical, expensive and unscientific for the State to start curing disease, or even to spend time studying how to cure disease until it has used its energies and its powers to prevent disease. That the State should so decide and so devote its energies is confirmed by the fact that the State is so selfishly concerned. The State has a right to be selfish. Its existence depends upon it. This, of course, is by way of argument only. The State can also afford to be lenient, forgiving, helpful, kind, but not weakly sentimental.

Prevention of epidemics and control of contagious disease is but a part of preventive medicine. The energies of the State must be more widely expanded. It is a question whether epidemics can ever be wholly eradicated until the peoples of the world are

thoroughly homogenized, and perhaps not then. There are more important problems which, when solved, will yield greater fruits. The State should till the untouched fields and give proper cultivation to those already cleared but sadly neglected. The problem of prenatal care and birth control may be well appreciated by France. Premier Clemenceau urges large families to save France. Child hygiene, nutrition, dental hygiene are now taught in the schools, but in the main imperfectly.

Industrial hygiene and welfare should be a constructive study and movement to eradicate the evils and place responsibility where it belongs, rather than to compensate, in part only, for damage done. Waterways need not be polluted, breathing places and beauty spots need not be overrun, dust, noise and confusion are not essential to industrial progress. The venereal problem is not simply a disease problem. The free clinic for tuberculosis does not lay the dust in the pottery plant. Killing half the flies covers no cesspools. The only A. B. C.'s that influence malnutrition are the kind they put in soup.

There will always be sickness, disease, epidemics and parasites; if we get rid of what we have there will be new ones. The nurseryman who plants under glass, free to prune away, uproot, burn, spray and handpick at will, with quarantines far more rigid than any against human exchange, has disease to treat, scientific specialist though he is.

The frailties of human nature, the inherited and acquired weaknesses, will never be bred out. The sympathetic, somewhat sentimental, care of a physician, the sustaining presence of a trusted acquaintance, will always be required. If he is without sympathy or sentiment, he is not a physician. The State cannot become a sympathizing friend. The objection to a department of health under which all health activities, direct and indirect, are collected is the charge of paternalism, the invasion of personal rights, the loss of individualism. The objection appears not to be sound so long as preventive medicine alone is implied. The only objection to an autocrat is the fact that he may at times be wrong. The objection to communism is that the multitude seldom know what is right.

A certain amount of autocratic power under control and advisement is perhaps most practical. I am reminded of the man who had objections to the autocratic control of a business by another, overthrew him and assumed control himself. Soon it appeared to those under him that he had a rather individual way of running things. They charged him with it and twitted him of the fact that he had objected to the same tendency in his predecessor. "True," he replied, "He ran things to suit himself and we kicked him out. But don't get the idea that I'm not going to run this to suit myself; the only difference is, I'm going to run it right."

There is much clear commonsense in that remark. There was considerable fear that the doctor would interfere with the art of war in 1898. Relegating him to the rear spoiled a perfectly good war. His greatly increased responsibilities and prestige, the multiplication of his numbers and his duties in the armies of the World War, gave vast returns in effectiveness and lessened wastage.

To the layman, the advocacy of disease prevention is, for the doctor, the limiting of his activities and the loss of business and prestige. The doctor has been glorified as the only one who is laboring to make his own services unnecessary. But this is not strictly true. As in the army, the use of preventive medicine as a State medicine or as an independent thing increases the scope and importance of medicine, opens new fields of thought and influence, calls for increasing numbers who must be scientists and educators. We may now reach that pinnacle where it will be considered worthy of a larger fee to protect an appendix from disease than to remove it! In any event, the subject of preventive medicine is inspiring and attractive, the prospect a bright one.

Therefore, let us have a national department of health for the principal reason that the nation's welfare demands it. Let the activities be along the broad educational lines of preventive medicine. Let it cooperate with the States and let them win back and take over the indirect and secondary health activities now scattered among bureaus, commissions, and boards which have no true scientific interest therein. Let it teach how to breed, feed and develop the child at least as well as the agricultural department teaches animal husbandry, and show the cash values so created. Let it show from its seat in equality the value of health counsel to every other department of government. Let it teach the employer that unhealthy surroundings and improper requirements breed sickness, and sickness and the resulting labor turnover mean economic loss; and show him the cost, to him, in dollars and cents.

Teach the worker, he who labors with brain or hand, that his health is his greatest asset; that properly directed work is beneficial and brings prosperity, and prosperity happiness.

Teach that the human machine, like any other, requires frequent inspection, proper care, and lasts longest when kept at work under normal load.

Let it support medical education and medical investigation, and openly fight quackery. Let it carefully avoid undermining a people by relieving individual responsibility or antagonizing family ideals.

Let it direct its charities along broad lines, but on business principles; charity should give strength rather than breed weakness.

And, finally, let the medical profession measure and judge departments of health by what they accomplish for preventive medicine and public health, not by what they do for the profession. It will gain in the end.

Alimentary Anaphylaxis from Pancreatic Insufficiency.—Nathan (*Presse médicale*, December 24, 1919) reports the case of a boy who showed a marked anaphylactic sensitiveness to egg albumen. Any article of diet containing it brought on a typical reaction. Examination of the stools revealed pancreatic insufficiency. Administration of pancreatic extract removed the sensitiveness to egg albumen, which, however, reappeared as soon as the medication was stopped.

IS ENDEMIC GOITRE A WATER BORNE DISEASE?

By J. CHRISTOPHER O'DAY, M. D.,
Honolulu, Hawaii.

I am certain of the propriety of including none but the endemic variety of goitre in such observations as I propose making relative to some definite knowledge of the water borne theory of goitre etiology. Areas within the United States where the disease is of an endemic character, and all areas studied by us, proved, without a single exception, to be supplied with waters destitute of mineral content. This fact led me to the conclusion that endemic goitre, which is always retentive goitre, is the result of the deleterious effect that soft, or mineral free water seems to have on the consistency of the secretion of the thyroid. While the bulk of the knowledge attained will permit of no other conclusion, the embarrassing point is recognized that the very opposite view has been held by men who have given the subject detailed investigation.

One of the districts where goitre has been endemic we found described by an English surgeon who, from second hand knowledge, erroneously believed the waters of the district to be heavy in calcium carbonate, iron and sulphur. The intricate relations between medicine and the inevitable anxieties of human exigencies is without doubt responsible for many of the superstitions that have woven themselves into the traditions of the profession, and while we have pinned our belief to the notion that certain waters are factors in the etiology of retentive goitre, the scope of the subject is so wide and so far-reaching we willingly recognize the possibility of time relegating all we may put together into the discarded notions of the past.

From British Columbia to Humboldt County, California, goitre districts are conspicuously prevalent. Every one of these districts is supplied with the purest water. In Vancouver, British Columbia, the water is so pure that pharmacists have no difficulty in distilling it. This was told me by Doctor Underhill, chief officer of Vancouver's health department, during a visit to British Columbia in 1918. When I ventured the likelihood of this exceptionally pure water being the cause of the prevalence of goitre in that community, he most vigorously disputed the assertion by citing localities in England, with which he was personally acquainted, where goitre was more prevalent than anywhere in all of British Columbia, and where the water was so heavy in minerals that it could not be used for laundry purposes.

In Oregon the goitre districts are associated with mineral free waters, the city of Portland, with its famous Bull Run water, gives a higher proportion of goitre than similar districts in the State of Washington, where a slight percentage of mineral matter obtains. In the southwestern counties of Oregon, and particularly within certain sheds of the great Rogue River Valley, goitres are observed proportionately with the waters of varying degrees of mineral content. Not until California has been reached are circumscribed goitre areas again encountered. Humboldt county, with its water shed

similar to that of the Bull Run country, has a paralleling percentage of goitres.

The greatest goitre area we found was within the head valleys of the Mad River. Here, too, the water was exceptionally free from minerals. This represented California's most distinct locality of endemic goitre. Approaching the middle of the western slope, particularly in and around San Francisco, the water contains a considerable amount of mineral matter, is typically hard water, and while varying types of true goitre may be occasionally observed, no place within this hard water area has been recorded where the disease can be regarded as endemic. In 1916 I visited a number of goitre districts within the valleys of the Allegheny mountains. Without exception each district was associated with soft or mineral free water. The district of the Tuna Valley in Northwestern Pennsylvania gives an average of about thirty per cent. of the inhabitants afflicted, mostly young girls and women. In West Virginia one of the districts gave the proportion as approximating fifty per cent. The Broad Top district, running from Pennsylvania into Maryland, gave between fifteen and twenty per cent. This proportion was in keeping with the variety of waters in this district. At the Bedford Springs hotel, the springs that have made the hotel famous, hard, soft and sulphur waters were flowing from natural springs, all of which were within the hotel grounds. With the exception of a few toxic goitres, a type never endemic, we found, as on the Pacific Coast, that the goitres of these various goitre districts were of a retentive character.

In his work, *The Thyroid Gland and Its Diseases*, George R. Murray of the University of Durham, supports his belief in the water borne theory of goitre etiology by relating that families moving into these districts would, sooner or later, have a member stricken with the disease; also, that villages where goitre was endemic eliminated it by changing their water supply. He refers to wells on the Continent with water so notorious for producing goitre that it has been successfully used by men who wished to acquire a goitre to enable them to be exempted from service in the army. In a general summary he says: "It has been supposed that iron pyrites, sulphate or carbonate of lime or carbonate of magnesium may produce this effect." Following this he admits the lack of evidence to prove that such waters can or do produce goitre, but he emphasizes his own belief in the water borne theory when he continues: "Whatever the cause may be, it is contained in the water and can be rendered inert by heat; no case of goitre having been observed in such of the families who practised the boiling of their water preparatory to its drinking."

I will refer in brief to another English writer who believed in the water borne theory of bronchocele. I use the term bronchocele because it is the one used by the writer throughout his masterful lecture, except, I may add, where, in the beginning, he mentions that the disease is spoken of by French writers as goitre, "a corruption, no doubt, of the Latin *gutter*—the throat." The exact date on which this lecture was delivered in King's College, London, we could not ascertain. We conjectured, however,

that it was between the years of 1834 and 1840. It was delivered by Sir Thomas Watson of London. Beginning with his own country, he says: "It is known in England as Derbyshire neck, from its frequent occurrence in that country." He then asserts: "In the first place bronchocele is endemic; prevalent in certain localities, and scarcely occurring elsewhere." In support of this statement he then discusses the goitre districts of the Alps and quotes from the works of some of those who have studied the geographical phase of it to show that the disease there is caused by the insalubrity of the air. He likens it, at first sight, to malaria. Wishing it to be remembered that the bronchocele of the Alps is unlike the bronchocele of other regions, mentioning the fibroid character and the condition known as cretinism with which it is always associated he says, "The cretinism mentioned in these quotations is a strange and melancholy disease; a sort of idiocy, accompanied by (and doubtless depending upon) deformity and imperfection of the bodily organs. The mental affection exists in all degrees from mere obtuseness of thought and purpose to the complete obliteration of intelligence. Many of the cretins are incapable of articulate speech; some are blind, some deaf, and others labor under all these privations. They are mostly dwarfish in stature with large heads, wide vacant features, and goggle eyes, short, crooked limbs, flabby muscles, and tumid bellies. The worst of them are insensible to the decencies of nature, and obey, without shame or self-restraint, every animal impulse. In no other class of mortals is the impress of humanity so pitifully defaced."

Continuing with the subject of goitre as it pertains to cretinism he says: "But more recent observations of the localities infested by goitre have rendered it improbable that the disease derives its origin from any deleterious properties of the air. Certainly it is not owing to anything that is common to all mountainous countries." He then gives a long list of districts where goitre is endemic to show that, aside from the goitre of cretinism, bronchocele has appeared endemically as much in flat as in mountainous countries. To quote: "It does not occur in the highlands of Scotland, but is met with frequently in the flat regions of Norfolk and Cambridgeshire." Referring to the disease as it occurs within certain districts of South America, from government statistics he shows that bronchocele is endemically met with both in the upper and lower levels of that country, citing in particular the valley of the Magdalen River and the high altitude of Bogota, which is nearly seven thousand feet above sea level.

India, Africa, Europe and America had furnished him a liberal amount of data and from which he argued that goitre was as much a mountainous as a lowland disease. In his conclusion, and with the modesty his whole article betrays, he denies the existence of anything that may be offered as real proof, merely this: "My studies of the world's goitre districts have given me the belief that the disease has its origin in the water." Then, in his own clear style, he leaves the suggestion for one to draw his own conclusions. This is the way he puts it. "There are some difficulties opposed to the im-

plicit reception of the opinions formed by myself and by the many others, respecting the origin of this disease. And the facts upon which those opinions are grounded are not without apparent exceptions. Moreover, the actual substance which exercises or confers the noxious power, has yet to be ascertained. This etiological problem, so full of interest, is not solved. One step more, and probably one step only, remains to be taken. We look to the medical geologist for its complete solution; and I trust, that now we have not long to look. The deleterious agent has been traced, with tolerable certainty, to the water, and hence to some element of the soil washed by that water. And if what at present is probable only, shall hereafter be proved—namely, that the hidden cause of goitre and of cretinism lurks in some chemical quality of man's natural beverage—it can scarcely be doubted that chemistry will be found ready to supply a simple and effectual corrective of the evil. This hope it is which makes it so important that medical men should be accurately possessed of the present state and bearings of the question; and prepared to take advantage of every opportunity that may arise for its practical determination. For surely it would be a noble achievement of our art, and a signal blessing provided for hundreds of human beings yet unborn, thus to prevent the deformity, the discomfort, and sometimes the danger, of bronchocele; and to forbid, in its very source and fountain, the more hideous and loathsome disfigurement, of mind as well as of body, that distinguishes the wretched cretin."

In the Tuna Valley goitre district of north-western Pennsylvania, where about thirty per cent. of the inhabitants have goitre, soft or mineral free water abounds. In a personal communication from Dr. George E. Benninghoff, of Bradford, Pa., tells me of personal investigations throughout the goitre districts of Northwestern Pennsylvania and Southwestern New York which brought him to the same conclusions I had made. Quoting him in part: "A good example of the difference in the percentage of goitres existing in localities, is that as found between the pure water towns of this district and the nearest hard water town which is Jamestown, N. Y., I have made considerable inquiries from the physicians and the number to the thousand population is greatly lower in Jamestown than it is in Bradford, Olean and Salamanca. Allow me to add that I believe you are correct in your idea of soft water being an etiological factor in retentive goitre."

In the Tygarts River Valley, West Virginia, goitre of the retentive type is endemic, about fifty per cent. of young women and girls being afflicted. Dr. E. R. McIntosh, an oculist and aurist of Elkins, W. Va., writes me that, "at least fifty per cent. of our high school girls here are afflicted with the disease. I have seen but two cases occurring in boys, but there are a large number of the men in the mountains who have goitres so large that they hang pendulously from the neck. Our water supply is from the Tygarts River and while the water is more or less polluted it is practically a soft water." Professor Miles F. Porter writes: "I regret to say I have no statistics on the water borne theory of

goitre as applied to this district. I shall be interested in seeing your article when it comes out." Dr. John N. Hurty, writing in answer to my query: "Have you districts in Indiana where goitre is endemic?" says: "So far as I know there are no goitre districts in Indiana. The disease is frequently found, but it is not concentrated so far as our information goes." Similar replies to inquiries came from other prairie states, in most of which the water supply is high in carbonate of lime. Goitres occurring in these states are evenly distributed and, with the exception of the toxic variety, are more inclined toward the nodular adenomatous type with a considerable interstitial fibrosis. Indeed, had the specimens we examined been diffuse, instead of this particular nodular adenofibrous type, cretinism, without doubt, would today be a problem in many sections of the United States, particularly in the limestone areas of the middle west.

Dr. K. D. Shastri, of Benares, India, wrote me that goitre was prevalent in certain regions of his own district. He said: "I have been convinced for some time that mineral free water, the so-called soft waters of glacier origin, is a factor in the etiology of endemic goitre. Many regions skirting the foothills of the Himalayas bear out this belief." In other districts, where prolonged dry seasons intervene between those of rain or thaw, he had observed that toward the end of the dry periods, an epidemic of thyroid enlargement would be noticed. Most of these enlargements, he observed, would remain as permanent goitres. Discussing this point further he said: "When our artificial lakes and reservoirs approach depletion toward the end of those prolonged dry seasons the remaining reserves of water take on some process of fermentation. With this comes the epidemic of goitre."

The Filipinos as a race are quite free from goitre. Dr. Jose M. Carino, of Baguio, P. I., has written me as follows: "I have observed a few cases in Manila all of which were of the toxic type. I have observed a number of colloid goitres within the mountainous districts. The water in the mountains is very soft." Dr. Willy Meyer, of New York, writes me as follows: "With reference to your question of the water borne theory of goitre, I believe with the late Professor Theodor Kocher of Berne, that the cause for the endemic goitre is most likely to be found in the drinking water. He and some of his Swiss colleagues made most careful investigations with reference to this question, and came to the conclusion that the magnesia content in the drinking water is probably the cause of the enlargement of the thyroid. Whether this chemical is responsible for it has never been satisfactorily proved. It was shown that when the inhabitants of the invaded region drank only boiled (sterile) water, they were not affected."

While many prominent surgeons throughout the United States were asked for their opinion, if they held one, regarding the water borne theory of endemic goitre, it was quite disappointing as well as surprising to find but a few who had given the subject any serious consideration. The conclusions I have drawn from my investigations, failed to coincide with those of some of the others whose

writings I have reviewed. Many had reached the conclusion that lime, magnesia and iron were the elements borne in the waters where goitre was observed to be endemic. It is only when we regard our own work in exclusion from the no less honest endeavors of others that we can fully accept the belief that endemic goitre is caused, not by anything contained in the water but by the lack of some unknown substance which imparts to the secretion of the thyroid the consistency necessary for easy lymphatic ingression.

Lectures and Addresses.

THREE EPOCHS IN THE HISTORY OF THE CLINICAL SOCIETY OF SURGEONS OF NORTH AMERICA.*

By JOHN G. CLARK, M. D.,
Philadelphia.

The Clinical Society of Surgeons of North America has participated in two epochs, world wide in their tragic importance, within the last three years. The first marked the entrance of the United States with the Allies in the great war; the second witnessed the frightful epidemic of influenza last year; and we are now standing upon the threshold of the third, or transitional event—a new era in American medicine.

The session two years ago in Chicago was of a highly inspiring character, for this great organization, constituting a guild of our best and most earnest surgeons, was stirred to the very height of patriotic enthusiasm by the events which transpired at that meeting. In addition to the secretary of the navy and our three surgeon generals, other distinguished figures in surgery, who had been known to us as skilled masters in our profession in civil practice in their respective countries before the war, came to us as military ambassadors, bearing messages of grateful appreciation from their countries for the magnificent effort we were then displaying in the organization of a virile medical corps to replenish the sorely depleted surgical ranks of the war ridden zone. After that remarkable meeting, our foreign guests returned to their homes, carrying inspiration to their wearied armies, for they had witnessed the awakening of a lusty national giant from a lethargy of neutrality. Out of this association went the surgeons who became the very heart of the medical corps, and many have returned decorated with the highest honors.

Indefinitely could one dwell upon the glorious deeds of our medical corps, but others will pay a more worthy tribute to our heroes than is possible for me to express. During the year following the Chicago session, our secretary general, Dr. Franklin Martin, the genetic and dynamic force behind this organization, although engrossed with the many difficult tasks of his high office as the medical member of the Council of National Defence, was working indefatigably upon the details of the forthcoming New York meeting. Again were delegated to this country from the Allied nations many dis-

*Presented before the Clinical Congress of the American College of Surgeons, New York, October, 1919.

tinguished surgeons from England, France, Italy, and Belgium, but after that delegation had set sail for New York the outbreak of influenza, which developed into a veritable pestilence, fell upon this country and became especially virulent upon the Atlantic seaboard. Notwithstanding our secretary-general had previously importuned to let the meeting lapse on account of military exigencies, the urgent opposition of man could not thwart his Jacksonian tenacity, but he was forced by this frightful interposition to capitulate. Only those who know his continuity of purpose and how persistently he worked for the success of that meeting can realize with what reluctance he prorogued the session until this year.

With the outbreak of the epidemic of influenza began the second noteworthy epoch in medical history of our country, a period filled with appalling issues. The physicians at home were heavily burdened with the added cares of their absent colleagues, and were almost overwhelmed with the searching trials that followed. In addition to the established hospitals, churches, warehouses, and armories were hastily equipped as emergency hospitals and our physicians and nurses served quite as valiantly and many died as nobly at those posts of duty as did the heroes of the Argonne. Two great armies of physicians were then at war, one making the great sacrifice in honor of their country, the other in sustaining our national civic life, so necessary for the construction of the industrial and financial bulwark behind our armies. The medical profession has emerged gloriously from these two colossal crises, and we are now on the threshold of the third great epoch—a new era of medicine in America.

The European nations are grievously impoverished, and their great educational systems must of necessity suffer for at least a decade before recovery is possible. They have sustained an irreparable loss in that youthful spirit which Sir William Osler had so wisely said is essential for inventive progress, and it will require at least twenty years to restock the scientific storehouses in those countries to which we formerly made our postgraduate pilgrimages. Are we prepared to carry on while they recover? If not, we shall lose one of the inestimable opportunities that this war has thrust upon us. We Americans do not deliberately seek scholastic ascendancy over any other nation, for we have witnessed the frightful havoc wrought by an egotistic "Kultur," but we are in duty bound to fill the gap and to score an advance in progressive medicine while the scientific ranks of Europe are being regenerated.

With the completion of our martial activities great numbers of young surgeons have returned and many have eagerly resumed their places in our schools and hospitals as teachers, invigorated with new ideals and filled with youthful energy to pursue them. Many other returning physicians, who have found themselves through the mighty force of circumstances created by their war activities, are newly possessed with a desire to take up intensive study in various special branches, so that they may better their positions in medicine, instead of falling back

into the humdrum of small practice. It requires no prophetic vision to forecast what will transpire when our great transportation fleets again take their places as the carriers of international commerce, especially to our South American neighbors. There will then be an influx of students from the southern countries, both to our undergraduate and postgraduate schools. To such men we should be prepared to offer ample facilities for postgraduate study, not of the old commercial type, such as our schools have been guilty of purveying in the past, but a full and comprehensive training of sufficient length to lead to a master's degree. The wretched postgraduate instruction of past years should be cast into the discard and courses should be arranged of such essential value that upon their completion by a student his diploma or certificate will be a real and trustworthy evidence of his ability to practice in that special branch. The six weeks' or even the six months' course of previous years was little less than a "bunco" game, in which the postgraduate student was given a smattering imitation of knowledge, and he in turn went into practice delivering the same deceptive article to his patients. It has been said that the patient who pays five or ten dollars as an obstetrical charge is usually cheated, so likewise is the postgraduate student who takes a six weeks' postgraduate course, be his tuition fee small or large.

We have spoken much in this country of research, and under the guidance of a false stimulus men have attempted to carry on phases of investigation who are as capable of attaining a successful issue as a farm horse would be of winning the Royal Derby. Although the great geniuses of science have brought forth their epoch making discoveries under the most adverse circumstances, and such geniuses will still attain prominent places in the scientific firmament under similar difficulties, the average investigator, however, cannot work against such obstacles and achieve results. Fortunately, there have sprung up in this country a few special laboratories and hospitals in which men capable of real research work may be trained. That the number of such institutions be increased is absolutely essential for a stable scientific growth. Out of every medical class of one hundred there may possibly be but one graduate who really has a creative mental capacity or bent for scientific investigation. These men should be segregated and fed upon such mental pabulum as will bring out their best capabilities and while pursuing this work they should be shielded by liberally endowed scholarships from the carking cares of earning a livelihood. As directors of departments of research, men of broad training and culture are required; those who, through copious fertility of ideas, are always ready to direct the scientific pioneer along lines that are most likely to lead to valuable discoveries. The new epoch, therefore, should become the renaissance in American medicine, combining all of the sterling qualities of our intensely practical natures with that fine sense of research and investigation which shall make so much more comprehensive and also more efficient the medical education of the coming generation of physicians.

CLINICAL NOTES FROM FRANCE.

BY CHARLES GREENE CUMSTON, M. D.,
Geneva, Switzerland.

GASTRIC CRISES OF LOCOMOTOR ATAXIA.

For a long time the gastric paroxysms of locomotor ataxia remained obscure; disturbances of gastric chemism, nervous or gastric lesions, vascular disturbances have each in turn been incriminated, but it has finally been decided that the condition is due to a lesion of the pneumogastric or the splanchnic nerves. Pain and vomiting are the two main symptoms of the attacks. The splanchnic nerve gives off sensitive fibres to the stomach, the pneumogastric furnishing the motor nerve supply. According to the primordial importance attributed to the gastric pain or the vomiting, it follows that one or the other of these nerves must be incupated. Consequently, opinion is divided, some accusing the pneumogastric, others the splanchnic. The question is important, because the object of surgical treatment is to stop the paroxysms. Förster maintains that the sympathetic nerve governs the paroxysms, basing his argument on the following data: 1. Pain predominates; the attack begins with it and it is the symptom which continues the longest. 2. The origins of the splanchnic are intimately related to the intercostal nerves. These connections readily explain the presence of areas of anesthesia and hyperesthesia frequently encountered in the epigastric region in locomotor ataxia during and between the paroxysms. And still more, the pain is not localized to the stomach.

The paroxysms are characterized by a waist pain, a sensation of constriction, which should lead one to admit that the lesion is localized in the posterior roots corresponding to the rami communicantes which give rise to the great splanchnic or to those going from the sixth to the tenth dorsal pair, since there is at the same time a morbid change in the the splanchnic and intercostal nerves. According to Förster, the vomiting is consequent upon a secondary reflex action.

These clinical data are upheld by the pathological findings recently brought to light by Roux and Tinel. The primary lesion is a posterior radiculitis. The roots are surrounded by masses of leucocytes and as if drowned in compact sclerous tissue. This pathological process irritates both the sensitive roots of the intercostal nerves and the sensitive fibres derived from the splanchnic and reaches the cord by the posterior roots. As Tinel has pointed out, the nerve conductor should be interrupted above the site of the irritative lesion, and it is in this direction that the majority of recently devised technics tend. Nearly all the operative procedures have division and destruction of the posterior roots as an objective, only the way of obtaining this result differs. I fancy that Exner is at the present time the only operator who still persists in dealing with the pneumogastric nerve for the cure of the gastric crises of tabes; he does a laparotomy and divides both pneumogastrics in the cardia or sometimes does a partial excision of these nerves.

This bilateral vagotomy is not devoid of future trouble, because the consequences are disturbances

of the motor functions of the stomach, therefore, in good Teutonic fashion, in order to complicate still more an already complicated situation, Exner advises doing a gastrotomy and pushing a sound down into the duodenum. The patient is fed solely by means of this sound for the first three weeks, but I am glad to add that not long ago Exner changed his mind and advised doing a gastroenterostomy in order to eliminate the use of the sound. I believe that of six ataxic patients operated on by Exner, three were benefited by the operation, while the remaining three were in no way improved. The vomiting is not even controlled as might be supposed. A patient operated upon by Küttner, who had previously undergone Förster's operation, was cured of the paroxysms of pain but still continued to vomit, so that a bilateral vagotomy was done according to Exner's technic with the result that the patient became worse and had to be fed exclusively by the rectum. Förster has pointed out that vagotomy cannot control either the pain, vomiting or nausea, because the irritative lesions are seated higher up than the point of division of the pneumogastric and he consequently proposed to attack the jugular ganglion, if vomiting continued after radiclectomy. It seems that he had for some time thought that the difficulties of this operation would make it practically impossible but it has been done successfully since by others. Nevertheless it is a procedure that should be resorted to only in desperate cases.

Operations on the sympathetic are of two kinds: 1, Those dealing with the terminal nerves, and 2, those directly attacking the posterior roots. The former have fortunately been discarded and need not be referred to. The typical procedure of the latter is Förster's technic. A laminectomy is done over the posterior roots and these are excised to the extent of about one centimetre; the dura and overlying structures are then carefully closed. This would appear to be an easy operation but such is not the case. Many operators have encountered difficulties in the details and complications which have considerably dampened their ardor for the procedure. The shock is severe, so that it is better to do the operation in two steps. First, a laminectomy is performed and several days later the dura is incised and the roots excised. But even this has not been always satisfactory and should, it would seem, be reserved for those patients who present an advanced degree of cachexia. It is not always easy to expose the parts and what is more annoying the field of operation is infiltrated with clots of several days' standing since the laminectomy. The hemorrhages during the operation may be troublesome and sometimes makes it a matter of considerable difficulty to find the roots. To avoid bleeding, the incision must be made exactly in the middle line and the muscular masses pushed off the spine with a periosteal elevator. The loss of blood will then be reduced as far as it can be and after division of the lamina the wound should be packed for about ten minutes in order to control oozing. By doing so much time will be saved as the search for the roots is rendered easy.

Escape of the cerebrospinal fluid is yet another complication; it is not a matter of indifference to the patient and is very annoying to the operator, as

the field of operation is flooded. The roots are not readily recognized on this account and as there is always some chronic radicular meningitis this adds to the confusion. Hovelacque has reported instances where the operator mistook fibrous adhesions for the nerve, divided them, and left the nerves intact. To avoid this error the head of the subject should be placed in a declivous position. The upper and lower ends of the wound in the spinal canal can be packed with gauze as recommended by Delrey.

The escape of the cerebrospinal fluid may not only give rise to immediate accidents—Bennett, Chipault, Vignard, have lost patients from this complication—but to late accidents as well. If a sinus becomes established the flow of cerebrospinal fluid may continue for weeks after the operation and infection of the meninges may result. In order to avoid the escape of the fluid, Guleke has modified Förster's technic in that the posterior roots are excised without opening the dura. The anterior and posterior roots seem intimately glued to each other, but as each is surrounded by its own fibrous envelope they can be separated. They are distinguished by their size, the anterior root being about twice as large as the posterior. Extradural excision presents considerable advantages and although it has been said to be very difficult, I know that in one case at least, that of Dr. G. Patry, of Geneva, it was found to be extremely easy.

Franke's operation is an attempt to reach the posterior roots and spinal ganglion without doing laminectomy. To obtain this end the intercostal nerves are torn off with the fond hope that both root and ganglion will be destroyed. Several technics have been proposed, but it is only necessary to mention a few details. It is easy to reach the intercostal nerves by two incisions parallel to the spine and it is quite unnecessary to divide the transverse apophyses as has been advised.

Mouriquand and Cotte say that the intercostal nerve should be brutally torn away and not slowly and progressively removed. They also admit that the ganglion rarely comes away with the nerve and found in two autopsies twenty-four intact ganglions out of a total of twenty-four intercostal nerves forcibly torn out, the nerve breaking off at about three to four millimetres on the distal side of the external pole of the ganglion.

Forcible tearing away causes a profound perturbation of the cells made evident by a temporary chromatolysis and Mouriquand and Cotte say that it is most likely that the nerve cell lesions thus induced are quite prone to start up or hasten complete degeneration of the posterior roots, already in a state of irritation from the process of transverse radiculitis, and consequently indirectly cause interruption of the reflex arc of nausea which constitutes the gastric paroxysm. It is hardly necessary to point out that this is a blind and uncertain procedure and although it might appear simpler than Förster's or Guleke's operations this is far from being the case. The search for the intercostals is much more difficult than is generally supposed and is dangerous from the fact of its proximity to the pleura. The percentage of operative pneumothorax in this operation is so

high that Sauvé and Tinel advise making every preparation for meeting this emergency.

Let us examine the results of operative treatment of the gastric crises of locomotor ataxia as they actually stand, although it is somewhat difficult to form an exact idea of the result of the individual operations because cases can only be judged when the patients are followed for some time afterwards, which is not usually the case. Förster thinks that the lapse of six months is necessary before considering a case as cured, but I would point out that relapses have been observed a year after operative treatment. A general idea may be acquired by Patry's statistics.

Exner's operation has given at his hands three improvements and three unsuccessful results. Of thirteen patients operated upon by Franke's technic two died from the operation. Of the remaining eleven two had immediate recurrences, and three had early ones, five were lost sight of, while only one was found without a recurrence eleven months after operation. Consequently we have two deaths, five bad results, five doubtful and one that perhaps may be regarded as fairly good.

Förster's operation, and in this are included Guleke's and Sicard's and Desmaret's procedures, which are modifications of the former, has a much higher immediate mortality, but the ultimate results are better. Gambier has collected sixty cases and with Patry's case we have a total of sixty-one. Seventeen patients died as a direct result of the operation and two from causes independent of it. Of the remaining forty-two, two had more severe crises than before the operation, in one no result was obtained, two were slightly improved, five were temporarily relieved but the paroxysms returned, one was improved but could not be followed long enough to be assured that the improvement lasted, four had paroxysms but lesser in intensity, while twenty-seven were improved to such an extent that it is reasonable to regard them as cured. Therefore, without entering into details, it can be said that Förster's operation gives a mortality of 31.1 per cent., 16.4 per cent. bad results and 52.5 per cent. good results.

It must be confessed that these figures are not brilliant but it must be recognized that this is an evident progress when we recall the incurability of the gastric crises of locomotor ataxia. Unquestionably progress in the technic will lower the death rate of the operation *per se*. To prevent recurrence after operative treatment Franke's and similar operations are to be absolutely discarded. By operating with more detail and therefore exactitude, those recurrences which are certainly the result of technical mistakes, will be prevented. There is no doubt that the roots are never touched in the operation in some cases or at least are not completely excised. Now, a single root is enough to engender pain intense enough to pass for a true gastric paroxysm.

Relapses result from the fact that the major splanchnic is formed by the union of a large number of rami communicantes than was formerly thought and recent work has revealed, in particular, numerous anastomoses uniting the major with the minor splanchnic, so that in order to obviate recurrences

Förster advised excision of the fourth to the eleventh dorsal pair. Although by this means recurrences may be avoided, the operative mortality will certainly be greater. Several cases have conclusively shown that recurrence was more intestinal than gastric, proving that the lesion had extended to the lower roots so that it has been advised to extend the excision of the roots to the second lumbar pair. Finally, a not unimportant point is that, as Guleke says, patients will often simulate paroxysms in order to obtain morphine to which they had become addicted.

DIFFERENTIAL DIAGNOSIS OF BUCCAL LEUCOPLASIA.

(Concluded from page 557.)

The truth of the entire question appears to reside in the conception of the older masters of syphilography. Leucoplasia occurs in subjects predisposed to it by continued irritation of the mucous membrane from tobacco, decayed teeth, badly fitting prostheses, etc., and develops with more facility and greater intensity in these subjects when they are syphilitics. In these circumstances, two contingencies present themselves, namely: 1. Syphilis has no effect upon leucoplastic lesions which are in any way influenced by antiluetic treatment, even when intensive. 2. Mixed lesions, the hybrids of leucoplasia, may develop in which syphilis—especially the tertiary form—plays a part, so that in these circumstances specific medication causes the hybrid to more or less completely disappear. 3. The white patches develop on distinctly luetic lesions; in these circumstances specific treatment will bring about a complete and rapid cure.

From what has been said, the following conclusions appear to be in keeping with logic, namely: it is a mistake to regard all white patches on the mucosæ as being leucoplasia; it is erroneous to resort to intensive specific treatment in all cases of leucoplasia when syphilis is not manifestly present. Next, what is to be thought of the opinion of those who look upon leucoplasia as the onset of epithelioma of the mucosa? Vidal admits three degrees or phases, in the evolution of leucoplasia. In the first phase the patch is smooth and pliant; in the second phase it assumes the papillomatous state, the first degree of epitheliomatous evolution, and finally fissures and induration appear and malignancy is well under way. Besnier was inclined to regard epitheliomatosis as the second phase of leukotheratosis. But, however this may be, it is certain that a large number of leucoplasias never reach the phase of epithelioma, so that one should never be hasty in making a serious prognosis. If the patient will take proper care of the teeth and buccal cavity, if he will give up smoking—which is the hardest of all—and will use unirritating tooth powders or pastes—if he will be careful to avoid highly spiced foods and alcohol, he will have a good chance to rid himself of the lesion or at least its malignant transformation.

The prognosis is not to be based on the external appearance of the lesions; very mild leucoplasias rapidly undergo cancerous transformation, especially in syphilitics, while well developed papillomatous leucoplasias will remain for years without change.

If fissures, induration or cracks occur, if the regional lymph nodes enlarge, malignant transformation is without doubt taking place and a biopsy should be made in order to settle the diagnosis. If malignant elements are found surgical interference is to be resorted to without delay and by an extensive excision of the diseased structures, including the regional lymph nodes, a radical and permanent cure may result. If the interference is incomplete, recurrence will take place early and the life of the patient will not be long.

Should histological examination be negative, the use of tobacco is to be proscribed and careful treatment of the buccal cavity carried out. Look for syphilis with the Wassermann reaction, and, if negative, no specific treatment should be tried; otherwise it must be given; and should it have no effect on the white patches discontinue it and do away with all factors of irritation. When the leucoplasia has become added to a luetic lesion, it has a tendency to undergo malignant transformation, and if it can be controlled by intensive specific treatment and the Wassermann becomes negative, local treatment of the mouth will then be all that is necessary.

LONDON LETTER.

(From Our Own Correspondent.)

Amended National Insurance Bill.—Remuneration of Medical Men Practising Under the Insurance Act.—Memorial to Sir William Osler at Oxford.—Mr. Barcroft's Experiment.—The People's League of Health.—Death of Sir Robert Laurie Morant.

LONDON, March 27, 1920.

Dr. Christopher Addison introduced recently into the House of Commons the bill prepared by the Ministry of Health to amend the acts relating to national health insurance. The bill proposes to increase the rate of sickness benefit for men to \$3.75 a week and for women to \$3 a week. Disablement benefit is to be raised to \$1.88 and maternity benefit to \$10. As regards the provision made for sanatorium treatment, the Ministry of Health will ask Parliament to agree to its complete removal from this act, as it is desired to deal with tuberculosis as a whole.

With regard to the remuneration of medical men practising under the Insurance Act, a decision has now been come to, as to the amount of the capitation fee. It may be recalled by readers of these letters that two months ago the insurance acts committee of the medical profession accepted arbitration with respect to the capitation figure which should be paid to medical men working under the National Insurance Act. The profession had demanded a capitation fee of \$3.35, while the Ministry of Health appeared unwilling to allow more than \$2.25 or \$2.50 as an extreme limit. Accordingly, arbitrators were appointed who announced the other day that they awarded a capitation fee of \$2.75. This sum, owing to the present conditions of living, is less than the medical men affected had the right to expect. However, it must be taken into consid-

eration that the settlement is only temporary and that the question of remuneration can be raised whenever the medical men doing insurance work think fit to do so. But, and this is a big but, if the question is to be raised soon and if the medical profession is to have a fair chance of winning its cause, this result will not be accomplished unless the profession is in a good deal stronger position, from the viewpoint both of unity of action and of a defense fund, than at present. The approved societies, which are chiefly interested in the medical benefits of the Insurance Act and especially so from the viewpoint of patients, are strong politically and financially and consequently wield a large amount of influence with the Ministry of Health. In the past these societies have been by no means gracious to or in harmony with their medical attendants and have seemed somewhat too apt to treat them as their servants. In order to maintain their self respect and independence medical insurance workers should be in a position to fight effectively for their rights.

* * *

The plan to create at Oxford a great institute of pathology and preventive medicine in memory of Sir William Osler will doubtless meet with strong support. In truth there might be half a score of fitting monuments to a man who touched life at so many points and illuminated each one of them. It is understood that another project under consideration is to purchase and dedicate forever to the memory of all the Oxford men who have fallen in the war one of the famous open spaces still left in the neighborhood of Oxford. Such a place, perhaps, could be found on Cumnor or above the Happy Valley, and if maintained as a memorial might be the best memorial to one whose son and only child fell in the war.

* * *

In connection with the People's League of Health which was inaugurated by Miss Olga Nethersole, Dr. Eric Pritchard, and others a few months ago, the Lord Mayor of London will preside at the meeting of provincial mayors to be held at the Mansion House on May 11th, when members of the medical council of the league will urge on all the boroughs and counties the duty of raising the general health standard and lessening the deplorable mortality from preventable diseases.

* * *

The State has lost a distinguished public servant and a pioneer in the field of social reconstruction by the death of Sir Robert Laurie Morant, K. C. B., first secretary of the Ministry of Health and formerly chairman of the National Health Insurance Commission. It may be said that the death of Sir Robert Morant is a severe blow to the British national health. As the London *Times* in a recent issue said, to him more than to anyone else belongs the credit of establishing the Ministry of Health. His wide vision foresaw the need long ago; his indefatigable energy devised the means. He dreamed of a great system of prevention and cure, of research and information, which should make of Great Britain the healthiest place in the world, and he was a

man whose dreams came true. His death at this time comes as a great blow, just when the Ministry of Health needed his judgment and guidance to steer through the shoals and rocks which lie in such quantities in its course. He was not only a strong willed man who knew what he wanted and generally got it, but he also possessed the faculty, possessed by some strong men but rare in a man of his almost autocratic personality, of being able to understand and sympathize with those who disagreed with his views. There are said to be factions in the Ministry of Health, but he was able to keep them united. It is hoped that with the withdrawal of his controlling hand and harmonizing influence, peace may still reign.

* * *

Mr. Joseph Barcroft, C. B. E., F. R. S., submitted himself at Oxford recently to the uncomfortable and daring experiment of being shut up for six days in a narrow glass case for the purpose of endeavoring to solve a physiological theory with regard to the action and properties of the lungs, which incidentally had a bearing upon aviation, touching the question of the heights to which airmen may ascend without taking the precaution of isolating themselves by means of a breathing apparatus. The question was whether the walls of the lung secrete oxygen and act as a reservoir from which oxygen can be pushed into the blood, or whether the lung acts merely as the receiver of a pump. The experiment appears to have shown that the lung does not possess the supplementary properties. Airmen, therefore, cannot count on drawing upon a reserve of oxygen in their system and must consequently provide themselves with artificial means to secure their safety. The scientific details of the experiment will be laid before the British Association at its next meeting, where Mr. Barcroft will preside as president of the Physiological Section.

* * *

The minister of health has appointed a committee to consider the present state of the law regarding the pollution of the air by smoke and other noxious vapors and to advise what steps are desirable and practicable to diminish the evils still arising from such pollution. It may be said that a departmental committee was appointed in 1914 to inquire into this subject and it had made some progress in taking evidence when the war broke out and its proceedings were discontinued. Some few weeks ago attention was drawn to the affections and discomfort caused by the London fogs and it was suggested that it was indeed time that practical steps were taken to abate or, preferably, to abolish the nuisance. A medical correspondent of a London Sunday journal proposes that, not only should London take example by New York and either burn smokeless coal or gas or compel its inhabitants to consume their own coal smoke, but that London should follow the lead of New York and erect skyscrapers. No doubt this suggestion that the smoke curse of London should be abolished or considerably diminished will be carried into effect, but the question of skyscrapers is a different matter altogether, and one which I hardly feel confident to discuss.

Editorial Notes and Comments

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FAME AND THE DOCTOR.

The electors of the American Hall of Fame founded by the New York University are now preparing a new list of nominations of men and women who will take their place among the nation's immortals. This will be the fifth quinquennial election to the Hall of Fame, the first of which took place in 1900. Up to date forty-nine men and six women have been elected to the Hall of Fame. These are divided into fifteen classes, as follows: authors, thirteen; educators, two; preachers and theologians, four; philanthropists and reformers, two; scientists, three; engineers and architects, none; physicians and surgeons, none; inventors, four; missionaries and explorers, one; soldiers and sailors, four; lawyers and judges, four; rulers and statesmen, eleven; business men, none; musicians, painters, and sculptors, one; eminent men outside of classes mentioned, none. Six women have been elected to the Hall of Fame; one author; two educators and missionaries; one home or social worker; one scientist; and one musician.

Judging from the foregoing, the engineers' profession, the art and science of medicine, and the realm of commerce have not produced men whose names are fit to be classed among the immortals. While we cannot speak with regard to the first and last of these classes, it seems remarkable, in view of all the blessings which the profession of medicine has brought to the human race, that none of the American workers in this

field have achieved a place of distinction in the annals of American life. It is true that Oliver Wendell Holmes sits among the titans, but as an author, not as a teacher of anatomy. Among the distinguished men sitting on the board of electors this year is Dr. Charles H. Mayo. This will insure proper consideration of the names of American physicians nominated for the Hall of Fame. Would it not be in order for the medical societies of this country to select and vote upon the names of their chosen medical heroes?

VITAMINES AND THE DEFICIENCY DISEASES.

It is now known that certain food elements termed vitamins or accessory food factors are essential or, at any rate, of very great value in the makeup of a well balanced diet. Also, that if a person's diet is not well balanced the full benefit will not be derived from the food, and in fact it is asserted that if a diet is conspicuously lacking or deficient in a particular vitamin, after a time a condition of ill health will ensue. A few diseases have been distinctly classed as being due to the absence or deficiency of a particular vitamin, and denominated deficiency diseases. Four diseases have been so termed. In beriberi there seems to be no doubt of the fitness of the appellation, but of the other three, scurvy, rickets, and pellagra, and especially rickets and pellagra, opinions are divided. Scurvy is truly a deficiency disease, but there is some doubt as to its causation being wholly due to the absence of the antiscorbutic vitamin. Again, while pellagra is generally held to be brought about by a faulty diet, many do not believe that it is a deficiency disease at all, nor owing to deficiency of a vitamin.

The Italian and Spanish investigators insist that spoiled corn produces a toxemia which is the cause of pellagra, and an influential minority headed by Sambon take the view that it is of infective origin. Casimir Funk was the first to suggest that pellagra was a disease produced in a similar way to beriberi; that a certain substance present in the embryo of the corn was removed by milling, and that an absence of that factor from the dietary would produce pellagra. However, Funk was unable to produce the disease experimentally, and since that time evidence has not been forthcoming which would justify the acceptance of this view. The investigations

made by I. Goldberger and his coworkers in the Southern States of this country have been the most prolific of satisfactory results. The conclusions arrived at are that pellagra is due to a diet physiologically lacking in protein supply, or deficient or insufficient fat soluble vitamine, or water soluble vitamine, or defective mineral supply, or a combination of two or more of these factors.

G. V. McCollum, N. Simonds, K. Thomas, W. H. Wilson, and others have all assisted in the elucidation of the problem, not the solution, and perhaps the result of these investigations may be set down as demonstrating that the danger of pellagra occurs if the biological value of the protein content of a diet is below a certain level. This level varies within certain limits according to individual need and idiosyncrasy, hard manual labor, for example, requiring a more generous provision in this respect. This protein deficiency is possibly concerned with a defective supply of some essential amino acid or acids.

If these views are accepted, and they seem to be more worthy of credence than the other theories of the causation of pellagra, then pellagra is a deficiency disease, but not in the recognized acceptance of the term, that is, a disease wholly or mainly due to a vitamine deficiency, but chiefly to a protein deficiency. Is it wise to lay the causation of a disease to the absence or deficiency of any one vitamine unless it has been absolutely proved to be the cause? This seems to have been proved in the case of beriberi.

At the meeting of the Section for the Study of Diseases of Children of the British Royal Society of Medicine, held in London on February 27, 1920, Dr. Robert Hutchison, the well known authority on diet, said that rickets seemed to be caused by an ill balanced diet, and particularly by one which contained a relative excess of carbohydrates. If an accessory substance played any part at all, it must be that it was required to counteract some defect in the diet and not merely that it supplied something that was essential and without which rickets would develop no matter what the composition of the diet was on the whole. The same was true of scurvy. He was of the opinion that as regards rickets, we required more evidence before calling in the action of a hypothetical accessory substance at all. Hutchison drew attention to the fact that we must not draw sweeping conclusions from our present inadequate knowledge of vitamins.

Pellagra is not essentially a vitamine deficiency disease, nor does rickets seem to be, nor, according to Hutchison, is scurvy. Views may have to

be revised with regard to the rôle of the vitamins or they may have to be placed on a sounder foundation. There has been a good deal of loose phraseology and glib talking concerning these substances. They may be essential to health in a diet, but, on the other hand, it does not necessarily cause a deficiency disease because a certain vitamine is lacking or deficient. In any event our knowledge of these elements must be considerably extended and rendered much more precise than at present, before we can talk authoritatively concerning the exact rôle of the vitamins. We should ponder and digest that old Latin proverb, "make haste slowly."

PROPOSED NARCOTIC DRUG LAW.

A paper calling attention to the need of State legislation to supplement the Federal law controlling the distribution of narcotic drugs was published in the *NEW YORK MEDICAL JOURNAL* for April 3, 1920. In this paper it was stated that such legislation must be in harmony with the Federal law, but that the enforcement of the latter would be strengthened and aided by State laws more precisely defining the limits of a physician's privilege in prescribing and dispensing narcotics. It will be of interest to our readers to know that a bill is now pending in the New York Legislature which has been drawn along these lines. This bill, introduced in the Senate by Mr. Cotillo, and in the Assembly by Miss Marguerite Smith, has the rather unusual distinction of bearing the unanimous endorsement of the medical profession of the State as voted upon at the recent annual meeting of the House of delegates of the State society. It has been also unanimously endorsed by the medical societies of the counties of New York and Kings, and has the approval of the department of health of the city of New York, which has had a unique and extensive experience during the past year in handling about 7,500 drug addicts.

The difficulty of getting doctors to agree on any matter of professional opinion is proverbial, and when the representatives of the 14,000 physicians of the State of New York agree in demanding legislation imposing definite restrictions upon their professional use of narcotic drugs it would seem that the significance of this fact would be apparent to the legislators; we should think, therefore, that the prospects of the passage of this bill must be very good. The particular object of the bill as regards the practice of physicians is to put a stop to the practice of a few doctors, without apparent interference from the enforcement of the present State law, of supplying narcotic drugs to addicts

under the pretense of medical treatment. While the right of physicians to prescribe narcotics for persons suffering from disease, in appropriate cases, is generally conceded, and is fully protected by the provisions of the bill, their right to treat addiction in this manner—known as the ambulatory treatment, the drug being prescribed for selfadministration by the addict—has been a matter to which not much attention has been paid by the profession generally until the last year. During that time the question has been thoroughly studied by committees of physicians and by public health officials who have had unusual opportunities for study of this problem on a considerable scale. It is as a result of such cooperative study and extensive experiment with both the ambulatory and the institutional treatments, that medical opinion has become so thoroughly crystallized against the former and in favor of the latter.

THE MEDICOLEGAL ASPECTS OF THE DELIRIUM OF AUTOACCUSATION.

As its name indicates, delirium of autoaccusation is a delirium consisting of accusing one's self. It differs from the delirium of culpability in that in this mental disturbance the subject believes himself guilty of some crime although he does not necessarily accuse himself of it, while in delirium of autoaccusation the patient accuses himself although he does not always consider himself the perpetrator of the act. From the clinical viewpoint, delirium of autoaccusation is especially encountered in the following psychopathic states: melancholia, degeneration, alcoholism, and hysteria. In each of these it affects a peculiar etiological mechanism and characters, but it is above all from the medicolegal viewpoint that the delirium of autoaccusation offers the greatest interest. In most instances the subject goes as far as public self-denunciation which of necessity leads to judicial consequences. The famous case related by Arthur Train is one in point, namely that of the Duke de Nevers.

If this ground is taken delirium of autoaccusation may be conveniently classified as follows, in accordance with the principal medicolegal situations to which it may give rise: The case of an individual who accuses himself of a nonexistent crime; the case where a person accuses himself of a real crime but where all the evidence shows that he could not possibly perpetrate the act; cases where the individual accuses himself of a real crime which can be perfectly well imputed to him; cases where a subject accuses himself of an offense which he has committed and greatly exaggerates the facts.

Numerous facts, many of which have never been published, allow us to make the following points. Cases where the insane person accuses himself of a nonexistent crime are by far the most frequent. Among the insane autodenunciators, degenerate subjects are most commonly involved, while after them come alcoholic, melancholic and 'hysterical' persons. Murders—infanticide, uxoricide, parricide, fratricide, political assassination and murder for unknown motives—are usually the crimes for which the subject accuses himself. Then in succession come theft, conspiracy, and adultery. Alcoholics accuse themselves more especially of more or less imaginary and dramatic homicidal acts, melancholic females of infanticide, degenerates of all sorts of the most unlikely offenses. These autodenunciators, whether or not examined medicolegally, are usually committed to a hospital or are discharged.

When summoned for a medicolegal examination in such cases, it is essential to discover if the autodenunciation has really any foundation, no matter how trifling, a thing which is not always easy to establish. It is much easier to decide whether or not the subject is insane. But this task is necessarily incumbent on the expert. In order to fulfil his mission he should recall in what psychopathic states the delirium of autoaccusation is met with, as well as the characters that this mental process affects in each. If an autodenunciator is found to be of unsound mind and if he has actually committed an offense or a crime he should unquestionably be committed to a hospital for the insane, especially if he continues his delirium and is susceptible of being dangerous. Otherwise if his offense was purely imaginary and his delirium of short duration he should be discharged.

SOME VITAL STATISTICS FOR ONTARIO

A dry subject like vital statistics may not make much appeal to most people, but physicians must give it some attention, provided they are interested in keeping pace with public health medicine. There is so much of this class of literature today in the public press that, failing knowledge of the death rate in typhoid in your own Province or State, the medical practitioner may find himself chagrined if he cannot answer offhand some curious citizen in public or private gatherings. The doctor is supposed to have a knowledge of everything pertaining to medicine, and he is often looked upon as improperly informed should he express ignorance of any question put to him. Vital statistics must therefore claim his attention as well as the newest remedies for maladies.

The province of Ontario with a population in 1918—the latest returns available—of 2,798,970, shows a tendency to get into city life, as the percentage population in towns is somewhat less than in 1917. There were in the entire province 64,729 births—an increase of 2,063 over the previous year. There were 33,486 males and 31,243 females. The number of illegitimate births was 1,363, being 139 more than in 1917. Ontario is sometimes not satisfied with increasing one by one, and brings them in in couples and triplets. The number of twin births was 676—boys, 658—girls, 694. There were nine cases of triplets comprising thirteen boys and fourteen girls. The number of marriages was 19,525—a decrease of 1,974 from 1917.

The deaths in the entire province numbered 43,038, an increase of more than 9,000 over 1917. The death rate is the highest in the history of the province and is put down to the ravages of the epidemic of influenza. The total deaths attributable to that cause were 7,337, and in addition there was a considerable number caused by pneumonia. The total deaths from pneumonia were 4,660. For the ten previous years the mean deaths from pneumonia were 2,015. If half of the deaths in pneumonia were caused by influenza, then the deaths from the epidemic would total 9,667 of all deaths reported, or three and forty-five one hundredths to the one thousand of estimated population. The last three months of the year had the greatest mortality.

The deaths from cancer in the province of Ontario are still increasing in spite of a considerable campaign of education by the Provincial Board of Health. They totalled in the year 2,103—seventy-five to the one hundred thousand of the population. Tuberculosis was responsible for 2,519 deaths—a ratio of ninety to the one hundred thousand of the population, being an increase of two over the previous year. Taking these deaths by the ages of the patients, it is found that between the ages of twenty and twenty-nine, the total number of deaths from tuberculosis in the ten years from 1909 to 1918 inclusive was 6,608, and between thirty and thirty-nine, 4,942, and between forty and forty-nine, 3,106. Infant mortality shows that 6,402 babies died before reaching the full twelve months of age. This is an increase of seven to the one thousand births over 1917, the lowest recorded year in the history of the province. This rate means that out of every ten children born alive in Ontario, according to the statistics, one is doomed before completing the first year of life.

LOOK AT YOUR PATIENT.

A celebrated professor was demonstrating a very interesting syphilide in a man who had suffered an amputation of both legs. He walked into the clinic room on his knees, the short stumps being used as though they were feet, and stood beside the teacher's chair. The latter demonstrated the lesions to the students with great clarity and fluency. Arriving at the question of treatment, he said (this was in the presalvarsan era), "And how shall we treat this patient? We will apply mercury. And how will we give mercury? We will give it by inunction. And where will we apply the inunctions? We will apply them, my students, to the soles of his feet!" A chuckle of laughter floated around the clinic room, and a student—somewhat less respectful than the rest—called out, "Look at your patient, doctor!" "Ah," said the professor, "that is what we call *inunction a distance*."

This little tale, however, demonstrates very clearly the way in which we are frequently so busily engaged in looking at one particular symptom, or the deviation from the normal in a single set of organs, that we forget to look at our patient. Too frequently a patient is considered merely as a vehicle designed for the purpose of carrying around the particular set of organs in which we at the time happen to be interested. In our desire to become specialists, we at times almost approach the state of mind of the physician who announced himself as specializing in fractures of the left ring finger, and in so doing, we forget that when the patient comes to us, he not only desires that the symptom in question be treated but that it shall also coordinate with a healthy body. What a good thing it would be if the phrase, look at your patient, could be inscribed in bold characters in every room in which clinical teaching is done.

Obituary.

SAMUEL DOTY RISLEY, M. D.,
of Philadelphia.

Dr. Samuel Doty Risley, a prominent ophthalmologist, died on April 1st in Philadelphia. He was born on January 17, 1845, in Cincinnati. After serving in the Union Army from 1862 to 1865, he studied in the University of Iowa and later in the University of Pennsylvania, from which he received his M. D. degree in 1870. He was lecturer and assistant surgeon in ophthalmology in the University of Pennsylvania from 1872 to 1889; professor of diseases of the eye in the Philadelphia Polyclinic from 1886 to 1900, and attending surgeon to the Wills Eye Hospital from 1889 to 1917. At various times he was president of the American Academy of Medicine, of the section in ophthalmology of the American Medical Association, and of the American Ophthalmological Society, and was a member of the American Otological Society, and of the American Climatological Society, and a fellow of the College of Physicians of Philadelphia. Doctor Risley was a frequent contributor to medical periodicals and was the inventor of an improved ophthalmoscope.

News Items.

Personal.—Dr. H. Holbrook Curtis is reported to be seriously ill at his apartment, Seventh avenue and Fifty-fifth street, New York.

Honor for Physician.—Dr. O. P. McPherson of Kansas City, has been awarded the Medal of the First Order of St. Sava, the highest Serbian honor which is bestowed upon foreigners.

Honor to Doctor Finney.—Dr. John M. T. Finney, of Baltimore, has been elected an honorary fellow of the Royal College of Surgeons of England.

Louisiana State Medical Society.—The forty-first annual meeting of the Louisiana State Medical Society will be held April 24th to 26th in New Orleans, under the presidency of Dr. C. P. Gray, Monroe, La. (first vice-president).

Medical Libraries to Be Consolidated.—Plans are under consideration by the authorities of Johns Hopkins University to consolidate the libraries of the hospital, the school of hygiene, and the medical school in a new library building to be erected in the hospital group.

Medical Editors' Congress.—The fifty-first annual meeting of the American Medical Editors' Association will be held Monday and Tuesday, April 26th and 27th, at the Grunewald Hotel, New Orleans, under the presidency of Dr. Seale Harris, editor of the *Southern Medical Journal*.

War Honors for Medical Men.—Dr. Gustavus M. Blech, of Chicago, late lieutenant colonel in the U. S. Medical Corps, and commander of Base Hospital No. 208, near Bordeaux, has been awarded a citation certificate of the Order of University Palms with the grade of *Officer de l'Instruction Publique*—gold palms—by the French government.

Experiment in Occupational Therapy.—A small experiment station for the study of the problems of invalid occupation has been established at Marblehead, Mass. The plan is to maintain a studio and workshop where designers and craftsmen, unhampered by the demands of teaching, may work out ideas and suggestions for hospital industries.

Care for Mental Patients.—The United States Public Health Service has entered into an agreement with the Maryland State lunacy commission and the board of managers of the Spring Grove State Hospital at Catonsville to care for soldiers, sailors and marines of the State suffering from mental disorders in the recently completed Arthur D. Foster Psychopathic Clinic. The clinic, which will afford accommodation to about 100 patients, will be equipped and ready for occupancy May 1st.

Few Alcoholic Cases at Bellevue.—Prohibition has reduced the number of alcoholic patients cared for in the hospitals of New York city from seventy to ninety per cent., and, according to published figures, in Bellevue Hospital alone the decrease will permit nearly 7,000 new patients a year to be cared for, based on the average stay of five and one-half days a patient. The reduction in ambulance calls at Bellevue to bring in alcoholic patients is particularly impressive: January, 1919, 136; February, 1919, 92; January, 1920, 21; February, 1920, 10.

Major General Gorgas to Clean Up Peru.—A press dispatch from Lima states that Major General W. C. Gorgas has accepted a five year contract with the Peruvian government to direct an extensive sanitation program there.

New York University Doctors Form Association.—Graduates of the New York University and Bellevue Hospital Medical College have formed an alumni association, with the following officers: President, Dr. Robert J. Carlisle; vice-president, Dr. Robert J. Wilson; secretary, Dr. Cornelius J. Tyson; treasurer, Dr. Godfrey R. Pisek.

Post-Graduate Hospital Seeks Fund.—The New York Postgraduate Medical School and Hospital Endowment Fund Committee has opened a campaign for \$2,000,000 to be used in expanding every phase of the institution's work. At the date of writing about \$350,000 had been subscribed, with other amounts pledged as contributions to the second million.

Medical Legislative Conference.—Representatives of the Eclectic Medical Society, the Homeopathic Medical Society, and the Medical Society of the State of Pennsylvania met March 13th in Philadelphia and organized the Medical Legislative Conference. Officers for the first year are: President, Dr. George A. Knowles, and secretary-treasurer, Dr. Edward A. Krusen.

United States Civil Service.—The United States Civil Service Commission announces examinations on May 5th and July 7th for the position of physician in the Panama Canal service, and for positions requiring similar qualifications. The entrance salary is \$200 a month; promotion may be made to \$225, \$250, \$275, \$300, and to higher rates for special positions. Both men and women are eligible.

American Anesthetists Convene.—The American Association of Anesthetists will hold its eighth annual meeting April 26th and 27th at the Hotel Grunewald, New Orleans, under the presidency of Dr. Albert H. Miller, of Providence, R. I. An interesting feature of the scientific program will be a symposium on the problem of anesthesia in goitre operations.

Hospital Gift to France.—Construction has been started on the maternity hospital at Chalons-sur-Marne which is the gift of the Society of Friends unit of the American Red Cross. The hospital, which is to cost a million francs, is designed to replace temporary dispensaries and baby clinics which sprang up in wooden barracks in the devastated region. About sixty endowed beds will be set aside for the use of Chalons and neighboring villages.

Medical College Association.—The Medical College Association held its annual meeting March 2nd and 3rd in Chicago. The following officers were elected: President, Dr. William Pepper, of Philadelphia; vice-president, Dr. Thomas Hough, of Charlottesville, Va.; secretary-treasurer, Dr. Fred C. Zapflee, of Chicago (reelected); council, Dr. Irving S. Cutter, of Omaha; Dr. Isadore Dyer, of New Orleans; Dr. James Ewing, of New York; Dr. Charles R. Bardeen, of Madison, Wis., and Dr. George Blumer, of New Haven, Conn.

Bad Food at Army Hospitals.—Mess conditions at the army hospital for tuberculous patients at Oteen, N. C., are described as reprehensible in a report made to the War Department by Inspector General Chamberlain. Steps have been taken to remedy the conditions complained of and to provide properly cooked food. The inspector general held that the principal fault had been lack of supervision.

Resignations in Health Department.—Dr. Royal S. Copeland, health commissioner of New York, is worried about resignations in the personnel of the Health Department, which threaten to cripple the work of the department. There have been 233 resignations from July 1 to December 1, 1919, and on an average more than one person a day is leaving. Nine out of twenty-six milk inspectors have resigned, thirteen out of 117 inspectors in the Bureau of Food and Drugs, three out of six veterinarians, and three out of ten chemists.

On the Banks of the Saskatchewan.—Dr. H. A. Listock Reid, of Prince Albert, Canada, who recently arrived in New York, is quoted in published interviews as stating that influenza is causing heavy mortality among Indian tribes of the Saskatchewan River districts of Alberta. Doctor Reid says that the red men suffer more severely in proportion to their number than the white men, and that the spread of the disease among Indians is facilitated by their habit of gathering about a visitor or messenger from the city until whatever disease germs he may bear have been well and widely sown.

Care of Army Sick.—Army circles have been considerably upset by the discovery that the passage of the peace resolution, if signed by the President, would place emergency army officers now in army hospitals outside the protection of the war department. The law providing for government care of these patients is for the "war emergency," and a resolution declaring the emergency at an end would compel them to accept transfer to the Public Health Service, where, according to one Washington correspondent, "they would be mingled with patients of all sorts and degrees." Congressmen, accordingly, have hurried to frame a bill providing for care of the soldiers who would be affected, thus saving the army from too much democracy.

American Hospital in France Started.—Ground was broken, during the week of April 3rd, in Rheims for a million dollar American memorial hospital in France. The hospital, which will stand in a sixteen acre park donated by the city of Rheims, will be chiefly for women and children. Construction of the hospital has been delayed because the plans for rebuilding all the destroyed cities must conform to the architectural censorship, but the plan for Rheims has been approved and the hospital may be begun. The institution will have 150 beds permanently endowed, and every bed will have over it a sculptural tablet bearing the name of an American who fell on the battlefield of France. Certain beds also are endowed in the names of cities. There will be a clinic for the civilian population, well equipped maternity and children's wards, and a dental clinic and dispensary. There will be sun parlors and gardens and special arrangements for the treatment of children suffering from malnutrition due to the war.

Relief for Vienna Physicians.—A committee of Chicago physicians has been appointed by the Chicago Medical Society and affiliated organizations to solicit funds for the relief of Vienna physicians. The committee consists of Dr. Rudolph W. Holmes, chairman of the committee of the specialist societies; Dr. Coleman G. Buford, chairman of the branch societies of the Chicago Medical Society; Dr. Effie L. Lobdell, chairman of the Chicago woman's medical societies and clubs, and Dr. Warren Johnson, chairman of the club and social associations.

Municipal Hospital for Baltimore?—A movement has been launched in Baltimore to have the city take over the hospital at Fort McHenry for a general municipal hospital. Dr. John M. T. Finney has been named by the mayor as chairman of a committee to take the matter up with the secretary of war and the surgeon general of the army. The only obstacle seen is that the U. S. Public Health Service may need the hospital for its war risk insurance work. If Fort McHenry hospital is acquired by the city, Sydenham Hospital, the city hospital for infectious diseases, will probably be put to other uses.

Meetings of Local Societies.—The following local medical societies will meet during the coming week:

MONDAY, April 12th.—Society of Medical Jurisprudence, New York Ophthalmological Society, Yorkville Medical Society, Association of Alumni of St. Mary's Hospital (Brooklyn), Williamsburg Medical Society.

TUESDAY, April 13th.—New York Academy of Medicine (Section in Neurology and Psychiatry), Manhattan Dermatological Society, New York Obstetrical Society, Clinical Society of the Hospital and Dispensary for Deformities and Joint Diseases.

WEDNESDAY, April 14th.—Medical Society of the Borough of the Bronx, New York Pathological Society, New York Surgical Society, Alumni Association of Norwegian Hospital, Brooklyn Medical Association.

THURSDAY, April 15th.—New York Celtic Medical Society, New York Academy of Medicine (stated meeting).

FRIDAY, April 16th.—New York Academy of Medicine (Section in Orthopedic Surgery), Clinical Society of the New York Postgraduate Medical School, New York Microscopical Society, Alumni Association of Roosevelt Hospital, Brooklyn Medical Society.

Yale Medical School.—As a result of the survey of Yale University medical school made by Dr. Fred T. Murphy, the following minutes were adopted by the corporation of the university: 1. That there is a clear and definite opportunity and obligation of the university to medical education. 2. That the Yale School of Medicine has a valuable nucleus of men and material and sound traditions, which richly justify the development of an institution for medical education of the highest type. 3. That the corporation accept as a policy the development of a medical school of the highest type to include the preclinical and clinical years of instruction upon such principles of medical education as may be approved by the corporation, after conference with the medical faculty. 4. That every effort be made to obtain at the earliest possible date the necessary funds with which to expand and develop the buildings, the equipment, the instruction, and the research, and the service, in accordance with the best ideals of modern medical education as an essential unity of our university plan for development.

Book Reviews

THE LIFE OF PASTEUR.

The Life of Pasteur. By RENÉ VALLERY-RADOT. Translated from the French by Mrs. R. L. DEVONSHIRE, with an Introduction by SIR WILLIAM OSLER. New York: Doubleday, Page & Co., 1919. Pp. xxi-484.

In the five medical folios of the sixteenth century the title pages are appulsive, in quaint design and emblem, of the author's work. He is seen operating in high plumed hat and lace ruffles, or demonstrating to a group of students sitting in a row all dressed alike. Half flayed skeletons walk around with one bony finger pointing to the seat of inquiry. Ladies on Elizabethan beds display a Cæsarean section; two women in high lace collars and ruffled silk gowns standing by hold up admiring hands. If the author is a naturalist, he walks in trim gardens with a huge flower in his hand, or if a physicist, is seated at a table loaded with bottles with a thunder storm raging in one corner of the page and a plump angel blowing a song of praise on a trumpet in another.

Here is a book concerning one called Pasteur. What should be on the title page? On one side is a mulberry tree with cheerful silkworms well in evidence. Under the tree are gigantic crystals with rays of light emerging. A lively hen, with wings outspread to show how well she is, stands nearly looking appreciatively at one of her own eggs. Some jovial vintners and brewers hold tankards of wine or beer and salute the central figure, of Pasteur. Vines, with Eschol sized grapes, grow up one side of the page, and happy mothers with plump newborn babies chat in the shade. Big sheep and cows with mild eyes full of gratitude are—apparently—telling their lambs and calves how much they owe. Plump pigs rout around, and dogs—very sane looking ones, rest peacefully at the author's feet, while a smiling cherub points to his own throat and bends pityingly over a second cherub who is holding a handkerchief, the only piece of laundry cherubs ever seem to possess, to tearful eyes.

The youthful student smiles a little as he studies this curious page and wonders at the strange groups before him. Who was this Pasteur? At first he idly turns the pages and learns he was born one winter's night in 1822 in the French village of Dôle as the son of a tanner, but as the hero approaches in age the age of the reader, the pages are lingered over to learn how the serious, inquisitive boy began not only to question Nature but to force her to reply. From research into crystallography Louis Pasteur threw the line over to the biological side of chemistry. Liebig's theories faded under the high lights projected in Pasteur's *Lactic Acid Fermentation and Alcoholic Fermentation*. Spontaneous Generation agonizingly degenerated as Pasteur caused the torch kindled and held by scientists since the seventeenth century to cast its light on this vital question.

He became known as a scientist who could show results. There was an inexplicable disease ruining the wine industry. Pasteur was asked to study it, and the gladdened vintners sang his praises. Then the silk industry was threatened by a disease among the worms called pébrine. Seventy-seven millions of francs were annually lost. Again Pasteur was the

savior. He worked at the breweries and found the cause of failure to get good beer. Charbon, or splenic fever, was ravaging flocks and herds and horses, even men were attacked. Victory again, but all these victories won against odds which only God and his servant knew. Hydraheaded epidemic now broke out as a chicken cholera and, along with this, Pasteur investigated bubonic plague. The unattractive pig saw *rouget* conquered and lived happily. The horrors of rabies in dogs and thence in humans died away in peace. The fateful word diphtheria at which a mother's heart would turn to ice lost its terrors. Then the godsent wonder worker was himself attacked by paralysis in 1868, but Nature shrank against hurting the healer and he recovered. Nineteen hundred and five saw him die honored by all the world with friends still friendly, enemies converted, pupils aglow to carry on his work, his unwavering faith in God maintained and the most wonderful biography conceived (and afterward written) by Vallery-Radot.

The biography woos both young and old, learned and unlearned, by its tender, reverent presentment of Pasteur. The youthful student grips the book a little harder as he reads of the sixteen year old boy who became so homesick when sent to Paris to study that he had to be taken home again. He feels nerved to persevere as he reads of untiring vigilant research, and shares and applauds the first conquest, that of the hitherto incomprehensible constituents of paratartaric or racenic acid, half feeling it to be his own, so greatly would he emulate the young scientist. Biot became Pasteur's guardian angel and deeply interested in his studies on fermentation he, with many others, remained faithful friends and encouragers to the man who, modest yet undaunted, prized and needed love and collaboration, yet whose feeling towards detractors was not personal, but a wondering regret for their refusal to see and nourish truths capable of helping humanity. The war over spontaneous generation was a hot one, half the scientists in Europe were against him, and he had the same fight when doctors—doing their best as far as they knew it—were dismayed and helpless before the suppurating wound and puerperal fever, though they yielded at last when Pasteur and Lister had proved themselves right.* Pasteur, though not medical, had the unusual honor of being elected a member of the Paris Academy of Medicine, and, later, that honor, coveted by all Frenchmen, of becoming a member of the Académie Française, his welcome being spoken by Rénan. A glimpse of his patriotism is seen in his returning his German doctor's diploma in 1870 to the bestowers—the Bonn Faculty of Medicine—and in refusing a German decoration subsequent to his work in hydrophobia. The same spirit of devotion—to his work—made him persistent in trying to obtain proper laboratory quarters, but, like Claude Bernard and Curie, he had a hard time getting what he needed.

*Lister and Pasteur fought and healed the disgusting putrefaction in wounds and women became mothers without fear of the seemingly inexplicable puerperal fever. The incredulity and opposition which was accorded to their theories seem almost inconceivable.

Vallery-Radot never crowds his canvas with figures of only contemporary interest, figures wearisome to a reader twenty years hence, but gives us memorable pictures. Pasteur confronting his opponents with courteous speech and proofs. Pasteur's days of torturing anxiety when he treated his first patient, a little Alsatian boy, bitten in fourteen places, for hydrophobia. His kingly reception of honors when aristocrats and scientists, merchants and students, gathered to pay homage; his faithful humility when personal illness delayed his work; his great trouble of heart when three little daughters made such a short earthly stay, his loyalty to friends, his never failing help for the willing student, all this is given in charming style by the author.

A district in Canada, a village in Algeria, have been named after Pasteur. Few will see them, but all may read his best tribute—the biography whose merits grow on the reader each time it is read.

THE AMERICAN POET BY A FRENCHMAN

Whitman: The Man and His Work. By LEON BAZALGETTE. New York: Doubleday, Page & Co., 1919.

To many, Whitman has seemed a singer of songs typifying America, but it has remained for Bazalgette to draw our attention to the human qualities of the bard as they appealed to Frenchmen—yes, to men the world over. He tells of Whitman's boyhood, youth and manhood, sketching the influences that had their part in the making of this plain speaker of plain words. Coming from solid stock, he brought an unrepresed and refreshing message. No weakness or shallow sentimentality shadowed his virility.

A careful study has been made of the value and the beauties of Whitman. The book should prove helpful to all those interested in poetry—literature—in humanity and in the glorious Whitman himself. This keen, appreciative Frenchman found to his liking the strong sketches that dug deeply into the heart of life, just as Rodin in his art swept aside the weaker similes that were called beautiful until he brought character into being and overshadowed the placid creatures that others had been content to model. Must it always be that great men are first given recognition from afar? Shaw, Stephens, Burke and many others have found greater favor in America than in their native country. Will the day come when genius is recognized at home as soon as it makes its appearance?

THE HEAD AND NECK.

Injuries to the Head and Neck. By H. LAWSON WHALE, M.D., Camb., F.R.C.S., Eng., Surgeon for the Ear, Throat, and Nose of the London Temperance Hospital. With Preface by COLONEL FREDERICK F. BURGHARD, C.B., M.D., M.S., F.R.C.S. Illustrated. New York: Paul B. Hoeber. Pp. i-332.

Of the many books concerning the surgical experiences of the war this will be found to be one of the most valuable to the civilian practitioner, especially to the laryngologist and otologist. Almost every injury and emergency described by Captain Whale occurs occasionally in nonmilitary life, and from an enormous number of observations he has been able to present to us for our guidance many

facts and suggestions which no one in ordinary practice would have the opportunity to work out.

The author takes up seriatim hemorrhage, describing the procedures of infusion and transfusion; the extraction of foreign bodies; general and local infections, their prevention and treatment; mediastinitis and vagitis; injuries of the pharynx and esophagus and salivary fistula; the method of feeding in injuries of the mouth and adjacent parts; the larynx, with the matter of edema and the operations of laryngotomy and tracheotomy and their respective advantages; laryngeal injuries; aphonia and the effects of gas poisoning.

In injuries of the ear, he describes the method of examination and the use of hearing and labyrinth tests, in so far as they are applicable to badly traumatized patients; rupture of the membrana from explosions; wounds of the tympanum and mastoid with their possible intracranial complications and labyrinth injuries. The immediate general management of nasal and accessory sinus injuries is described and then the more detailed later treatment of the individual sinuses and the lachrymal sac. Plastic repair of bone and soft parts is admirably and understandably portrayed in all possible phases, with due emphasis on the minutiae which make for success or failure. This portion of the work is peculiarly instructive and, by contrast with much of the literature that has recently been foisted on the public, most welcome. Due prominence is given to every modern method which can be of service in injuries of this kind. Peroral endoscopy is accorded its deserved importance and Gwathmey's oil ether colonic anesthesia has the author's endorsement.

Here is one medical publication without padding. The author is to be congratulated on the interesting, terse, and clear style in which he has presented his subject. The illustrations are good and the book is well put together. We recommend it most heartily.

WAR ECHOES.

A Physician in France. By Major General SIR WILMOT HERRINGHAM, K.C.M.G., C.B., Late Consulting Physician to the Forces Overseas. Illustrated. New York: Longmans, Green & Co., 1919. Pp. v-293.

For those of us who find the so-called joy of recognition in the pages of this clean cut book many unpleasant truths are flung back. It is cold in its warmth of portrayal; it is cruel in its kindly acceptance of truth. The book is written so as to embrace most of the medical and surgical conditions which were encountered during the war and yet the tales are so simply told that they may be understood by the physician who has not seen service and by the laymen.

Many fields are covered and often it will seem that the author has wandered away, but he always manages to bind his text together and bring matters to a logical conclusion. His simple descriptions of shell shock, trench fever, and enteric fever, and how they were treated, are very well done. The final review of what he calls odds and ends is perhaps as interesting as any other part of the book. He here reviews many of the pictures which others have drawn and tries to fit them into his own experiences.

BACTERIOLOGY OF INFECTIOUS DISEASES.

Die Experimentelle Bakteriologie und die Infektionskrankheiten von besonderer Berücksichtigung der Immunitätslehre. Eine Lehrbuch für Studierende, Ärzte und Medizinalbeamte. Von Dr. W. KOLLE, Direktor des Institutes für experimentelle Therapie, o. Honorarprofessor an der Universität Frankfurt a. Main; und Dr. H. HETSCH, Prof., Privatdozent, Oberstabsarzt im Sanitätsdepartement des Kriegsministeriums in Berlin. Fünfte, erweiterte Auflage. In zwei Bände. Illustrated. Berlin: Urban & Schwarzenberg, 1919. Pp. vi-1363.

The fifth edition of this work is extraordinarily complete. In the two volumes the various infectious diseases are presented primarily from the bacteriological point of view, though the clinical aspects are not ignored. In fact, the subject is well bound together and handled in a well balanced manner. Many additions have been made from war time studies. The books contain material of value to the bacteriologist and the clinician.

DR. CRAWFORD W. LONG.

A booklet with the title of Some Personal Recollections and Private Correspondence of Dr. Crawford Williamson Long, discoverer of anesthesia ad sulphuric ether, together with documentary proofs of his priority in this wonderful discovery, has been written by Joseph Jacobs, Phar. D., of Atlanta, Ga. The book is equipped, in addition to pictures and poetry, with much documentary material relative to the fact that Doctor Long extirpated a tumor from the neck of a patient under the influence of ether on March 30, 1842, and that this was the first use of an anesthetic. The claims of Wells, Jackson, and Morton are discussed and disposed of.

OPHTHALMOLOGY IN EGYPT.

Fourth Annual Report of the Ophthalmic Section of the Department of Public Health of Egypt, 1915 and 1916, by the Director General of Ophthalmic Hospitals, Ministry of the Interior. Cairo: Government Press, 1919.

These evidently dry statistical data compiled under the direction of the well known English ophthalmologist, Dector MacCallan, present a wealth of remarkably interesting information of ophthalmic conditions in Egypt during the years 1915 and 1916. The story is the more noteworthy as the work was performed under the stress of war conditions, and it goes far to show how much can be accomplished in a large number of obstinate eye conditions when treatment is pursued in a systematic and persistent manner. The number of cases treated runs literally into thousands and tens of thousands, as Egypt still retains its tragic preeminence as the abode of certain eye diseases, especially trachoma, of which the minimum percentage is eighty in certain schools, running up to a full one hundred in others! Fortunately the results of treatment were satisfactory, the more serious stages of the disease being reduced from 21.4 per cent. to three per cent., as compared with 62.3 per cent. of serious cases in 1907. The terrible toll exacted by ignorance, poverty, wilful neglect, and lack of early treatment is strikingly evident from the table of the causes of blindness, one in every eight eyes examined being blind! At the head of these causes of

blindness stand the various conjunctivites, with the gonococcus in the lead, followed by the Koch-Weeks, Morax-Axenfeld, and others.

A close perusal of every one of the presented tables brings out a great deal of information which should be of considerable value to the wideawake and progressive eye man, especially if his activity lies in the field of large social group work, such as school, special institutions, large clinics, and the like.

New Publications Received.

Psychology of the Normal and Subnormal. By HENRY HERBERT GODDARD, A. M., Ph. D. New York: Dodd, Mead and Co., 1919. Illustrated. Pp. 3-341.

Cunningham's Manual of Practical Anatomy. Revised and Edited by ARTHUR ROBINSON, Professor of Anatomy in the University of Edinburgh. Seventh Edition. Volume I. Superior Extremity; Inferior Extremity. Illustrated. New York: William Wood & Co., 1919. Pp. i-451.

Handbook of Anesthetics. By J. STUART ROSS, M. D., Ch. B., F. R. C. S. E., Lecturer in Practical Anesthetics, University of Edinburgh. With an introduction by Hy. Alexis Thomson, C. M. G., M. D., F. R. C. S. E., Professor of Surgery, University of Edinburgh. Chapters upon Local and Spinal Anesthesia by WILLIAM QUARRY WOOD, M. D., F. R. C. S. E., Lately Temporary Assistant Surgeon, Edinburgh Royal Infirmary, and upon Intratracheal Anesthesia by H. TORRANCE THOMSON, M. D., F. R. C. S. E., Anesthetist to the Leith Hospital. New York: William Wood & Co., 1919. Pp. i-214.

Handbook of Skin Diseases.—By FREDERICK GARDNER, M. D., B. Sc. (Public Health), F. R. C. S. E., Lecturer on Skin Diseases, University of Edinburgh. New York: William Wood & Co., 1919. Pp. i-160.

Manual of Surgery. (Rose and Carless.) For Students and Practitioners. Tenth Edition. By ALBERT CARLESS, C. B. E., M. B., M. S. Lond, F. R. C. S. Emeritus Professor of Surgery to King's College, London. Illustrated. New York: William Wood & Co., 1920. Pp. i-1558.

Manual of Diseases of Children. By JAMES BURNET, M. A., M. D., M. R. C. P. Physician for Diseases of Infancy and Childhood at the Marshall Street Dispensary, Edinburgh. Second Edition. Illustrated. New York: William Wood & Co., 1919. Pp. i-416.

"Wade in, Sanitary!" The Story of a Division Surgeon in France. By RICHARD DERBY, Lieutenant Colonel, Medical Corps, U. S. Army, Division Surgeon, Second Division. Illustrated. New York: G. P. Putnam's Sons, 1919. Pp. i-260.

Now It Can Be Told. By PHILIP GIBBS. Illustrated. New York: Harper & Brothers. Pp. iii-558.

Quarterly Medical Clinics. A Series of Consecutive Clinical Demonstrations and Lectures. By FRANK SMITHIES, M. D. At Augustana Hospital, Chicago. Illustrated. Vol. L, No. 2. St. Louis: Medicine and Surgery Publishing Co., Inc., 1919. Pp. 189-408.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

RECENT GLEANINGS IN DIPHTHERIA PROPHYLAXIS.

BY LOUIS T. DE M. SAJOURS, B. S., M. D.,
Philadelphia.

(Continued from page 607.)

In their new procedure for differentiating true diphtheria bacilli from morphologically similar germs in specimens from clinical cases or germ carrier, Costa, Troisier, and Dauvergne, 1919, use Petri dishes into which a special medium containing horse serum, glucose, and litmus has been poured. In the preparation of this medium, ten mls of a thirty per cent. sterilized solution of glucose are added to 100 mls of horse serum, together with thirty drops of concentrated, sterilized tincture of litmus and three mls of a one per cent. sterilized solution of sulphuric acid. The last mentioned ingredient is introduced for the purpose of partially neutralizing the natural alkalinity of the serum and thus of so sensitizing the medium as to hasten the reaction of the diphtheria germs upon its color. Coagulation of the medium, of which ten to twelve mls are used in each Petri dish, is secured in the autoclave or some other heating device whereby the temperature can be raised very slowly and gradually. After 75° C. has been reached, the temperature is maintained at about 80° C. for an hour and a quarter.

In inoculating the medium with suspected diphtheric material, a triangular platinum loop measuring about one centimetre to a side is used. The distal side of the loop is rubbed over the swab with which the material was originally collected from the suspected case, and then lightly drawn in parallel strokes over the surface of the medium in the Petri dish, a single loopful being used over the entire dish. Finally, the dish is placed in the incubator with the bottom directed upward and the cover downward.

Twenty-four hours later pinhead sized, discrete, diphtheria bacillus colonies, red in the centre and pink at the periphery, appear on the surface of the medium. Examined with a hand lens and held up near a window, they are sufficiently transparent to yield a small image of the window frame. Rather globular in shape, and of fairly firm consistency, they sink into the medium like upholsterer's nails. Under the same conditions, colonies of pseudodiphtheria germs appear more flattened out, opaque, solid, and bluish or grayish in color. Later, the differences between the true diphtheria organisms and diphtheroids become still more marked. The former remain circular, and when three to four millimetres in diameter become flattened and umbilicated, like smallpox pustules, though with a small elevation in the centre of the umbilicated area. Simultaneously the red color becomes deeper and extends centripetally in the medium itself. The non-diphtheric organisms are distinguished not only by the absence of red coloration, but also by their irregular—frequently lozenge shaped—form, their

dentate and crenated margins, softer consistency, and the fact that the centre is their most elevated point, the outer portions of the colony gradually descending to the surface of the medium. Growth of the other bacteria of the mouth is markedly hindered by the medium, if properly prepared. Streptococci and pneumococci, when they develop, produce only punctiform red colonies. The liquefying organisms are always less disturbing in the Petri dish preparation than in the tube preparations hitherto generally employed. Staphylococci at times exhibit a more copious growth and may impart a red coloration to the medium; their usual yellowish tint, however, together with the absence of umbilication of the colonies and the morphology of the germs, remove all possible doubt.

Where carrier infections are being studied, a single Petri dish for two specimens is sufficient. In this instance, the dishes are examined only after thirty-six hours. All dishes showing no colonies, or colonies devoid of any effect on the litmus—constituting always a great majority of the total number—are discarded from the start and only the dishes containing red colonies examined. Macroscopic examination with the naked eye or with a hand lens enables the worker to eliminate a few more. Finally, microscopic examination of those remaining confirms the decision already reached macroscopically. By using this procedure, which while reliable and accurate, is said to be more easily carried out and more rapid than the ordinary method, the diphtherimorphic germs from the pharynx are divided at the start into two groups, those with red colonies, fermenting glucose, and those with gray colonies, which fail to do so. Control tests in animals showed that the bacilli forming red colonies were virulent in the guineapig in ninety-two per cent. of cases; the bacilli not forming red colonies, on the other hand, were found devoid of pathogenicity both in guineapigs and in birds. The former group yielded anaerobic cultures in Veillon tubes, and the latter, strictly aerobic cultures. Again, the former germs showed granulations in eighty-four per cent. of cases, while the latter, save in two instances, showed none.

(To be continued.)

Leucocytes in Anaphylaxis of Serum Sickness.

—Joseph H. Barach (*Journal of Laboratory and Clinical Medicine*, February, 1920) reports a case of serum sickness with a delayed anaphylactic reaction. At the time of the reaction there was a primary polynuclear leucocytosis followed by the appearance of myelocytes after the organism had appropriated the available leucocytes of the circulating blood, with a coincident increase in the platelets. A leucopenia followed with a low polynuclear count and a relatively high mononuclear count. Eosinophilia is not seen, and Barach says that this is not a criterion of anaphylactic shock, as has been claimed by others.

The Murphy Treatment of Acute Arthritis.—C. D. Hoy (*Ohio State Journal of Medicine*, March, 1920) outlines the treatment as follows: 1, Relief of the tension by aspiration; 2, relief of the intra-articular pressure by Buck's extension; 3, neutralization of the infection and the production of local immunity through injection of two per cent. formalin in glycerine; 4, administration of vaccines, autogenous preferred; 5, avoidance of luxations and deformities during inflammatory activity; 6, removal of focus of infection. In acute cases the treatment should be instituted immediately. The injection is best done under nitrous oxide and oxygen or other anesthesia. Morphine one sixth and atropine one three hundredths of a grain are given hypodermically half an hour before the injection. The part should be washed with alcohol the night before and painted with ten per cent. tincture of iodine in the morning. The solution should be prepared at least twenty-four hours in advance. In the larger joints from ten to twenty-five c.c. should be injected. Usually two injections suffice, but five or six may have to be given. They should be given every ten to fourteen days until the infection subsides. It should not be given in tuberculous arthritis nor in cases where joint structures have already been destroyed by infection. The joint should never be opened for the purpose of drainage.

Cinematic Amputations.—Tuffier (*Bulletin de l'Académie de médecine*, January 13, 1920) presents his conclusions regarding this method, formed after a visit to the clinics of Putti and Galeazzi in Italy and from limited personal experience. The essential point in the procedure is the direct attachment of tendons in the amputated limbs to apparatus so designed that traction by these tendons can be utilized for serviceable, practical ends. All forms of amputations and disarticulations have been "cinematized," from unilateral resection of the lower jaw to disarticulation of the hip and from disarticulation of the thumb to that of the shoulder. In the majority of instances nothing very encouraging has been obtained in the way of practical results. In the case of the arm, however, and especially in the forearm, primary, secondary, or late cinematization, the method seems well worthy of further attention. The stumps themselves are irregular and rather repulsive, but the muscles, owing to continued functioning, remain much larger than after the ordinary noncinematic amputation. The degree of direct traction exerted by the cinematized tendons is entirely satisfactory, although overuse may result in callousness of the skin covering the terminal tendon loops.

Some slight difficulty arises from the fact that whereas, under normal conditions, complete flexion of the fingers occurs after only one and one half centimetres of shortening of the muscles concerned, with the prosthetic apparatus now in use four to six centimetres of shortening is required. Nevertheless, sufficient motion is obtained to enable the artificial hand to grasp objects. The chief drawback lies in the efficiency or useful effect of the apparatus itself when connected with the tendons. In the case of the hand, all but five to ten per cent. of the muscular power originally put forth is lost by

the time the artificial fingers are reached. The procedure is sufficiently effective to permit of holding a pen, fork, or cigarette or doffing the hat, but work requiring the exertion of greater force cannot as yet be performed, at least in the case of the forearm. In one case of arm amputation, however, enough power was afforded to hold a heavy steel clamp and perform a considerable amount of useful work. Much of the original power is wasted in adaptation of the apparatus upon the stump at the start of each movement. Flexibility, prehensile friction surfaces, cooperation of opposed muscles, and tonicity are all far inferior to those of normal motor action. On the whole, the method may be said to be still in its incipency. The chief desideratum at present is more efficient prosthetic apparatus.

A Simplified Method for the Detection and Estimation of the Distribution of Morphine.—Sergius Morgulis and Victor E. Levine (*Journal of Laboratory and Clinical Medicine*, February, 1920) describe a method of detecting morphine in food, tissues, or body fluids, which consists in heating with two per cent. tartaric acid (if solid, the material should first be ground or finely minced) to convert all morphine into the soluble tartrate, and then rapidly cooling the mixture, preferably on ice, to solidify the fatty material. The solid residue is then removed by straining through cheesecloth, and washed until the washings are no longer acid to litmus. After the liquid is filtered through paper it is evaporated to a pasty consistency. The tartrate is then decomposed by the addition of an excess of solid sodium bicarbonate which sets the alkaloid free. The evaporation is then continued to complete dryness, the mass powdered and extracted with chloroform to remove the free morphine. The volume of the chloroform extract is noted, and the smallest quantity of the extract is found which on evaporation (in a porcelain crucible over the water bath) leaves a residue which yields a definite morphine test. In this way it is possible to determine the relative amounts of morphine in several extracts; besides, knowing the limit of sensitivity of the reaction an approximate estimate of the amount of morphine in the original sample is possible. The various alkaloidal tests can be applied to the residues after the evaporation of portions of the chloroform extract. Selenium dioxide, dissolved in sulphuric acid, is very sensitive towards the opium alkaloids. While the limit of sensitivity for morphine may be regarded as 0.005 mg., for practical purposes the smallest amount that can be detected as morphine with this reagent is 0.01 mg.

Experiments on rabbits showed that the morphine was widely distributed through the body, whether the morphine was given by mouth or subcutaneously. With the former method of administration especially large amounts of morphine were found in the alimentary tract and excretory organs, while after subcutaneous injection it was recovered principally from the liver, excretory organs, and from the lungs and brain. The authors believe that it is not wise to limit the toxicological examination for morphine to the alimentary tract, and that at least an examination of the kidney, urine, and liver should be done.

Urticarial Attacks Resulting from Administration of Emetine.—R. Savignac and A. Alivisatos (*Paris médicale*, January 10, 1920) report the case of a man aged forty-two years who had repeated attacks of urticaria following intramuscular injections of emetine hydrochloride. The patient had never had urticaria before. For the seven months during which he was under treatment, the eruption was constantly of the same nature, consisting of large, elevated, sharply margined patches from the size of the palm to that of the entire lateral aspect of the thigh. The outer portions of the patches were bright red and hot; the centre paler. When involving the hand, they caused it to swell to twice its ordinary size. Soft, extensive edema of the scrotum or penis also sometimes resulted. The eruption over definite areas disappeared in one day and then appeared elsewhere. Only the limbs and genitals were ever affected. Usually the eruption appeared rather close to the site of injection of the drug. Some degree of symmetry was noted in that the eruption often jumped from one thigh or arm to the opposite thigh or arm from one day to the next. The usual predilection of emetine for the nervous system was manifested in a toxic neuritis of the right radial and circumflex nerves. A long period often elapsed between the termination of a series of injections and the appearance of the eruption, e. g., two weeks in one instance, and even five months, at the time the treatment was finally stopped. This peculiar feature was accounted for by the slow elimination of the drug, emetine being still found in the urine three months after treatment.

Indications for the Spinal Bone Graft in Pott's Disease.—Jacques Calvé (*Presse médicale*, January 7, 1920) disapproves of the Albee and Hibbs procedures in the treatment of Pott's disease in children on the ground that callus cannot form to replace the collapsed bodies of the diseased vertebræ at the point of kyphosis after the spine has been forcibly straightened, and that the bone graft, placed on the dorsal aspect of the spinal column, will later inevitably give way, either by breaking, if it is weak, or gradual bending, if it is strong. This second cause of failure is actually operative in nearly all cases in which the operation is performed, and when once the graft has yielded, it serves merely to keep up the deformity and hampers the orthopedic treatment. The latter treatment should, therefore, be utilized from the start, the fact being borne in mind that these patients are tuberculous and should receive the customary treatment for that disease by open air, preferably at the seaside, sunlight and generous feeding. After the third year of treatment, if repeated x ray examinations show that bone absorption has been arrested, and especially if the patient is an adolescent, secondary bone grafting may be resorted to as an auxiliary support to the process of spinal solidification already carried out spontaneously by the body. In adults with Pott's disease, spinal grafting is as strongly indicated as it is contraindicated in children. Complete restoration is no longer possible in such cases, the affected vertebræ are far less easily destroyed than in childhood, and compensatory changes in the posterior portion of the spinal column take place only to a limited de-

gree. In these patients the Albee procedure is indicated where the lumbar, lumbosacral, or dorso-lumbar region is involved. In the dorsal region, however, the Hibbs method is theoretically preferable but sometimes fails to yield bony union at the precise point of kyphosis, though yielding union above and below. The author, with Galland, therefore uses a modified technic in which the spinous processes are removed by oblique saw cuts and the underlying laminae split by oblique sawing down to the bases of the transverse processes and bent out laterally. This is done over the diseased vertebræ and over two normal vertebræ above and below, thus affording a broad open bone surface with means for fixation of the bone graft on either side. A soft graft is then obtained from the patient himself and fastened in place. The spinous processes previously removed are cut into small pieces and these distributed over the whole length of the graft.

Anterior Drainage and Discontinuous Irrigations in Empyema.—Bérard and Dunet (*Lyon médicale*, February 10, 1920) call attention to the fact that empyema patients often assume the sitting or semisitting posture to allay dyspnea. Since such patients are not kept in bed until complete recovery, the proper point for draining the pleura is not situated posteriorly, but in most instances anteriorly to the midaxillary line, at the tenth rib. As anatomical studies showed that the lowest point varied somewhat in different individuals, the authors began by making the customary posterior incision in the eighth or ninth interspace, without rib resection. After evacuation of pus the pleura is explored through the incision with the finger or long forceps, and the exact point for drainage at the lowest possible level ascertained. Often the low point is found anteriorly or anterolaterally, though sometimes, owing to adhesions or individual variation, it is in the midaxillary line. A second pleurotomy, this time with rib resection, is now made at the proper point and residual pus and false membrane removed with gauze mounted on forceps. A large drain is then placed in the anterior opening and two Carrel tubes introduced posteriorly. Where no oozing of blood into the pleural cavity follows, irrigation is begun on the next day and repeated every three hours with 150 to 200 mills of fluid, e. g., one in 1000 potassium permanganate or silver nitrate. The irrigation is continued until the purulent secretion is replaced by serous fluid; this usually takes eight to twelve days. The Carrel tubes are then removed but the anterior drain left in for small reverse irrigations during the dressings. A smaller drain is substituted at each dressing, and finally the drain omitted entirely when the pleural discharge has become limited to that of the anterior parietal tract. To promote chest expansion the patient is allowed out of bed as soon as the temperature descends below 38° C. Under these conditions the pleural cavity has already been reduced and evacuation of pus and of the irrigation fluid takes place satisfactorily. Appetite returns and the condition is cured in twenty to thirty days, or even less. The authors report a case of staphylococcic empyema closed in fifteen days and a streptococcic case closed in eighteen days.

Miscellany from Home and Foreign Journals

Observations on the Active Principles of the Pituitary Gland.—H. W. Dudley (*Journal of Pharmacology and Experimental Therapeutics*, December, 1919) describes a method of preparing crystalline residues, very active physiologically, from extracts of the posterior lobe of the pituitary. Powdered infundibulum is extracted with acidulated water, the solution treated with colloidal ferric hydroxide, and the filtrate extracted with butyl alcohol at reduced pressure. The pituitary uterine stimulant and histamine are not identical, but are two distinct chemical substances. The former is readily extractable from acid solution by butyl alcohol at reduced pressure, while histamine is but slowly thus extracted. It is rapidly destroyed by normal sodium hydroxide at room temperature, while histamine is not. It is rapidly destroyed by trypsin, which does not act on histamine, and is insoluble in boiling chloroform, in which histamine dissolves. The pituitary uterine stimulant is more readily extracted from acid solution than the pressor principle of the pituitary.

Functions and Diseases of the Endocrine Glands.—Clarence O. Cheney (*The State Hospital Quarterly*, February, 1920) gives a résumé of the bearing of the glands of internal secretion upon the study of neurology and psychiatry. It had been found that they were supplied by the vegetative nerves and connected indirectly with the central nervous system. The thyroid gland, with its diseases, is discussed. A complete list of the symptoms of Basedow's disease is given, as well as the various methods of treatment that have been attempted. Myxedema is then described. The treatment for cretinism is given by thyroid gland, the results of which have varied. The author believes that endemic cretinism and goitre have a common origin. The parathyroids seem to control calcium metabolism and in this way regulate nerve cell activity. Their removal causes death. The effect is less prompt if the thyroid is removed at the same time. It is not believed that true myotonia is caused by parathyroid insufficiency as the symptoms of tetany are not present in myotonia. Epilepsy and tetany may develop together, the result, it is said, of the irritation of the cortex and subcortex. No constant or definite changes are found in the parathyroids of epileptics. The results of parathyroid feeding in diseased conditions of the parathyroids are uncertain.

In regard to the pituitary, in spite of the enormous literature little uniformity prevails as to the pathogenesis of the various clinical pictures concerned with this gland, principally because of the lack of knowledge of its functional significance. This lack rests on its relative inaccessibility, and on the fact that there are two organs intimately bound together, each prone to be affected by disease of the other because of their being held together in a rigid skull. A complete clinical picture of acromegaly is presented, the treatment of which is principally surgical, there being no specific medicinal therapy. Complications of thyroidism or myxedema are treated, in the same manner as are these diseases.

Hypopituitarism is described as a condition of fat accumulation in various parts of the body, such as is found in eunuchs. The metabolism is generally sluggish and the temperature subnormal. The mental state is characterized by restlessness and a psychosis may develop. No definite conclusions are given in regard to the pineal gland. The principal disease of the adrenals is Addison's disease which is supposed to be caused by an adrenal deficiency in the function of the adrenal medullary apparatus. This is shown by a lowered blood pressure, great weakness, low sugar content in the blood, pigmentations of the skin, and other well known clinical signs. The picture of hyperfunction of the adrenals is not a clear one at the present time. The function of the pancreas, the sexual glands in the male and the female, the thymus, and pluriglandular diseases are also discussed at some length.

Josserand's Sign as a Forerunner of Rheumatic Endopericarditis in Children.—Mouriquand and Lamy (*Lyon médical*, February 10, 1920) have recently seen three cases of mild articular rheumatism or chorea presenting Josserand's sign during and even before endopericardial complications. One patient, a girl of twelve years, first had mild pains in the hip joints and left shoulder, then torticollis. The temperature rose repeatedly to 38° or 39° C. Eight days later the heart examination, previously negative, elicited Josserand's sign, viz., muffling of the first sound at the apex and a very loud, sharp second sound at the pulmonic area. Sixteen days after, fever and slight torticollis recurred and heart examination for the first time revealed a marked to and fro pericardial rub at the base. Subsequently this friction sound extended over the entire precordium and muffled the sharpness of the second pulmonic. The Josserand sign seems of great value as an indication of oncoming endopericarditis, probably more so in the child than in the adult.

Heat Coagulation of Milk.—H. H. Sommer and E. B. Hart (*Journal of Biological Chemistry*, November, 1919), in order to obtain an explanation for the difference in the coagulating points of different milk samples, studied the following factors: titratable acidity, hydrogen ion concentration, concentration of the milk, and composition and balance of the milk salts. The titratable acidity varied from 0.102 to 0.257 per cent., and in forty-five of eighty-six samples was above 0.18 per cent., above which all milk is rejected for condensing. In fresh milk no relation exists between titratable acidity and the coagulation point. The hydrogen ion concentration was also found not to be the determining factor in the coagulation of milk, but it is important, for if the reaction of the milk is changed by adding acids, the coagulation point is lowered so that it may be a factor in commercial milks. The concentration of casein and of the serum may partly explain the differences in the coagulating points of milk samples, but the main determining factor seems to be the balance of calcium, magnesium, citrates, and phosphates.

Exotic Diseases and Rural Prophylaxis.—Fernand Barbary (*Bulletin de l'Académie de médecine*, December 30, 1919) asserts that while sufficient attention has been paid in France to public measures for the prevention of malaria propagation through infection of anopheles mosquitoes by soldiers returning from the Balkans, the possibility of transmission of dysentery due to bacilli, to *Balantidium coli*, to lamblia, to trichomonas and especially, the pathogenic ameba, has been unduly neglected. Numerous cases of these varieties have already come to light among persons who had never left France. The author has personally found ameba cysts in four adults treated for enterocolitis and lamblia cysts in a child of eight years. He has also met with two cases of kala azar and two cases of bronchopulmonary spirochetosis—the latter admitted to a hospital as tuberculosis suspects. In large cities, with waterclosets communicating with sewers generally available, the chances of transmission of intestinal parasites are relatively slight; but in country districts, where opportunity is offered for the rain to wash excreta through the soil and into streams, children may readily become infected indirectly while playing. The village fountain where clothes are washed in common is also a source of danger. Convalescents formerly in military service may disseminate infection without any one in the locality being aware of the existing danger. Barbary outlines the individual and collective prophylactic measures which should be taken to prevent the spread of exotic diseases. Dysenteric cases should be detected and given free treatment. Special dispensary facilities and clinics should be arranged for the treatment of these cases—if necessary, by men who have already had experience with them in the army. Circulars, posters and conferences should be availed of in rural communities to instruct the public concerning these diseases, their modes of propagation, and the means of prophylaxis.

Experiments on the Nasal Route of Infection in Poliomyelitis.—Simon Flexner and Harold L. Amoss (*Journal of Experimental Medicine*, February, 1920) state that monkeys differ considerably in their power to withstand the virus of poliomyelitis when it is energetically applied to the mucous membrane of the nose. Some animals possessed a striking power of destroying or eliminating the virus. The nasal membrane is regarded as a valuable defensive mechanism, and experiments were carried out to decide whether the application of antiseptics to the nasal mucosa is to be recommended as a preventive measure against poliomyelitis. The results of the tests with chloramine-T and the oily solution of dichloramine-T showed that the application of antiseptics is of doubtful value, and may even do harm by affecting the natural destructive properties of the nasal mucosa. The authors were able to block or prevent infection with the virus of poliomyelitis applied to the nasal mucosa under very favorable conditions to its occurrence by the injection of poliomyelitis immune serum into the blood. They consider it likely that the meeting place of the virus and immune serum is in the subarachnoid space.

Five Cases of Poisoning by Nicotine.—William D. McNally (*Journal of Laboratory and Clinical Medicine*, January, 1920) reports five fatal cases of nicotine poisoning, the first three of which occurred in men working in greenhouses who drank an insecticide containing nicotine, mistaking it for whiskey. The other two cases were in men who drank from the same whiskey flask; both had a sensation of choking, dropped to the floor gasping for air, and died within five minutes. Autopsy three hours after death showed intense hyperemia of all the organs, and much congestion of the stomach, which had the odor of alcohol. Chemical examination of a volatile distillate of 200 grams of stomach and content showed 0.4465 grams of nicotine, making a total of 0.7702 grams in the whole organ. From 115 grams of the second stomach 0.8673 grams of nicotine was recovered, or 4.9609 grams for the entire organ. Examination of the whiskey flask showed a light brown colored liquid, strongly alkaline, with the characteristic odor of stale tobacco smoke, a volatile distillate of which gave 39.84 per cent. of nicotine. McNally reviews the fatal cases in the literature and describes methods for the identification of nicotine.

Physical Signs and X Ray Indications in Latent Tracheobronchial Adenopathy.—P. F. Armand-Delille (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, November 27, 1919) reports three cases in which he had opportunity to correlate autopsy findings with careful physical and x ray examinations during life. All three patients died of tuberculous meningitis, but their chests had been examined during incipency of the latter. In the first case the stethoscopic signs and x ray study alike indicated a marked enlargement of the lymph nodes at the right hilum, and the autopsy confirmed the diagnosis. In the second case, auscultation and x rays were negative on the right side but the rays indicated lymphatic involvement at the left hilum, which was confirmed post-mortem. In the third case, no clear cut auscultatory signs at the hila were elicited, but the x rays yielded small shadows predominating in the vicinity of the left bronchus, which the autopsy confirmed. There was also found postmortem a dense, circumscribed tuberculous infiltration at the anterior cords of the lung, which the stethoscopic signs had shown but which had not appeared clearly upon posterior radiography. The conclusion reached is that in the case of large lymphatic masses at the right hilum stethoscopic study in the interscapulovertebral region and radioscopic are alike serviceable in demonstrating the condition. In the presence of smaller, deeper nodes, or nodes on the left side, the x rays are alone capable of demonstrating them. They occur as rounded or oval shadows, generally well defined, which have nothing to do with the dark bands formerly emphasized as a result of the earliest x ray studies. On the whole, the stethoscopic examination is of marked diagnostic value, but should be confirmed by the x rays. The latter may at times alone permit of the detection of limited involvements of deep lying glands, but its results should be correlated with the general condition and other pathological evidences presented by the patient.

The Effects of Malt and Malt Extracts on Scurvy and the Alkaline Reserve of the Blood.—J. F. McClendon, W. C. C. Cole, O. Engstrand, and J. E. Middlekauff (*Journal of Biological Chemistry*, December, 1919) fed sprouted barley to one lot of guineapigs and rabbits and dry barley to a second lot. The animals fed on sprouted grain lost little if any weight and on autopsy none showed any scurvy symptoms, while the group fed on dry grain all showed hemorrhages characteristic of scurvy. The alkaline reserve was determined in a number of animals. Acidosis was found to have nothing to do with scurvy. The authors state that the antiscorbutic substance in sprouted grain is not destroyed by heating to 70° C. to gelatinize the starch, and that the antiscorbutic substance may be extracted from sprouted barley after it is crushed between steel rolls that are so close together that the cells of the acrospire are crushed.

A Bacteriological Study of Egg Powders.—Sartory and Flament (*Bulletin de l'Académie de médecine*, January 6, 1920) obtained three brands of egg powders from grocery stores and upon bacteriological examination found a variety of aerobic germs in each. These comprised two varieties liquefying gelatin, viz., the *Staphylococcus citreus* and a lactic ferment micrococcus, and two non-liquefying organisms resembling the enterococcus. *Bacillus subtilis* was abundantly present, and there were also found an organism of the *Bacillus coli* group and a proteolytic and saccharolytic organism differing from the colon bacillus in that it elaborated a light yellow pigment and only slowly liquefied gelatin. The authors conclude that while powders made from fresh eggs should, theoretically, be sterile, the egg powders now on the market are markedly contaminated during the process of preparation. Use of such powders is particularly attended with risk in the making of dishes in which heating to the boiling point is unnecessary.

Hemostatic Properties of Thromboplastic Agents under Different Conditions.—P. J. Hanzlik and C. M. Weidenthal (*Journal of Pharmacology and Experimental Therapeutics*, October, 1919) found that the hemostatic effects in superficial hemorrhage from the dog's pad, although limited and variable, tended to agree, in general, with the power of the same agents to accelerate coagulation of blood and plasma *in vitro*. The thromboplastin and kephalin were among the most active agents, followed by saline solution and coagulen and hemostatic serum as either inactive or doubtful. Application of thromboplastic agents to bone and liver wounds in a dog gave unsatisfactory results. Hemorrhage *per se* at intervals from arteries of dogs markedly and promptly shortens the coagulation time of the blood. Administration of four grams of kephalin by mouth to a patient with hemophilia and suffering from a troublesome intestinal hemorrhage was followed by prompt stoppage of the bleeding with shortening of the coagulation time and bleeding time of ear blood. This is not interpreted, however, as due necessarily to the kephalin, as bleeding in this patient was known to have stopped spontaneously before the treatment.

Rupture of the Abdominal Aorta.—Devic and Lamy (*Presse médicale*, December 17, 1919) record the case of a man aged fifty-three who was admitted to a hospital with violent attacks of lumbar and abdominal pain, radiating to the inguinal regions. There was no evidence of syphilitic infection, the vascular system seemed normal, and there were no signs of incipient tabes. Lumbar puncture revealed marked cerebrospinal hypertension and lymphocytosis. The attacks of pain recurred frequently during three weeks, and one night the patient died suddenly without making any outcry that might attract attention. At the autopsy an extensive recent clot, occupying all the subperitoneal cellular tissue was found. On the posterior aspect of the aorta, midway between the celiac axis and the bifurcation, was a transverse rent in the vessel at the site of an atheromatous plaque. Rupture had occurred in two stages, a false aneurysm of the size of a mandarin orange, with incipient fibrous deposits, having first formed, and secondary rupture followed, causing immediate death. Many atheromatous plaques were found at other points in the aorta. Examination of the other abdominal structures was negative. An unquestionable syphilitic origin of the atheroma was shown by microscopic study, in spite of the absence of all history of the disease. The severe pains experienced are presumed to have been due to irritation of the solar plexus.

Etiology of Thrush.—Aldo Castellani (*Journal of Tropical Medicine and Hygiene*, January 15, 1920) points out that thrush is not caused by one species of fungus only, viz., the so-called thrush fungus or *Oidium albicans*, but by a number of different fungi, some of which are botanically very far apart from one another, belonging to separate species, genera, and families. The term thrush in reality covers a group of clinically similar conditions. Two principal types may be clinically distinguished—the white or gray white type, extremely common, and the yellow or yellow brownish type, of rare occurrence. The genera of fungi which the author cites as being responsible for thrush comprise *Monilia*, *Oidium*, *Hemispora*, *Willia*, *Endomyces*, and *Saccharomyces*. The yellowish type of thrush is caused by *Monilia zeylanica* and *zeylanoides*, *Oidium rotundatum*, and *Hemispora rugosa*. The white type is caused by a large number of different species of *Monilia*, by *Oidium matalense*, and by fungi of the other genera above mentioned.

Combined Tumors of the Kidney in Adults.—Frank B. Berry, (*Journal of Medical Research*, September, 1919) describes three cases which he regards as being true combined tumors of the kidney. The first occurred in a female, forty-three years old, and contained the elements of a fibrosarcoma and of an adrenal cell carcinoma. The second was in a female aged thirty-five and consisted of a fibrosarcoma and a papillary adenocarcinoma. The third was in a man seventy-two years old and was a combination of an adrenal cell carcinoma and leiomyosarcoma. The histories of the cases and complete pathological findings are given, as well as a discussion of the origin of the tumors.

Proceedings of National and Local Societies

AMERICAN LARYNGOLOGICAL SOCIETY.

Forty-first Annual Meeting Held in Atlantic City, N. J., June 16, 17 and 18, 1919.

The President, Dr. CORNELIUS G. COAKLEY, of New York, in the Chair.

(Continued from page 616.)

Diagnosis and Treatment of Laryngeal Tuberculosis.—Sir ST. CLAIR THOMSON, in answer to queries regarding the symptoms upon which he depended for the diagnosis of tuberculosis of the larynx, said that he had not enlarged on the subject of diagnosis because it was rather a large subject to enter into, and he could only say that the chief thing in diagnosis was the skilled eye of the diagnostician. It was not only the conditions but the slight changes of these conditions with progress or temporary improvement. Briefly, pallor was a suggestive thing, whether pallor of the soft palate or of the epiglottis and larynx generally, though, on the other hand, particularly among men and among elderly subjects, congestion might be met with. He also compared very carefully the two sides of the larynx, because if there was a congestion or a catarrh or a thickening, such as a syphilitic infiltration, it was more likely to be more or less evenly disposed on both sides, whereas, where if it was on one side, it was much more suspicious of tuberculosis. The favorite spot to find an early tangible sign was just above the vocal process, hidden to a great extent because it was low down on the laryngeal surface of the arytenoid, just where the arytenoid and the vocal process joined one another. Sometimes, of course, there was a change of voice, but he had records of a considerable number of people who had no complaint of the larynx, whose voice was not changed, and yet who had distinct tuberculosis.

As to the treatment, the keynote of this was to a great extent masterly inactivity. He said he was quite opposed to all the violent surgery of the larynx in tuberculosis, from which we had suffered chiefly through the work of Heryng of Warsaw and others many years ago. In the case of these poor people that take years to die, it was impossible to herd them all into sanatoria. The thing was financially impossible. They must be sheltered as well as possible for the remaining years of their life, and in such patients to restore the voice was a very valuable thing. Rest was the first thing. The first treatment was the sanatorium, not only because the principles of sanatorium life were good, but because in the sanatorium the patient was not subject to the temptation to talk. He said that he generally amputated the epiglottis with punch forceps if the dysphagia was keeping the patient from rest or dragging him down. But even there he found the use of the galvanocautery had lessened the frequency of amputation of the epiglottis. He had given up lactic acid; practically all chemical caustics were found to be ineffective compared with the galvanocautery. It was the one treatment, not only for ease but for cure.

Leucoplakia of the Larynx.—Major NORVAL H. PIERCE, of Chicago, said that the disease as it occurred in these regions was rare, and for that reason he had availed himself of the privilege of reporting the two following cases:

G. DeV., male, aged sixty-three years, a composer of music and a vocal teacher, consulted Doctor Pierce because of a hoarseness which appeared whenever he used his voice in vocalization. He was a vigorous, well preserved man, and at the time was not at all hoarse. Laryngoscopy showed a large larynx, the interarytenoid space and vocal processes being normal. In the middle of the left vocal cord was a pearly white patch about a fifth of an inch long. Laterally it extended from the border of the left false vocal cord to the edge of the true vocal cord, over which it projected in a finely serrated manner. The anterior and posterior edges of the patch were square, but had a frayed appearance. There was no interference with movement of the cord. The rest of the cord was slightly more hyperemic than the right, which might be classed as of the brunette type. Considering the man's age and the laryngeal picture, malignancy was suggested. The patient was advised to use his voice as little as possible, and was requested to report from time to time for observation. This he did for a period lasting over five years, and no striking change occurred in the appearance of the disease other than that he occasionally coughed up a small piece of membrane. He was never able to save this, so that it could be examined, but after such an occurrence the patch was distinctly less white in appearance. Here there was a periodical desquamation of the outer layers of epithelium.

A. B., male, aged fifty-seven years, American, grain operator, used tobacco and spirits liberally. Consulted Doctor Pierce in consequence of hoarseness. The laryngoscope revealed a pearly gray patch about a quarter of an inch long on the middle of both vocal cords, the edges of which were irregular. The cords themselves were pink and distinctly thickened. The mucosa over the vocal processes was thickened, but there was no visible pitting. The movements of the cords were normal. He was advised to abandon floor trading, and the usual treatment for chronic laryngitis instituted. The inflammatory condition subsided and his voice, though cloudy, lost much of its hoarseness. The patches remained unchanged. During the course of three years he had many relapses. After an unusually severe relapse he returned with the information that he had decided to go to California and give his voice a long rest. The appearance of his larynx at this time was distinctly alarming. The cords were more thickened, the edges more grossly irregular, but the patches were unchanged or only slightly increased in area. He complained of a sense of discomfort in his throat. After some months' stay in California, he returned. He could speak only in hoarse whispers. There was dyspnea on exertion. The laryngoscope disclosed two tissues replacing the vocal cords with coarsely granular

surfaces, pinkish white in color, and so large as to leave only a small chink between them in the middle line. The process had been diagnosed malignant from pieces removed. He had been advised to have the growth removed by the direct method. Doctor Pierce had disagreed with this opinion, his reasoning being: If the growth was malignant, nothing short of a total laryngectomy could save him. If it was not, laryngofissure provided a more exact method of removal than direct laryngoscopy. The subsequent history of the case justified this view. The patient was tracheotomized, the larynx was opened, the growth removed, and immediate frozen sections confirmed its nonmalignancy. Radium was placed in direct contact with the cut surfaces within the larynx on several days, after which the larynx was closed. There had been no recurrence.

While in the first case there was no histological confirmation, the diagnosis of leucoplakia was sufficiently assured by the laryngoscopic appearance and clinical course of the affection. The desquamation feature in the cases that had occurred in regions other than the outer arytenoid regions was interesting. In the larynx, however, they formed a source of irritation during the process of exfoliation and were forcibly projected into the mouth. It can readily be imagined that if the patient was first seen at the moment when the desquamation was occurring that factor might add to the difficulties of a differential diagnosis. This was true when the process affected the lower margins of the cords.

The change in type which occurred in the second case from pachydermia planus to pachydermia verrucosa was interesting. The change was very simple and consisted in the ingrowth of the epithelial elements; an increase of the connective tissue elements might be accounted for by the activating influence of whatever agency caused the original disease.

The method of approach in dealing surgically with such conditions as the second case illustrated might furnish just ground for difference of opinion. It was Doctor Pierce's opinion that where extensive disease of the interior of the larynx necessitated removal, laryngofissure was preferable to indirect or direct endolaryngeal methods, because it gave greater liberty of movement, greater visibility, was more rapid and was quite as safe.

Discussion.—Dr. HARMON SMITH, of New York, said that Doctor Pierce's paper recalled to his mind a patient whom he had under observation a number of years ago. A man about fifty years of age, an inveterate smoker, had gradually become hoarse, the hoarseness extending over a period of several months. His wife was a sufferer from pulmonary tuberculosis and was in a private sanatorium at Saranac Lake. During a visit there he consulted a laryngologist who was in attendance upon his wife, and the association of the conditions led this specialist to suppose that the epitheliomatous looking growth on the vocal cord was tuberculosis. Heroic treatment was begun by curetting the cord and burning it with lactic acid. There were never any physical signs of tuberculosis of the lungs; no abnormal temperature, and nothing other than the laryngeal condition to cause one to suspect tuber-

culosis. During the period of treatment the patient consulted Doctor Smith, who expressed the opinion that it was not tuberculosis, but possibly a mucous patch. It was reported that the patient ultimately died of carcinoma of the larynx.

Doctor Smith said that he believed all cases of leucoplakia were the beginning of an epithelioma. In other words, piling up of the epithelium was an epithelioma, and it depended on the progress of this epithelium dipping down and its invasion of underlying structures, which were not its natural environment, for it to become malignant. Malignancy *per se* was only a relative term, and the microscope could not determine the virulence of malignancy. The picture in the microscope would be the same for the specimen of a carcinoma of the larynx, whether the patient died in eighteen months or in twelve or fourteen years, so that prognosis based upon microscopic findings was unreliable. Leucoplakia, if left alone or treated gently, would continue for years without rapid progress or great detriment to the patient, but if curetted or cauterized would become more readily malignant and instead of remaining quiescent would become riotous and rapidly invade the surrounding structures.

Dr. HENRY L. SWAIN, of New Haven, said that he remembered the case that Doctor Smith had mentioned. He thought it was a clear case of charlatanism and that that man had been traumatized into the epithelioma which subsequently developed in his larynx. It was a case of overtreatment, carried on through a long period, and he was glad that Doctor Smith had happened to remember it.

Dr. NORVAL H. PIERCE, of Chicago, said that he believed Sir St. Clair Thomson had reported a case of so-called desquamative leucoplakia, and the question of leucoplakia of the larynx had been subject on several occasions to discussion before the Royal Society and they would like to hear from him on this subject.

Sir ST. CLAIR THOMSON said that he had watched these leucoplakias for months and sometimes years, and in no inconsiderable number of cases they had eventuated as epithelioma. There was one celebrated case in the annals of the association in which there was a white appearance as of leucoplakia which proved to be epithelioma, although it took thirteen years. Even if this leucoplakia was removed, the patient should be warned. The patients, finding a recurrence of their hoarseness two, three and four years afterwards, do not go back to the same man—they come to Sir St. Clair Thomson, perhaps his patients go to somebody else. Because he knew more about malignant disease than about leucoplakia. In the back of his mind in all cases of leucoplakia was probable malignant disease.

Dr. D. BRYSON DELAVAN, of New York, said that he had only one thing to say, and that was to call attention to the fact that in the treatment of the case reported, after the removal of the diseased area, radium was applied. He believed that the postoperative treatment in such conditions was going to be a very important thing in the future.

Doctor Pierce said that it must be remembered that leucoplakia might accompany tuberculosis and syphilis, as well as malignant disease.

Brain Abscess Dependent Upon Empyema of the Frontal Sinus.—Lieutenant Colonel THOMAS J. HARRIS, of New York, reported the case of a man, aged twenty-six years, who was admitted to the eye ward of General Hospital No. 14, on September 10, 1919, suffering from a swelling of the right eye. Both lids were swollen and the conjunctiva congested. Vision 20/50 in each eye. The swelling occupied chiefly the outer third of the orbit. No pain was complained of. The fundus was normal. Examination of the nose showed pus high up on the affected side. Irrigation of the antrum brought away pus. There was a deviation of the septum to the right. A diagnosis of pansinusitis on the right side was made, which was confirmed by x ray pictures. An intranasal operation for correction of the septum to secure better drainage was advised but refused. The patient spoke slowly and with a distinct drawl. As a result of local treatment the swelling for a time improved. At the end of a month, however, it had increased to such an extent that the eye was closed. Under threat of court martial the patient finally consented to operation. A radical Killian operation was performed. A large defect was found in the posterior wall of the sinus, together with extensive necrosis in the anterior wall. The dura did not appear to be affected. The wound was only partially closed, and a drainage tube was introduced. Convalescence was slow. Complete healing had taken place only toward the end of January. It was then noticed that the patient's eyesight had been rapidly failing during the last few days. A test of his vision confirmed this and an examination of the fundus revealed two diopters of neuritis. Careful palpation of the operated field showed a soft, apparently fluctuating mass. The temperature and pulse were normal. There was no paralysis. A diagnosis of brain abscess was made, which was confirmed by the neurologist.

(To be continued.)

Letters to the Editors.

NO PHYSICIAN NOR SURGEON IN THE HALL OF FAME.

NEW YORK, March 31, 1920.

To the Editor.—Soon there will be the fifth quinquennial election to the Hall of Fame. The first took place in 1900 immediately after the funds had been given unanimously for the building of a permanent monument to the men and women who had contributed most to the nation's wellbeing and culture. According to the constitution drawn up at the time, it was agreed that at the first election fifty national figures in art, science, and history should be chosen and that thereafter five were to be added every five years.

The method of procedure in placing a man or woman's name on a tablet in the Hall of Fame is such as to allow no question or doubt as to the person's eligibility. The senate of the New York University, which is made up of the dean and the senior professor of each of the university schools,

with the presidents or other representatives of each of the great theological schools in or near New York city, chooses the electors. There are a hundred of these. Every State in the Union is represented by at least one man. These hundred men are chosen by virtue of their eminence in some branch of national culture. They fall into seven main divisions: Authors, presidents of universities or colleges, scientists, professors of history, jurists, high public officials or men or women of affairs, and editors. When the names are sent in to the senate of the university they are considered on the basis of constitutional qualifications. Not the least important of these qualifications is the one requiring that the nominee must have been deceased at least ten years.

It is with delight that we see, I believe for the first time, the name of a physician among the electors, the chosen one being Dr. Charles H. Mayo, of Rochester, Minn. Perhaps this is a good omen and indicates that one of our own profession may at last be among the immortals. It is true that Oliver Wendell Holmes was a physician, but his name has been chosen for the Hall of Fame as belonging to Group I, authors, of which there are now fourteen; Group II are educators and number four; Group III, preachers and theologians, four; Group IV, philanthropists and reformers, three; Group V, scientists, five; Group VI, engineers and architects, none; Group VII, physicians and surgeons, none; Group VIII, inventors, four; Group IX, missionaries and explorers, one; Group X, soldiers and sailors, four; Group XI, lawyers and judges, four; Group XII, rulers and statesmen, eleven; Group XIII, businessmen, none; Group XIV, musicians, painters, sculptors, two; Group XV, eminent men outside of classes mentioned, none.

William T. G. Morton, the discoverer of ether anesthesia, had once been proposed under Group VII, but failed in the election. I do not know whether or not the constitution of the senate of the New York University permits a renomination. I hope there will be no barrier to renominating the "inventor and revealer of anesthetic inhalation, before whom in all time surgery was agony,"* of whom Sir William Osler speaks as follows in his *Man's Redemption of Man*: "On October 16, 1846, in the amphitheatre of the Massachusetts General Hospital, Boston, a new Prometheus gave a gift as rich as that of fire, the greatest single gift ever made to suffering humanity. The prophesy was fulfilled—neither shall there be any more pain; a mystery of the ages had been solved by a daring experiment by man on man in the introduction of anesthesia."

The next two greatest figures in American medicine and surgery are perhaps Ephraim McDowell and J. Marion Sims. McDowell performed the first rational and deliberate ovariectomy, which he did in 1809, and of course without an anesthetic; his patient living for thirty-two years after the operation. As is well known, J. Marion Sims (1813-1883) gained for himself a national and international reputation by his invention of the speculum as an instrument for the treatment of pelvic diseases in

*From a monument erected to his memory at Mount Auburn, Boston.

women and by his perfecting the plastic operation in the vagina for the relief of vesical fistulae.

The nominations must be sent in to the senate of the New York University, University Heights, New York city, before May 1st. Beside erecting the tablet in the Hall of Fame, the senate of the New York University is now considering collecting the works, where it is possible, of all the men and women who have thus been honored by the nation. They hope in this manner to create a valuable *Americana*, open for study and inspection.

I am sending this letter to as many of our American medical journals as possible, so that each and every American physician who has a just pride in his profession may do his share in seeing that a recognition to medical and surgical science, equal to that of other professions, is given at last. While there may be other great physicians and surgeons in the past generations who have distinguished themselves so as to be worthy to be classed with America's greatest, I venture to say none has surpassed the achievements of Morton, McDowell, and Sims. These were real pathfinders in science and added to human happiness and wellbeing and the glory of the American medical profession.

Let every American physician send one, two, or all three of these names to the above mentioned address of the senate of the New York University, stating that this is his choice of America's great men for the nomination for the Hall of Fame.

S. ADOLPHUS KNOFF, M. D.

MEDICAL JOURNALISM.

ROCHESTER, N. Y., March 27, 1920.

To the Editor.—Are physicians voiceless as a factor in public opinion? If so, why are they voiceless? These questions are asked because during the past ten years, and for time immemorial in lesser degree, medical men have seen important legislation affecting the practice of medicine and public health passed with scant attention to what medical men and medical organizations may think about it. Such has been the experience with compensation for workmen, compulsory health insurance, maternity benefits, factory regulations for the reduction of health hazards, laws governing the organization of health departments, and even laws governing the practice of medicine itself. Such, no doubt, will be the experience with laws regulating housing, and with invalidity, old age, and unemployment benefits.

The answer to much of this criticism is that these are, primarily, sociological and economic questions and unless the physician is willing to recognize this fact he can expect no special consideration from legislative committees. In other words, the physician must realize that medicine has sociological and economic aspects, as well as scientific. Turn to our recognized medical journals, and it is apparent at once that the scientific point of view predominates.

Medical opinion needs to be moulded and marshalled for united action in the interest of the profession. In America we have a wealth of medical journals which are adequate for the publication of all the original contributions to scientific medicine which may be offered for publication. We now

need State or local medical journals, preferably of weekly publication, which can mould the medical opinion of our communities. What is needed is journalism as exemplified by our great metropolitan dailies. Instead of a staff made up of men actively engaged as practitioners and specialists, there should be a staff of full time journalists. Instead of waiting for men to offer papers for publication, medical journals of this new type should determine what is the medical news of the hour and assign men of its staff to get and write up the news. Instead of the medical news of the day being crushed into a half column on the last page of our medical journals, let us have the medical news while it is still news, and treated with all the importance it deserves. Until such journals are provided, let the medical profession be ever so well organized, its influence must be dwarfed. Without such journals, medicine is without the machinery to express its opinion in a manner to be heard by the public at large. Let us have a few medical journals which will mirror for us the thousand and one medical interests which enter into the daily life of the practitioner, which will stimulate us to keep abreast of the times not only in scientific medicine, but also in medicine as it relates to industrial, sociological and economic fields.

WALTER C. ALLEN, M. D.

Births, Marriages, and Deaths.

Died.

BLAKE.—In Baltimore, Md., on Tuesday, March 30th, Dr. John D. Blake, aged sixty-seven years.

BROWN.—In Bayside, N. Y., on Friday, April 2nd, Dr. Augustus H. Brown, aged fifty-six years.

COOLEY.—In New Britain, Conn., on Friday, April 2nd, Dr. George Pitkin Cooley, aged ninety-one years.

CURTIS.—In San Pedro, Cal., on Sunday, March 14th, Dr. Charles C. Curtis, aged seventy-six years.

CROXALL.—In Aberdeen, Wash., on Friday, March 12th, Dr. Willard Young Croxall, aged fifty-one years.

DARE.—In Rising Sun, Md., on Wednesday, March 24th, Dr. George S. Dare, aged seventy-seven years.

DILLON.—In Fillmore, Cal., on Tuesday, February 16th, Dr. Jephtha Dillon, aged seventy-five years.

DODSON.—In Rochester, N. Y., on Wednesday, March 24th, Dr. John William Dodson, aged fifty-five years.

FERGUSON.—In Whitestone, N. Y., on Monday, March 15th, Dr. Ellen Brooke Ferguson, aged seventy-six years.

GELINEAU.—In Indian Orchard, Mass., on Saturday, March 27th, Dr. Ovilla Clement Gelineau.

KUNKEL.—In Westfield, Pa., on Wednesday, March 24th, Dr. Asaph Textler Kunkel, aged sixty-one years.

MARTIN.—In San Francisco, Cal., on Thursday, April 1st, Dr. William Martin, aged seventy-one years.

MORTON.—In Miami, Fla., Dr. William James Morton, of New York, N. Y., aged seventy-five years.

PACHALI.—In Reading, Pa., on Friday, March 26th, Dr. Theodore Pachali, aged seventy-three years.

RISLEY.—In Philadelphia, Pa., on Thursday, April 1st, Dr. Samuel D. Risley, aged seventy-five years.

SCHMAUSS.—In Alexandria, Ind., on Friday, February 27th, Dr. Leonard F. Schmauss, aged fifty-three years.

THOMPSON.—In New York, N. Y., on Saturday, April 3rd, Dr. George W. Thompson, aged sixty-five years.

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Original Communications

DENTAL INFECTION IN THE CAUSATION OF NERVOUS AND MENTAL DISEASES.*

BY CHARLES K. MILLS, M. D., LL. D.,
Philadelphia.

The subject for presentation is that of dental infection in its relation to various important diseases. The old question of focal infection in its etiological relations has recently received unusual applications. Dental infection in particular has largely interested the profession—and the laity also. This is not strange when the methods of advertising the views promulgated are considered. Its propagandists have advanced their views stoutly and with cheerful faith.

Fortunately the mind of the profession is tending towards a healthy discussion of the possible fallacies of this and of many other correlated and zealously exploited views, as, for instance, those regarding colonic infection. A few months ago (1) I took occasion to recall some of my experiences in neurological therapeutics and especially directed attention to various fads and fallacies which have come under my notice during several decades. These need not be recalled here. The criticisms were in some instances as much directed to myself as to my professional colleagues.

Perkinism and Burqism, the suspension treatment of locomotor ataxia, the various surgical treatments of epilepsy, craniectomy for the relief of idiocy and imbecility, nerve stretching, glandular therapy, and the rôle of dental infection in the psychoses and neuroses received reminiscent attention. Since the publication of this paper (1) other articles along similar lines have appeared showing that the profession is becoming alert in regard to such questions. One of the most interesting of these papers is that of Dr. Frederick Peterson (2), of New York. One point justly emphasized is that the medical profession, at present as in the past, has shown itself quite as credulous as the laity which it severely criticizes.

Let me, in the first place, say a few words about newspaper propaganda regarding causations and cures. Newspapers are sometimes potent for harm by playing upon the credulity of the public at large—lay as well as professional—through the

publication of articles of medical and surgical import. No doubt the public at times should be informed through the press on eugenic, hygienic, sanitary, and even therapeutic problems, in order that the health of the community may be better protected. Limits, however, should be set to such publications when they take the form of ill considered exploitation. Shortly after the death of Colonel Roosevelt, an article appeared in a Sunday edition of one of our Philadelphia papers and probably in other publications throughout the country, which illustrated one of the most dangerous forms of medical propaganda. The writer told the world that one of Colonel Roosevelt's teeth was the indirect cause of his death, accompanying the disquisition with a photograph showing the prominence of Roosevelt's teeth. The death of the colonel was said to have been directly due to a pulmonary embolism, weakening of the blood vessels which caused this affection having accompanied an attack of inflammatory rheumatism. The infection of a tooth dating back twenty years was stated to have been the original cause of the affections which resulted fatally. The strenuous life of Colonel Roosevelt, including his experiences in the jungles of Africa and especially in the wilds of South America, where he not only received severe injuries but was the victim of serious infection, was little, if at all, considered.

The writer proceeded to make the wholesale statement that thousands of persons die or are incapacitated yearly from maladies arising from infected teeth. Rheumatism, gastric and duodenal ulcers, mental and nervous diseases and other maladies were attributed to dental infection. Reference was made to thousands of dental offices, dental clinics in universities all over the land, schoolrooms, army camps, and institutions of correction from which flowed evidence proving that an infected tooth can cause more trouble in the human system than almost any other agency.

A series of cases supposed to be illustrative was cited. A rescued backward boy, whose brain was clouded to the point where he could not master the rudiments of knowledge, and a youth assailed with a lethargy at the age of fifteen, who afterwards became one of the most brilliant practising lawyers in the Middle West, were included, in both instances the marvelous results being due to the removal of an infected tooth. The soldiers of Italy and Austria were cited as more prone to rheumatism and infections of the heart, kidneys,

*Read before the Philadelphia County Medical Society, January 14, 1920, as an introduction to a symposium on The Role of Dental Infection in the Production of Disease.

and intestines than those of other countries simply because of their uncared for teeth. Bad food, bad sanitation, malaria, and many other causes of lowered vitality usually regarded as operative in these countries were not even mentioned. The supremacy of the American Army over the Germans was traced to the efforts of the dentists and the röntgenologists.

The writer of this unblushing article did concede many causes of insanity, but held that bad teeth were a contributory factor, which was probably the most conservative statement in the article. He continued, however, to discourse on the rescue of those deranged by way of the poisons of bad teeth. Devitalized teeth and crowned teeth came in for anathema, but I must leave the consideration of these matters to my dental confrères in this symposium. Presumably, from the reading of this article, most of the ills that flesh is heir to are attributable to dental infection.

Why should so much attention be given before a medical society to an analysis and review of a newspaper article? When one considers that such a contribution may be read by hundreds of thousands, or even a million readers, the reason for calling attention to it is clear. In dental and medical journals subjects of this sort may be discussed without harm because of the training and supposed capacity of readers of these periodicals. Credulity, however, as was stated at the beginning of this article, is one of the striking peculiarities of our race. The people may be sceptical in matters of religion, politics, or business, but are inclined to swallow almost any fallacy relating to the human organism, especially if it holds out to them hope of relief from some ache or pain or mental distress. Literally bushels of teeth of excellent quality doubtless have been sacrificed throughout our land as the result of the wide dissemination of this misleading article about Colonel Roosevelt.

In refreshing contrast to the newspaper screed regarding the death of Colonel Roosevelt is a paper by Dr. Percy R. Howe. The article calls for particular reference in connection with the paper on Roosevelt as in one instance, at least, it makes use of the same data to enforce exactly opposite views to those advanced by the lay journalist. The item to which I refer is only one of many which might be adduced to show how an erroneous hypothesis can be bolstered by the use of collected material. Reference was made in the Rooseveltian article to the fact that at the Forsyth Dental Infirmary for Children in Boston in 50,000 cases examined there were more than 40,000 abscessed teeth, often ten abscesses in one mouth. The newspaper writer, however, refrained from mentioning what Doctor Howe stated in his article that there was no record whatever of the most frequent and entirely obvious affection attributed to the teeth, such as arthritis deformans or rheumatism. Howe punctures many of the fallacies regarding the potency of dental infection in the production of systemic diseases.

Before quitting this aspect of my subject I might refer to a recent newspaper dispatch with regard to the production of serious diseases of the eyes through dental irritation and abscess. One of the

most distinguished of foreign ambassadors who has suffered for a considerable time from failure of vision and accompanying distress was reported to have received from an American ophthalmologist strong encouragement that he would obtain progressive relief, if not absolutely restored vision, through the treatment of an abscessed tooth to which his partial blindness was attributed. Every lover of his kind would be delighted to know such relief or cure had been effected in the way indicated or in any other, but just what the result has been in this case the public is not in a position to know. Even just what was said by the ophthalmologist cannot be assuredly indicated as I have not seen any endorsed statement regarding the matter, either in writing or as the result of an acknowledged interview. Here lies one of the great evils of newspaper reports on medical subjects. It does not matter whether a cure or partial cure was effected, or whether failure more or less complete has awaited upon the treatment prescribed, thousands of people accept the view that blindness or partial blindness has for one of its frequent causes an abscess at the root of a tooth.

The dispatch referred to failed to state what was in all probability true that the distinguished statesman had had critical examinations made and careful methods of treatment applied by ophthalmologists of his own country; in fact, at least by inference, the report was a severe criticism on the home physicians of the ambassador. Let us patiently await authorized information regarding therapeutic results, and let us trust that until such information is forthcoming the sufferers from defective vision will not have their teeth, good, bad, and indifferent, recklessly immolated by the exodontist.

Turning now to some of the more technical aspects of the question before us, let us consider for a moment one or two points regarding the part played by the x ray examinations in the determination of the presence of dental infection. I have frequently had my attention called by dental friends and others to the presence of what are designated as abscesses at the roots of teeth, these having been determined by x ray observations and indicated on the plates handed over to the dental surgeons and physicians. The argument for the removal of teeth has usually been based on these so-called abscesses. A röntgen ray investigation may show absence or less density of a part when compared with surrounding healthy tissues, as has been shown by Doctor Burr and myself in discussing the question of cerebral cysts. Such an observation, however, does not determine the nature of the part under investigation, but merely enables us to discriminate between areas of differing density. In a strict sense an abscess cannot be demonstrated by a röntgenological investigation.

This position is taken and is presented as a result of experimentation by Talbot (4). His paper which is largely experimental proves that the alveolar process goes through advancing conditions of absorption as the result of organic irritation, by wedging teeth or by using burs, and by injecting irritative liquids like, arsenic and glycothymoline.

The paper is highly instructive as showing how cavities can be produced with or without resulting infections.

The particular subject assigned to me is the question of dental infection in the causation of nervous and mental diseases, and to this I shall more specifically direct attention. Not fully believing in the theory on which the dental procedures are based, it is not likely that I have had the opportunity to study many cases which have been treated under my suggestion by the methods referred to in this contribution. Nevertheless, a score or two of cases have passed through my hands or have come to my knowledge in which important mental and nervous diseases have been attributed to dental infection. In these with the united support of physicians, röntgenologists, and dental surgeons, the teeth in small or large numbers have been removed with results not only so unsatisfactory but often so harmful as to impress me with the futility, if not the criminality, of the procedure. In a preceding paper (I), to which I have already referred, I spoke of a few of these experiences, first discussing my personal observations of patients who had obsessions regarding the mouth and teeth, which are not uncommon. I emphasized the fact that too much attention paid to the teeth sometimes resulted in the increase of obsessions regarding them. Some of the diseases referred to as having come under my observation in connection with the question of dental infection are dementia præcox, manic depressive insanity, epilepsy, neurasthenia, hysteria, and psychasthenia. The teeth in these cases were freely sacrificed on the altar of focal infection and without a single result of convincing value.

Since the presentation of this paper in June, 1919, I have had other opportunities, directly or through the kindness of personal friends in the profession, to learn of the fruitlessness and harmfulness of treatment by what might be designated as dental violence, especially when this is unguarded by careful clinical consideration. The presentation of cases in detail might be tiresome and I will refer to only a few of the affections for the relief of which the service of the exodontist has been called in, or threatened, usually with the advice or concurrence of the practicing physician and röntgenologist.

One of my objects is to call attention to the wide diffusion of what might be justly called the craze for the removal of teeth in order to relieve nervous and mental affections, these not infrequently being organic diseases readily determined by proper clinical study. In not a few of the cases the organic diagnoses were made by competent neurologists and notwithstanding this, teeth were removed on the suggestion of other physicians or, more rarely, on the initiative of the patients themselves.

A young lady was brought to me by her father, who later came with a newspaper clipping advocating teeth pulling for all manner of nervous and mental disease. The patient was illegitimate, had a history of insanity in one line of descent, and the patient presented a constitutional psychosis. Her teeth were in good condition and laboratory

examinations were made of her stools, urine and blood, the results all being negative. She was about to be taken to an institution where dental violence was much used for the relief of mental disorders. I succeeded in temporarily stopping the pilgrimage, but have little doubt that she later journeyed to one of the meccas of exodontia.

In a case of a patient with psychasthenia sent to me by a surgeon, the woman had all her teeth removed, some of these on advice and others on her own initiative. She had also had a minor operation on her jaw, but was still suffering or obsessed and wished to have some further surgical procedure. I advised against this and the patient went out of my hands.

In a case of dementia præcox the patient had reached the forties, steadily losing ground. He suffered from marked hallucinations and delusions of suspicion and persecution, was sometimes aggressive and dangerous, and showed marked general mental disintegration. After clinical and x ray investigations a physician advised teeth pulling, but I was able to prevent this as long as the patient remained in my hands.

In two cases of spinal tumor, the clinical histories of which were clear and in both of which the diagnosis was confirmed by operation and removal, extraction of teeth for the relief of the symptoms was suggested. In one of these cases five or six teeth were removed. In the other, the services of the exodontist were declined.

In a case of myxedema all the teeth with the exception of the canines of the left lower jaw were removed without any improvement in the patient's condition. Under the use of thyroid there was gradual improvement.

In an adult patient with cerebellobulbar encephalitis with marked Romberg symptom, paralysis of the superior rectus on left side, anesthesia of left side of the face and cornea, and other symptoms of a destructive lesion, the patient steadily improved simply under a waiting treatment, but continued to have some numbness and occasional attacks of vertigo. The patient's husband was strongly advised to have her teeth examined with the idea of the removal of some of them. She came to see me about this matter. She had no trouble with her teeth—no pains or aches—but had a few small bridges and small fillings. I advised her to have nothing done to her teeth, writing strongly to this effect to her husband.

For a patient with epilepsy advice was given to extract all the teeth left in the mouth, some of which were in poor condition. This was done. Recovery did not ensue and in short time the patient died. Whether the resulting death was *propter hoc* or simply *post hoc* I am not prepared to say. The epilepsy, however, was not ameliorated.

In another case, psychasthenic in character, the patient was literally operated upon from heel to head. Some surgical procedure was first used on her foot; she was next curetted and the cervix was dilated; then her appendix was removed; her gall-bladder and mastoid were operated upon; and finally several teeth were extracted, but all in vain. She is at present in a rest house, submitting to the tender

mercies of one of my neurological friends.

A man about forty years of age complained of pain in the right lower incisor. His jaws were x rayed and dental abscesses reported. Pain continued and the man had every tooth in the right lower jaw removed. Then he began to have teeth in the upper jaw extracted. About this time the dentist made up his mind that the patient had *tic douloureux*. Neurological examinations showed that while the pains were present, they were not exactly like those of *tic douloureux*, and in addition it was found that the man had a four plus Wassermann reaction. The case was doubtless one of syphilis with involvement of the root of the right fifth nerve and treatment was ordered in accordance with this view.

A woman, forty-five years old, lost her husband, an undertaker, during the influenza epidemic of 1918. She continued his business, doing the embalming and most of the other work connected with it. She had delusions and was much depressed, neglecting her business; in other words, she passed through a phase of manic depressive insanity. She was taken to a sanatorium and a parotid abscess developed which was drained and healed. She remained in the sanatorium for three months in the same depressed mental condition. She was then removed without the consent of one of my colleagues to an institution where dental infection was regarded as the chief etiological factor in various forms of insanity. The teeth were x rayed, several teeth were removed, cultures were made of the so-called abscesses, and the woman was given about twelve injections—one every week. In spite of the removal of the teeth and the injection treatment the patient showed the same symptoms that were manifest when she was admitted to the hospital, but at the expiration of three months she became better overnight, and in two weeks was discharged. Her history, in brief, was that of similar cases of manic depressive psychosis which have received no dental treatment.

I might continue this record of organic and functional cases, but enough has been given to illustrate the point that the diagnosis of dental infection and the therapeutics of teeth removal are used without reason or result in a variety of widely differing diseases of the nervous system. I have had the opportunity of listening on several occasions to the presentation of this subject of dental infection in its relations or supposed relations to mental disease by one of the leading psychiatrists of the country. Many and diverse forms of insanity have been attributed to dental infection by this alienist, although the large intestines and other channels of infection have not been disregarded. Diseases long recognized by most authorities as of teratological origin, of which dementia præcox is a good example, and other affections traceable to causes like syphilis have been given some place in the list of the disorders caused by dental infection.

The late Dr. August Hoch, in a critical review (5), pointed out the logical defects in the presentation of the subject in one of the articles referred to. As the critic says, one has the feeling that the author of the paper reviewed believes that

such infections are the real cause of the mental disorders discussed. He places heredity and constitution in a minor rôle and, in short, he appears to hold that extrinsic factors like focal infection are the real causes of such psychoses as manic depressive insanity. It is not my purpose either to review the reviewer or the paper under discussion, which I have read, but simply to refer to some of the points brought out by the former.

The author under review had eleven patients, five of whom died. The first case was one of delirium beginning after acute articular rheumatism. Streptococcus meningitis was discovered at autopsy. In the second case streptococcus viridans was found, the patient having become maniacal after influenza. In a third, the history of which suggested paresis, the patient had mania after grippe and pleurisy. Streptococcus longus was found, the patient having died of general septicemia. In the fourth case, staphylococcus was discovered, manic symptoms having been present after an ischiorectal abscess. The fifth case was similar as regards history, result, and findings, and, as Hoch remarks, the five cases proved nothing as regards the diagnosis of manic depressive insanity. The sixth case was apparently one of manic depressive insanity with cycles of depression and hypomania. Organisms were found and teeth were extracted, after which the patient calmed down somewhat.

The seventh case was also one of hypomania, but in spite of treatment by rectal injections and rest, depression followed the disappearance of hypomanic symptoms. In another case mania occurred after pneumonia and the patient recovered after lumbar puncture. A woman with suicidal tendencies recovered five months after admission, colonic irrigations having been used in her case because of unusual quantities of Streptococcus viridans isolated in the stools. In the tenth case, one of prolonged depression, although infected teeth were extracted the patient did not improve and equal lack of success resulted from the use of vaccine from Streptococcus viridans. In the eleventh case the patient, who had suffered from mania, depression, stupor, and delirium for six years gradually recovered after the extraction of one infected tooth! The evidence in favor of the views advocated has little support in the histories recorded.

It is not my intention in this paper to deny that focal infection, tonsillar, dental, or of other local situation, may not in some instances cause systemic disease like arthritis or endocarditis or even, in rare instances, some form of nervous or psychiatric affection. I am convinced, however, that this etiology has been greatly overworked, this being especially true of the dental infection hypothesis. Just as in a former generation the medical profession went beyond all bounds in applying the theory of reflex causation of uterine, ovarian or other origin, so now the tendency to attribute serious systemic diseases, including forms of insanity, has gone beyond all reason and has led to serious and even disastrous mistakes. We seem to be passing through another of the periods of fad and fallacy which

have so often misled the profession and the public. How far commercial considerations have been influential in diffusing the hypothesis of dental infection I am not prepared to say, although consciously or unconsciously they sometimes may have played a part.

One might almost feel that the teeth like other portions of the human organism, which throughout centuries have been considered of value and not simply necessary evils, might be disposed of without any great loss to the race. Under the influence of the propaganda of focal infection, to use the expression of my facetious, but learned friend, Doctor Peterson, the colons of epileptics bid fair to be reduced to semicolons by operation. The appendix will soon be no longer left even as a vestigial illustration, and the tonsil, protrusive and submerged, is sharing the fate in recent years of the ovary in our early experience.

A nose and throat specialist not long ago gravely informed me that he thought of preparing a statute to be presented to the State legislature making compulsory the extirpation of the tonsils of children after reaching a certain age on the theory that prevention is better than cure. Why, he argued, should we not get rid of an organ which may some day be the source of focal infection? Why on the same principle may our exodontist friends not be called in for their exterminating activities and free the rising generation of teeth which in the process of time may have their roots infected? In this way might we not happily forestall the development of rheumatism and gout, duodenal ulcers, and nervous and mental maladies? In conclusion, I would fain protest against the too free use of the therapeutics of organic mutilation. If the craze for violent removal goes on it will come to pass that we will have a gutless, glandless, toothless, and, I am not sure, that we may not have, thanks to false psychology and surgery, a witless race.

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1909 CHESTNUT STREET.

Acute Necrotic Parotitis.—R. C. McWatters (*Indian Medical Gazette*, February, 1920) describes two cases which appear to him as a special type of inflammation of the parotid, possibly due to influenza, in which the gland breaks down in suppuration. Very free incision with drainage is necessary. Reference is made to a description of seven similar cases by Zachary Cope in the *British Journal of Surgery*, for July, 1919.

THE PRESENT STATUS OF ORAL SEPSIS IN RELATION TO MEDICAL DISEASES.*

By JAMES M. ANDERS, M. D., LL. D.,
Philadelphia.

It has been said that the fad is an essential adjunct of every well ordered life. Surely, this is quite true of those fads which offer wholesome diversion from routine duties which lead to staleness or something worse if not relieved. On the other hand, the harmful effects that have resulted from the professional crochets perpetrated in the name of surgical procedures, e. g., in connection with the operations of ovariectomy, tonsillectomy, appendectomy, not to speak of others, have reflected discredit upon scientific medicine. The latest fad, and one that has asserted its sway, not only over the medical, but also the dental profession, is now upon us. It is, perhaps, more far-reaching in its baneful effects than any of its predecessors, having gripped the members of two large professional bodies, unlike former hobbies which affected principally either the medical or dental world alone.

The importance of the subject of the relation of tooth root infection to systemic diseases cannot be readily overstressed from the viewpoint of further study and investigation. Our knowledge of the flora of the mouth as related to special affections, local and systemic, is still imperfect and further laboratory and clinical observations as well as animal experimentation are needed to clarify the situation. It is true that a certain limited number of facts may be unreservedly accepted.

A closer cooperation, better team work, between dentist and physician, is urgently needed in order to set many questions bearing upon the etiological relationship of mouth to systemic infection at rest. The time has arrived when these two professions must take a keen and intelligent interest in one another's work, up to a certain point, at least. Again, the dental profession should be in a position to take full advantage of the services of the bacteriological laboratory, either private or public. It has not been more than a decade since dental surgeons first availed themselves of the use of the x ray which has been helping them so materially; but it is now equally incumbent upon them to utilize routinely the pathological and bacteriological laboratories, more especially the latter, in cases of mouth infection.

In any case of oral sepsis in which constitutional symptoms are found in association, the dental surgeon should report both the x ray findings and those of the bacteriological laboratory to the physician in charge. For example, if he were to report the presence of a certain strain of the streptococcus as the predominating organism, i. e., the viridans, the clinician could interpret its probable relation to the general condition, provided that no other foci of infection were discoverable in the body. On the other hand, without reliable laboratory evidence a scientifically accurate explanation or consideration of these interesting and important conditions arising from mouth sepsis, is impossible.

*Read at a meeting of the Philadelphia County Medical Society, January 14, 1920.

I am assuming that the morbid states which are presented by the masticating apparatus and gingival diseases of a suppurative character belong, in the last analysis, to the dental surgeon. Upon him also must the physician rely for a final opinion as to whether, in a given case showing disease of a tooth, it is curable by any means at his command. It has become all too commonly the custom among physicians to have made an x ray study of suspicious teeth, and if abscesses have been discovered to advise their removal.

While I strongly favor consultations between dentists and physicians in cases of tooth root disease with their symptoms manifested by outlying organs, the recent developments in so-called focal infections have thrown added responsibilities upon the dental profession, and these should be recognized now, and fully met in the immediate future. And when the time arrives that the complete report of the dentist, as set forth above, is available to the physician, it will be up to the latter to show the connection between the local and general morbid states, including their symptoms. It will be the clear duty of the internist to demonstrate the presence of an identical organism or its pathological effects, in the affected organs outside of the mouth cavity. In this way, and in this way only, can real progress be made that will be of mutual advantage to the dental and medical professions. In this way also may we hope to arrest the serious blunder of sacrificing useful teeth.

As the result of recent investigations a number of strains of the streptococci have been isolated so that definite information can be now expected at the hands of competent bacteriologists. Although this alone does not make a diagnosis for us, thorough laboratory studies should be made routinely in cases showing the presence of a purulent exudate. It is true that the possession of a knowledge of the pathology and bacteriology of the deeper dental affections is needed, since the clinician recognizes the fact that the one sure foundation for both diagnosis and treatment is in the successful correlation of the general symptoms with the special morbid oral lesions present in the individual case. The aim should be to trace the clinical features back to their pathological causes. When this is made possible we shall be able to deal intelligently with affected teeth and alveolar processes.

EFFORTS TO SPARE DENTAL ORGANS.

It must be clear to all who have given careful and conscientious attention to the question, that some concerted plan of action is urgently needed to lessen the haphazard sacrifice of masticating apparatus. But it is equally clear that so long as the bacteriological aspect of mouth infection remains unsolved, this custom of destroying the masticating apparatus of the race will continue.

I am speaking with feeling on the subject, possibly for the reason that I have observed more reckless sacrifice of teeth than the average practitioner of medicine. I recall a case of epilepsy occurring in a young lady aged nineteen years, who, on the advice of a physician, had all her teeth, which were in fairly good condition, extracted. Needless to say, the attacks continued without

change as to either their frequency or severity. Obviously, such a removal of healthy useful organs for epilepsy would be condemnable at any age, but in the light of the fact that teeth, comparatively speaking, rarely give rise to disturbance of the general health at this early period of life, the edenture in this and similar cases becomes a procedure which is to be regarded as nothing less than a criminal offense against society. Such unscientific and deplorable practice, if not promptly halted, will tend to bring about a revulsionary feeling against the work of those men who are honestly endeavoring to foster scientific medicine, not to speak of the public scorn and contempt for the allied professions concerned which must inevitably follow.

Fortunately, and in the interest of an, as yet, unrebelling public, the practice has probably reached its crest. It is also true that certain leaders in dentistry and medicine have been and still are sounding a timely note of warning. On the other hand, to call a halt effectually will require a spirit of unity and cooperation, with determination, of the organized medical and dental professions. It behooves medical and dental bodies, therefore, to place themselves on record as opposing the present appalling rate of removal of dental organs.

FACTS ABOUT ORAL INFECTION.

It cannot be gainsaid that considerable progress has been made, more especially during the last decade, in the subject of oral sepsis, but it has not been accomplished without an inexcusably great sacrifice of organs, than which few others are of greater importance to the race. Among definite pronouncement of the effect of tooth root disease on the general health is that which recognizes age as a modifying factor of signal importance in connection with its incidence. Experience and observation have shown that after the fortieth year of life, disseminated infections leading to constitutional disturbances are more frequent and of a more pronounced and serious character than in younger subjects. This fact is not as yet so widely appreciated as it deserves to be.

A worthy and decided step forward also has been taken in the clinical aspect of the subject. Many and varied morbid medical conditions may be of oral origin, as shown by the fact that correction or removal of the chronic focus about the teeth has effected a cure, or at all events, a well marked and immediate amelioration of the symptoms. Here may be enumerated some examples of diseases which have been attributed to oral foci of infection. Among these are arthritis, endocarditis, pericarditis, myocarditis, myositis, gastritis, gastric ulcer, myocardial degeneration, arterial fibrosis, chronic nephritis, exophthalmic goitre, and many others. It should be recollected, however, that gingival and dental conditions are rarely the sole cause of the diseases and morbid states for which they can sometimes be held responsible, and it is highly desirable that our knowledge of their bacteriology should one day help us out of the field of conjecture in which we have found ourselves until the present. Meanwhile, let the voice of both the medical and dental professions call out against the all too common custom of taking a chance and extracting teeth on

the mere assumption that when tooth root disease exists, it is the cause of the symptoms of the disseminated infection.

It may be definitely stated that multiple foci of infection often exist in different organs of the body, any one of which may be responsible for the general clinical features when these are found in association. When multiple, infectious foci may be at times classified into primary and secondary, and an attempt to distinguish the former from the latter is always to be made, although this is often impossible. In this connection it is to be recollected that in many complaints, e. g., chronic arthritis deformans, chorea, acute rheumatic fever, endocarditis, gastric ulcer, appendicitis, myocarditis, myositis and glomerulonephritis, the primary focus is usually located in the head, in the guise of tooth root disease (periapical abscesses), acute and chronic tonsillitis, or sinusitis. Failure to find a focus about the teeth in these varied affections should, therefore, lead to an examination of the tonsils and frontal sinuses, preferably by a specialist. Should these regions be free of infective foci, we must extend our investigation to practically all other regions and organs of the body. In cases in which the physician suspects oral sepsis as the cause, it is clearly his duty to eliminate all foci elsewhere before consulting a dentist, and if he finds a source of toxic infection, a careful cultural study of any exudate that may be obtainable should not be omitted. Before teeth are condemned, therefore, it is obviously the duty of both dentist and physician to make reasonably sure that no infectious foci other than those found in the gums or teeth are present before advising extraction. This is a matter of vital importance, but one that has not, as yet, been brought home.

While hidden foci are sites for the fertile development of different pathogenic bacteria, the latter may lie dormant for an indefinite period, or until such time as the body resistance becomes lowered, or in symbiosis with other micro-organisms, when they are stimulated into activity, reaching through the lymph channels or blood stream, the outlying organs of the body for which they have special affinity. Latent dental infections, however, should be either removed or actively treated without delay as soon as discovered, since they are a distinct overhanging menace to health.

Among established facts one worthy of mention is that certain strains of the streptococcus, the *Streptococcus viridans* in particular, isolatable from the exudate of a tooth root abscess in some cases may cause septic infection of joints, muscles, tendons and the cardiovascular system. I have reported a case of chronic myocarditis which was obviously occasioned by a periapical lesion. We may also assume with Stengel (1) that prolonged or oft-repeated absorption from dental focal infections is responsible for certain cases of Bright's disease. In a well marked case of Graves's disease which fell under my care, immediate and decided improvement set in and continued until a complete cure was produced, by the use of x ray treatment by Doctor Pfahler, after the removal of several badly abscessed teeth. In two cases of sci-

atica removal of irremediably diseased teeth was followed by a speedy cure.

DIAGNOSIS.

From the foregoing statements it is obvious that there are many cases of focal infection in which an assured diagnosis is not possible. In approaching the subject of the diagnosis of primary foci, it is to be recollected that in a large proportion of the systemic diseases of which they may be the apparent cause, e. g., chronic nephritis, arterial fibrosis, myocardial degeneration and arthritis—other factors, as heredity, occupation, intemperance in eating and drinking, syphilis, gout, and the like, may play an important etiological rôle. When any of the latter causative agencies are operative in the particular case in hand, it is not possible to determine precisely the significance of an associated chronic infectious focus, e. g., in the teeth, more particularly since these may at times remain latent for a long period of time.

In suspected cases the services of an x ray expert are required. Unfortunately, x ray studies sometimes fail to enlighten in a satisfactory manner, even when made by the most skilled roentgenologist. To take the x ray studies alone, and base treatment thereon, is unwise since the deeper dental lesions may be simulated by a nonpathological area or a foramen on the one hand, while on the other hand the x ray may fail to show an abscess which actually exists. Should the dentist make his own x ray examinations? In my view the wisdom of this is questionable unless he is an expert, since special skill is required to make dependable plates. I feel strongly that a wide experience and long training are necessary to practical findings on which dependence is to be placed. Any one who may be sceptical as to the truth of this assertion may convince himself of its absolute correctness by comparing the plates from the same case, made by different dentists, or even by different experts.

There are many points in the technic of application which must be observed in order to make reliable plates, so that only those skilled in the art can be considered capable of suitable work. I trust that I may be pardoned for being bold and frank enough to express an opinion as a medical man on a subject which concerns principally the dental profession. My excuse for doing this is a desire to see the development of our knowledge of the deeper infections of the mouth, or those involving the alveolar processes, advanced along strictly scientific lines.

Again, the custom of accepting the results of an x ray examination, however carefully made, as conclusive in a diagnostic sense is unwarranted. The local and general clinical features presented in any given case are to be carefully weighed. A careful examination of every other organ, especially those situated along the gastrointestinal tract, as well as in the pelvic cavity and the tonsils, for foci of infection is to be uniformly undertaken. If inflammatory disease of any of these organs is found, then extreme caution should be observed in ascribing a systemic infection to the mouth condition. Again, foci elsewhere in the body than the

teeth are quite as likely to cause disseminated infection as disease of the masticating organs.

The scientific study of mouth infection from the viewpoint of diagnosis can never reach the high plane which its dignity and importance demand so long as it does not receive the continual impetus resulting from the combined laboratory and clinical methods at our disposal. It follows, and this is the supreme consideration, that every progressive dentist and physician must utilize the advantages offered by a private or public bacteriological laboratory, so as to be able to make an etiological diagnosis whenever possible. They cannot be expected to keep abreast with kaleidoscopic details of biological technic, but they should familiarize themselves with the fundamental basis on which laboratory methods rest and thus become capable of interpreting the results reported from the laboratory.

TREATMENT.

The question of the prevention of tooth root disease should be preeminent in the minds of all who are interested in the health and welfare of the race. This must come through education and enlightenment, especially with regard to the cleanliness and care of the masticating apparatus. Fones (2) states: "We know of no one movement from the health viewpoint that would be more beneficial to the nation at large than a serious educational campaign to eliminate dental caries so far as would be possible. Such a program should be carried on in the public schools." There can be no doubt that the most important part of personal hygiene is that which has to do with the mouth and it is equally true that sanitary oral cavities are potent factors in limiting the incidence and spread of communicable diseases.

An abscess about a tooth root which cannot be freely drained should not lead to the immediate extraction of the organ, and if amputation of the root is required the operation whenever feasible should be undertaken. It is within the truth to state that apicectomy is not generally carried out, but instead removal of these teeth is recommended, both by dentists and physicians, if my personal observation is correct. On the other hand, those abscesses that can be successfully drained and treated receive, generally, appropriate management at the hands of dental surgeons. In the treatment of an abscess that can be drained, the preparation and use of an autogenous vaccine is to be advised, with the object and assurance of shortening the duration of the disease.

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The Effect of Egg White Injection on the Dog.—Seymour J. Cohen (*Journal of Laboratory and Clinical Medicine*, February, 1920) confirmed Vaughan's work by producing a constant fever in guinea pigs by repeated subcutaneous injections of egg white. Such injections had no effect on the temperature curve of dogs.

OBSERVATIONS ON DENTAL THERAPEUTICS BASED ON CLINICAL AND ROENTGEN RAY INVESTIGATIONS.*

BY WILLIAM MIDDLETON FINE, D. D. S.,
Philadelphia.

We are forced to believe that too many teeth are extracted in the expectation that their removal will be the deciding factor in curing some obvious systemic disturbance—such as rheumatism, gout, arthritis, arteriosclerosis, various ocular disorders, diseases of the gastrointestinal tract and the nervous system. We have witnessed during the past year or two, the wholesale extraction of teeth, but we have failed to see a recovery from many of the bodily ills attributed to them. The proportion of cases of systemic disease which can be legitimately attributed to the teeth has never been definitely established. Because it is possible to demonstrate the same microorganisms in pulpless teeth and in arthritic joints, it should not be stated that the teeth are invariably the primary cause of the infection. I do not wish to be understood as saying that such cures or improvements in the general physical condition of the patient do not occur, but there are many cases where the removal of all the teeth, vital and nonvital, has not been followed by any marked improvement in the patient's condition.

Teeth that are badly decayed and upon whose roots we find abscesses in various stages of development, allowing the infection to be absorbed into the system, undoubtedly play an important rôle in aggravating other symptoms of systemic disease and interfere with the proper functioning of the organs of digestion, assimilation, and circulation. The extraction of such teeth or their restoration to health and usefulness, removes one of the contributing factors in the cause and development of many diseases. If we were fortunate enough to obtain a careful and sufficient history of such cases followed by a most thorough medical examination it might be possible to trace the disease directly to a primary infection in the diseased mouth, but the evidence indicates rather that a systemic disease may be accountable for the dental disturbance.

Rosenow has caused gastric ulcer and appendicitis by injecting streptococci, as he believed that these diseases were due to embolism following the entrance of the microorganisms into the circulation from a primary focus and not from swallowing them. If this is true, where does our theory of pus from pyorrhea alveolaris lead us? Is the swallowing of pyorrhea pus the deciding factor or the cause of systemic disease? Is there a specialist in medicine for gastric troubles or arthritic joints who would be willing to confine his treatment to the correction of dental defects? Microorganisms do not wander about the body and localize without special reason. Many professional men do not recognize the importance of the wonderful defenses of the body against bacteria. These

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are very efficient, especially within the oral cavity where in spite of infected teeth and lacerations from extractions, healing takes place rapidly, upsetting another theory. Do we ever hear of a sterile mouth? Are we ever without bacteria?

A belief seems to exist among dental surgeons—and perhaps also in the medical profession—that all nonvital teeth, that is, teeth from which the pulps have been removed, should be extracted whether they give trouble or not, simply because they are dead teeth. This belief I do not share. If we lose the ability to masticate our food properly we are in a greater danger of systemic disturbance than from a properly treated dead tooth. Teeth without vital pulps are not normal organs and can never be made normal again. Therefore, their days of usefulness are numbered. The statement has been made that such teeth well treated will not last over twenty years, but is it not possible for these well treated teeth to be retained in usefulness for that length of time and not be the cause of systemic disease? In the case of well treated teeth without living pulps our bodily protective processes prevent them from being the direct cause of disease. I am not advocating the retention of all nonvital teeth; but there is a difference between an infected tooth or one causing an infection, and one that is simply nonvital. I fear that the good have been made to suffer with the bad in the twentieth century craze to fasten all the ills the body is heir to upon the teeth and their dental care. If oral abscesses were ever a prominent factor in the causation of systemic disease, then the English would not have been able so fitly to demonstrate their physical courage and ability in the world war.

Many valuable contributions to the literature of the medical profession indicate, if they do not prove, that at least one of our common systemic diseases, arthritis, is produced by a constipative diet and experiments have been made following this line of thought. Patients with loose teeth in the gums, accompanied with bleeding and pus, have been benefited when the pathological conditions produced in the intestinal tract were removed. A statement has been made by a noted writer that once the microorganism has entered the blood its connection with the portal of entry ceases.

According to Talbot in five per cent. of successful root fillings, exostosis has partly or wholly closed the apical canal. Of the ninety-five per cent. of imperfections about the apical ends of teeth he is of the opinion that only a small proportion are affected by the streptococcus group of bacteria forming alveolar abscesses. In other words, in only a few instances infection has occurred and abscesses have been found. This statement would lead us to believe that all the clear areas we see on radiographs of dead teeth are not abscesses and do not contain pus, and that these teeth should not be ruthlessly extracted.

The physician and the dentist should work together toward the same end, the prevention of disease, the physician through the many systems of bacteriological examination and physical diagnosis, and the dentist by his careful attention to the

primary care of the teeth and the prophylaxis of the mouth. Precaution doubtless must mean not only the prevention of carious teeth, but the prevention of systemic disease as well.

During the past twelve or fifteen years or longer, I have examined many diseased mouths and teeth. Perhaps the greater number of these have been instances of gingivitis, a very common disease due primarily to lack of proper attention to mouth hygiene. Other affections have been pyorrhea alveolaris, infected teeth and root ends, and abscesses in all stages of development. In many instances when the teeth operated upon would not respond to treatment, positive cures not being obtained, the teeth were removed. In other cases, the teeth that were badly infected were successfully treated and cured, the pus eliminated and the teeth made useful again. I treated many of these cases successfully before x rays were extensively used in dentistry. I am sure that if radiographs were made today of some of the teeth treated in the manner in vogue at that time there would be clear areas at the root ends, and yet these teeth have not given any trouble and are still useful. Perhaps some of the patients treated have suffered from one or more of the systemic diseases mentioned, but the removal of the devitalized teeth would not have brought about a cure.

We occasionally hear of a remarkable cure following the removal of all of the teeth. I have a record of one case. The entire set of teeth, upper and lower, were removed because the patient suffered with frequent and severe attacks of facial neuralgia. It was her own idea that the teeth were the cause of the trouble and they were removed at her request, although they were sound. After the mouth had healed, the patient regained her normal poise, the facial neuralgia entirely disappeared and I have not heard of its recurrence, but it seemed a terrible price to pay.

I wish to emphasize the fact that I am in accord with those of the profession who advise the extraction of dead and diseased teeth, after a thorough and painstaking attempt to cure has failed, or is in doubt. A diseased tooth should not be tolerated in the mouth if it will not respond to careful and systematic treatment within a reasonable length of time. There are teeth that cannot be successfully operated upon; canals that cannot be found or opened. Such teeth must be removed when they become the seat of infection.

A prominent member of the dental profession has recently made the statement that an incipiently infected root canal cannot be sterilized permanently by the antiseptic methods of treatment now in vogue. That is undoubtedly correct. There are so many factors to be considered in regard to a dead tooth and the treating of its root canals that a general answer cannot always be given.

Is a tooth which shows a clear area at the root end on a radiograph an infected tooth? Is the area due to the presence of pus or to some other cause? How do we know it is an infected tooth when it has never given trouble and all we have to guide us is a clear area at the apex in the radiograph? Talbot refers to bone absorption around

the roots of teeth and has demonstrated how easily it may be produced by means of forcing filling material through the end of the roots. Medicines used in the treatment of root canals produce absorption. Again we see a possibility of producing the clear areas so frequently seen in dental radiographs, but are they significant? They may be produced by water. They may be produced by pus. Therefore are these conditions indicated by the clear areas in radiographs a causative factor in the production of systemic disease? I do not believe they are. Creosote, oil of cloves, and carbolic acid all produce absorption of the alveolar process, as has been demonstrated by Talbot, upon living teeth, which were subjected to microscopic examination and magnified from eleven to thirty-six diameters. Dentists are treating teeth with these drugs every day using all possible care to make the operation a success. Perhaps they do not know that the very thing they are doing when they remove a pulp will in time produce a condition that upon radiography will show a clear area. Some other dentist will later condemn this clear area as an abscess and assure the patient that his former dentist did not do a careful root filling. Out comes the tooth because an area produced by irritation from the mechanical treatment and drugs is seen. It is more than likely that seventy-five per cent. of the clear areas in the radiographs at the apical ends of teeth have been caused by such operative technic. My experience has been that for every hundred root canals that we operate upon there are at least twenty or twenty-five per cent. that we cannot open. Some of the dental literature is written so as to give the impression that the teeth in question are outside the mouth and can be treated with both hands. All of the root canals we are obliged to open are not in the anterior part of the mouth and when it comes to the posterior teeth there are some canals that absolutely refuse to be discovered no matter whose method we follow or what efficient combination of drugs we use.

Some professional men enthusiastically assert that all diseases are due to the teeth and if all diseased teeth are treated by their method there will be no failures. When a conservative person asks for more light on the subject he is put down as ignorant or a poor operator. We have the ultradentist with us always, the one who never has a failure and always gets to the bottom of root canals, and we have the ultraphysician who cures everything. It cannot be done. Every abscess cannot be cured and every case of gout cannot be cured. Dentistry is a compromise with existing conditions and every case is a law unto itself.

Our field of operation is a semicircular opening two or more inches in diameter in all directions, containing thirty-two teeth, more or less, a tongue of varying size and thickness, a constant flow of saliva and a hundred and fifty different varieties of microorganisms. It is impossible to operate for some people and for others it is easy. We cannot practice dentistry without some pain and discomfort to the patient and some nervous strain to both patient and operator. The teeth cannot be separated from the individual when it

comes to treatment (except in a paper on the subject) and the personal equation enters largely into the success or failure of the case. Often we have to work an hour or so hunting the canals in an upper molar. We have to do it all in the reflection in a mouth mirror an inch in diameter. At the same time there is a desire upon the part of the patient to go to an exodontist and have it out rather than go through another sitting. That is one reason why teeth are extracted. Another reason is because exodontia has become a branch of dentistry for getting rich quickly.

TREATMENT OF ROOT CANALS.

The means of treating root canals are chiefly of a chemical nature together with manipulative instrumentation. Some men do not possess as great a digital manipulative ability as others, and many have not the patience for long and tedious operations. These facts all focus to one point. If septic root canals cannot be successfully treated and made absolutely sterile by the methods in vogue today, the dead teeth must come out because of their inaccessibility to the manipulative skill of the dentist and not because they are the cause of systemic disease. As we grow older the canals of our teeth become subject to change, grow smaller, and the necessity for extraction becomes greater to make room for properly fitting plates or the removal of teeth that have lost their attachment to the gums and are an annoyance to the patient. Deposits often occur that prevent us from penetrating a canal to its end. We know today that teeth do not contain a single opening at the apex of the root, but several small openings for the nerve filaments. Within the tooth are minute canals or tubules filled with nervous and vascular tissue. These tubules have been measured by Koelliker and estimated to be from 1.3 microns to 4.5 microns about the apical foramen, while the average size of the streptococcus is about one micromillimetre. Hence we readily see that microorganisms may enter these small canals or tubules and find lodgment there and we must depend upon the action of the chemicals used in dentistry to seal them in or render them inactive.

I have seen many teeth that have remained without pus or any symptoms of disease for fifteen years or longer, teeth that under x ray examination showed clear areas, indicating what some are pleased to call abscesses. Patients have been sent to me by prominent physicians who had marked definite parts of the radiographs as abscesses, and I have opened the root canals to find them without odor or pus or other material, except root canal filling, or possibly there was the odor of some antiseptic dressing like creosote, carbolic acid, or iodoform in mixture. In some cases the root canals did not appear to be filled to the apex and that was given as the cause for the clear areas seen in the radiographs at the root ends. The clear areas might also have been produced by a defective film.

I am reminded at this point of a case I read about several days ago. A radiographer made a study of the mouth for a certain dentist and in taking the picture did not place the films in the

mouth in the proper position. The result was that not one of the root ends was visible in the finished picture, so he ventured the remark that as far as he could see there was nothing wrong. Pictures of the teeth can be distorted and positions changed in relation to the teeth and tissues.

In another case I have in mind, a plate was made of all of the teeth. Then separate films were made. In one of the separate films there appeared to be an abscess on the lateral incisor, but upon comparing it with the mounted film of the entire set of teeth it was found the mounted one was perfectly normal and had not been noted by the radiographer. Which film told the truth? Was there an abscess or not? The tooth was only slightly filled, a good color, and to all appearances a vital tooth. It was perfectly comfortable and a useful member of the dental arch, so I did not disturb it.

In another case all of the suspicious teeth were removed upon the advice, "Get your teeth out and your cure will follow." The patient had gout and enlarged finger joints. Finally all the teeth were removed, but still the gout and enlarged finger joints persisted. Arthritis may be due to gout; headaches may be dependent upon nephritis or advanced arteriosclerosis; and pain in the shoulder may arise from degenerative changes in the aortic arch, and yet all these symptoms have been attributed to the teeth.

ABSENCE OF SYMPTOMS FROM ABSCESSES.

Many patients are seen by us where abscesses have been present for many years in the mouths of strong men, who have never had an ache or a pain. They look at you and smile when you tell them that they have an unhealthy condition of the mouth and one likely to produce bodily disease. They say, "Why, doctor, I have never needed a physician since I was a boy and had measles." When these cases do become medical cases we look at once for the diseased teeth, take them out and find that the grave condition of the patient's health is not improved simply because we have taken away something that never had anything to do with his case. Alveolar abscesses in some instances seem to exert absolutely no demonstrable influence upon the health of the patient.

We often find in our patients the lack of proper functioning of various organs, constipation, poor circulation, indigestion, or nervous attacks. With these conditions the patient may at the same time have bad teeth. Is it not probable that the trouble is to be found in other parts of the body? A patient may have a serious case of pyorrhea alveolaris, swallowing a constant flow of pus and will often tell you that such a condition has existed for several years. Suppose this patient suffered from rheumatic pains, arthritis, enlarged finger joints, or even a mild form of insanity, aggravated by the infection of the teeth, is it right to say the teeth started the trouble? Many individuals we know of pile on the coal in the furnace, but never think of removing the ashes.

Some time ago I had a patient sent to me to put in first class condition. The patient was an officer in the navy. He had spent several years abroad

living upon his ship. Naturally he was subjected to all kinds of weather and many days at a time his clothes were wet through to the skin. His meals were not eaten regularly and he may have spent sleepless nights. His teeth were in poor condition. Many large cavities and several abscesses were found, but the abscesses opened and drained of their own accord and gave him no trouble and no pain. His only complaint was a slight rheumatic pain in the shoulders. To make a long story short, I put his house in order and drained the abscesses, cleansed the canals and filled them, and at a subsequent sitting I filled the teeth. Before I had finished all the work he had been discharged from the service and returned to his home to take up a normal active life with proper nourishment, dry clothes, a comfortable bed, and normal surroundings. His condition improved immediately, the rheumatic pains in his shoulders disappeared entirely. Now the question is, was his cure the result of filling his teeth and curing the abscesses or to the changes in environment? The radiographs still show the same markings. Should these teeth that have been restored to usefulness, enabling him to masticate his food, something he was not able to do properly before, be extracted now because they once had abscesses about their roots?

OTHER FACTORS.

I have seen cases of so-called rheumatism improve and a patient get well, or free from pain, on nothing more than a diet of oatmeal, eliminating meat entirely. The intestinal tract was sluggish and oatmeal helped clean it out. All this took place without a moment's attention to the teeth which were very much diseased. They were repaired afterward.

I am not a physician, but it seems to me that about eighty per cent. of our bodily ills arise from the improper functioning of the stomach, intestines, liver, and kidneys. I believe there was a time when all the bodily ills were fastened upon the appendix. Somebody needed the money. Today they say, "Let's call it the teeth and practice exodontistry."

In 1914, I had a patient referred to me for treatment. Upon examination I discovered several teeth that were beyond repair, which I removed without anesthesia. The patient suffered from facial neuralgia, which was severe at times. When I extracted the teeth the pain was intense. The mouth healed and plates were made, leaving five fairly good teeth in the lower jaw, but she continued to have facial neuralgia. In March, 1918, she returned to me to have the remaining five teeth extracted. The left lower cuspid was firm, the lateral very loose, the right cuspid loose and the two bicuspids firm. So to make the first one the easiest I decided to extract the loose lateral, but she went through more agony than she did in 1914. The other four teeth were extracted without much pain or difficulty. Could that lateral incisor have been the cause of all her facial pain? It was a sound, vital tooth without filling. Since 1918, I have seen her once. She said that she had had no facial neuralgia, but had had indigestion and sciatica so bad at times that she could hardly walk. Now where is her primary infection? Where is the cause of her systemic disturbances? It is not in her porcelain teeth, and she has no other.

Several years ago a patient was sent to me from New York city with radiographs, seven of which were nicely marked in pen and ink, showing the presence of abscesses. The patient had been told that her gout and painful joints were caused by her teeth and that she should go to her dentist and have them out. After a great deal of discussion on the subject we decided to open the teeth. They had been filled many years ago by one of our best dental operators, some with gold and some crowned. Some of the teeth did not show complete root canal fillings. We opened one at a time with care. It was a long and tedious operation and when we had finished after six or eight weeks we had found pus in only one tooth. The other six were clean and after that she decided to keep her teeth. I doubted very much if the pictures had told the truth and I also doubted the statement that her trouble would disappear after the teeth were removed.

INDICATIONS FOR INTERFERENCE.

When the radiograph shows a liquefaction of the tissues it is a plain duty to open and drain, and when there is a great deal of destruction of bony tissue due to the abscess it necessitates extraction. Some of these markings on the radiograph are said to indicate a diminution of lime salts. Suppose they do. Will the diminution of lime salts around the root or roots of a tooth that is perfectly useful and strong produce any symptoms of systemic disease?

There are a number of men taking up the work of radiography, without any professional training or any knowledge of anatomy or pathology, and solely from a commercial point of view. I believe these men would venture an opinion in a case if asked by the patient. First impressions are the lasting ones and if a man who knows nothing of pathology or anatomy tells a patient, "Oh, yes, that's an abscess," he immediately makes it a more difficult case for the dental practitioner to handle. The patient still believes it is an abscess because the radiographer told him so.

Today physicians and dentists are working together harmoniously when it comes to diagnosis and the search for a seemingly obscure cause of a systemic disease. Dentistry cannot render its best service without the aid of the medical profession, and I am sure the medical profession would not want to put aside as of no vital importance the practice of dentistry as a means of safeguarding the health of the nation.

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THE RELATION OF FOCAL INFECTION TO MENTAL DISEASES.*

BY HENRY A. COTTON, M. D., A. M.,
Trenton, N. J.,

Medical Director, New Jersey State Hospital at Trenton, N. J.
Lecturer in Psychopathology, Princeton University.

Since the publication of the pioneer work of Hastings, Billings, Rosenow, and others, the principle of focal infection has gradually been established and has to some extent, at least, modified our ideas of the etiology and treatment of many disease processes, especially those of unknown etiology. The principle has been extended to many branches of medicine and the results justify the importance of the subject as emphasized by these early observers.

In our preliminary report on the influence of focal infection in the etiology of mental diseases (1) we, like many of the early investigators, confined our attention largely to the infection found in the teeth. Since then our work has developed further and we have found that while the teeth may be a source of infection, in many cases the bacteria probably migrate and set up important secondary foci of infection in other remote portions of the body (2). The recognition of this important fact has explained why the removal of the original source of infection in the teeth in some cases produced the desired results, while in others none were obtained. Failure to recognize this fact has brought much criticism of the whole question of focal infection and consequent scepticism of the methods employed in eliminating these infections.

We are indebted to the pioneer work of Hastings (3) who in 1914 not only demonstrated the relation of infected teeth to systemic diseases, but also gave us a very important laboratory test whereby the presence of systemic infection could be detected. I refer to the complement fixation test of the blood for the streptococcus group and other organisms. In 1916 we began the use of this method as a routine examination of the blood of all our patients and soon found enough positive reactions to convince us that we should look further for the source of infection. At that time the only source of infection recognized was from the teeth and consequently while some of our patients showed improvement when this source was removed many did not.

We were not the first to show that infected teeth were related to the etiology of mental diseases. In 1908, Henry S. Upson (4) of Cleveland, Ohio, published his work on the relation of infected teeth to certain nervous and mental conditions and reported cases of both manic depressive insanity and dementia præcox in which the patients recovered when impacted third molars as well as other infected teeth were extracted. Like all new ideas in medicine, his work was not taken seriously, but he deserves great credit for his researches in this field. He states that as early as 1876, Savage, the English alienist, reported a number of cases of insanity due to infected teeth, in which the patients recovered when the infected teeth were removed, and further

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this work was mentioned by Lauder Brunton in an essay (4a).

Not all the credit for establishing the relation of infected teeth to systemic diseases belongs to the medical profession for in an admirable book on the subject, Kurt Thoma (5) of the Harvard Dental School, has given us the most comprehensive work in this field and we can recommend it to both medical and dental professions. Other members of the dental profession have called attention to the danger of infected teeth, but judging from the widespread nature of this infection the rank and file of the dental profession have not heeded their advice.

The relation of infected tonsils to systemic disease was first shown by J. J. King (6). While it was generally known that rheumatism frequently followed tonsillitis and that infected tonsils in children should be removed, we find little of positive value until the work of King. Following his work we began to look at the tonsils as a possible source of infection and in 1917 we began to enucleate infected tonsils. Dr. Charles F. Adams, of Trenton, at our request, enucleated the tonsils in twenty-five cases in the spring of that year and twenty-four of these patients recovered. We are indebted to Doctor Adams and we believe that this was the first time that infected tonsils were removed in order to benefit the mental condition of patients in an insane hospital. At present infected tonsils have to be removed in over sixty per cent. of our patients, and frequently it would appear that they were the most important source of infection. At least we can say that infected tonsils and infected teeth are of equal importance.

The next link in the chain of infection was supplied by Martin F. Rehffuss (7) of Philadelphia. We have realized for some years that a certain proportion of our patients had serious gastrointestinal disturbances, but we were unable to determine the nature of this trouble or to eradicate it. Routine examination of the stools did not furnish us the necessary information as we could not determine what type of organism was responsible for the infection. Rehffuss has supplied this very important link by his method of fractional examination of the stomach contents and their culture. This latter procedure seems to have been overlooked entirely, but from our results we are of the opinion that it is perhaps one of the most important contributions to the whole subject of chronic infection. By this method we are able to determine definitely the organisms responsible for the gastrointestinal infection for here we can obtain them in pure culture. Not only do we find serious gastric infection in at least twenty per cent. of our cases, but in most of these cases there is either an entire absence of hydrochloric acid during the test meal or a very low amount secreted. Thus this method gives us a very important fact regarding gastrointestinal infection and links up the teeth and tonsils as the probable origin of this infection.

To Reese Satterlee (8) we are indebted for our knowledge of the pathogenicity of the colon bacillus and our work substantiates his ideas regarding the importance of eliminating this organism in certain types of gastrointestinal disorders. We have found

the colon bacillus in the stomach and duodenum of many of our patients and in other organs where normally it should not be found and we consider it a very potent factor in most of the chronic types of mental diseases. As far as we have seen there is little evidence that it tends to eliminate itself spontaneously as is probably the case in streptococcic infection.

To John W. Draper and Jerome Lynch (9) we are indebted for their contributions to the physiology and pathology of the lower intestinal tract. Their work is of the utmost importance and represents years of painstaking research in this field. It has been of especial value to us not only in determining the presence of chronic infections of the colon, but also has given us definite methods of eradicating this infection.

It can readily be seen from the above that we are not responsible for any new methods in clinical medicine, but we do claim credit for recognizing the importance of these methods outlined above and their application to the problems of mental diseases, especially when these methods have not been given the recognition they deserve. We refer specifically to the complement fixation test for the various organisms concerned in focal infection. Without this method we would not have been able to carry our researches to completion or to report the results which we have obtained in the so-called functional group of the psychoses.

We believe that we can show by clinical evidence that certain types of mental diseases are caused by toxemia resulting from focal infection and clearing up these foci of infection results in the recovery of the patient. We have further confirmation of this belief from the pathological and bacteriological studies made after death, and have yet to find a single case with a functional psychosis without accompanying infection. Although we presented our facts in a preliminary report to the New York Psychiatric Society in April, 1918, no one has as yet disproved our findings—at least it has not been shown that these types of mental diseases are free from the infections we have described.

Results are what count and theory can be easily proved or disproved if any one in this line of work will take the trouble to investigate our methods. We realize that we have to upset many of our traditional ideas regarding the etiology of the psychoses, but if we can produce results which have not been produced by any other methods, we feel that our methods should have a fair trial. We shall proceed to outline our methods of examination and treatment in detail with the hope that other institutions will see the necessity for their adoption. No one interested in this subject would deny the necessity for searching for some definite etiology in the so-called functional psychoses, some causative factors which could be attacked with some assurance of success.

The present attitude of psychiatrists is well represented in the recent work of Gibson (10), formerly of the Boston Psychopathic Hospital, who has reported a series of 105 cases of mental disease of unknown etiology, arising in the fifth and sixth decades, comprising the manic depressive and de-

mentia præcox groups. We suppose he reflects the views of that hospital and indeed one has but to glance over the reports of hospitals for the insane all over the country to see that his position is ably supported and that the psychiatric research institutions have as yet offered no solution of the problem of the etiology or treatment of the functional psychoses. Therefore, we repeat that it behooves us to search diligently for etiological factors which can be attacked with some success and instead of criticising the work of those who are endeavoring to advance the knowledge of this complicated subject it would be more to the point if our associates would lay aside their prejudices and at least follow out some of the suggestions outlined in this paper. We feel sure that the patients would be materially benefited in their physical condition and if chronic infections were eliminated one could be at least practicing good medicine even if it would not be considered good psychiatry.

TYPES OF DENTAL INFECTIONS.

In describing the pathological conditions of the infected teeth which have come under my observation, I may not use the accepted terminology familiar to the dental profession, but shall confine my descriptions to conditions as seen by us.

There is considerable difference of opinion as to the efficacy of the various treatments of apical abscesses, which are legion, but I think we are safe in following the dictum of Thoma. He quotes from Grievess as follows: "There is to my knowledge no medicament, nor method, germicidal, oxidizing or electrolytic, that will revivify the pericemental apex. If it is vital, the tooth is healthy; if it is diseased, the tooth is next to doomed. This is the point in treatment where materia medica stops and good surgery begins." Thoma states that he has tried all antiseptics and found that none of them has the power to destroy completely the bacterial life in the periapical granulomata. The sooner this fact is recognized by the dental profession the better it will be for the patient, and for the physician who later sees the patient with some incurable malady.

The type of infection which is not so easy to determine often occurs in filled teeth in which the x ray does not give a clear picture. Many of our patients had to be reexamined because we did not at first realize the significance of the condition. Even in good radiograms the roots were blurred, twisted, apparently sclerotic, and with no involvement of the alveolar process. We hesitated at first to extract them. Deciding, however, that these teeth were diseased, we found after extraction that the roots were eroded, frequently absorbed, and that the tips of the roots for some distance were necrotic; and one obtained cultures of the non-hemolytic streptococcus. Perhaps we shall be accused of being too radical in our opinion and procedure in these cases; but, after many serious mistakes in not extracting such teeth, and with the good results obtained in the patients by reconsidering our decision and later extracting all such teeth, our position is justified.

A third type of infection, of which I have seen no description, is what we term a soft granuloma, occurring often on apparently vital teeth. I am

fully aware of the fact that the prevailing opinion is that vital teeth cannot become infected, and I also was a believer in this doctrine until experience taught me otherwise. These granulomata usually form below the crown of the tooth and encircle the roots, often running completely around them. The structure is seemingly newformed connective tissue, rich in bacteria. One might imagine that by scaling the tooth this could be removed, and such a supposition is correct, but we have repeatedly cultured the apices of these teeth and have always found them infected. Therefore, even if the granuloma were removed, the accompanying infection would continue at the apex of the root and the damaging process go on. Such a granuloma does not show in the radiogram and can very easily be overlooked. Frequently there is a faint red line near the gum margin, or the gum may be somewhat swollen and purple, but very seldom can pus be squeezed from the gum. The tooth may have no filling and show no sign that it is diseased, although at times it has a milky white appearance. It is our opinion that such a condition is a result of the spread of infection from a nearby infected tooth, for we have found it only where other teeth were infected in the same region. The following case well illustrates the necessity of recognizing this type of infection.

In the spring of 1917, a boy, twenty years of age, a patient of Dr. William A. Clark, was admitted to Mercer Hospital suffering from polyarthritides of a severe type and complicated with a valvular heart lesion. He was anemic, emaciated, and in an extremely nervous condition. An examination of the teeth, by the x ray method, showed several apical abscesses. These teeth were extracted. He did not improve and soon left the hospital, considered by us a failure. Soon after leaving the hospital he sent for me. When I saw him I was convinced that something radical should be done if his life was to be saved. An examination of the molars showed a condition that I had not seen before. The teeth were milky white, apparently vital, and had no fillings nor evidence of decay. The gum was swollen and almost covered the crowns of the molars. The boy protested when I suggested that these teeth should be extracted, because the extraction of the other teeth had not benefited him. I could not give him positive assurance that extracting the eight molars would benefit him, but I told him that nothing else could save him. Finally his family prevailed upon him to have them out. We extracted four at a time and the result was remarkable. He began slowly to improve and his pulse subsided from 120 to normal in a few days. His convalescence was rapid and in a few months he was able to resume his former occupation. (In March, 1920, this patient spoke to the writer who did not recognize him until he introduced himself. He had been steadily employed at war work in the South for the past two years and was in a perfectly healthy condition.) An examination of the extracted molars confirmed our opinion that they were the cause of the boy's trouble. Each of the eight molars had a large circular granuloma just below the gums, and cultures gave luxuriant growth of *Streptococcus viridans*. The patient's rapid recovery verified the

diagnosis of toxemia due to infected molars. If we wish to eradicate focal infections we must bear in mind that only by being persistent, often against the wishes of the patient who respects the opinion of his dentist, can we expect our efforts to be successful. Failure in these cases at once casts discredit upon the theory when the reason lies in the fact that we have not been radical enough.

INFLUENCE OF UNERUPTED THIRD MOLARS.

Another type of infection which is often overlooked occurs in unerupted and impacted third molars or wisdom teeth. There seems to be quite a difference of opinion in regard to the necessity for extracting these teeth when their presence is shown by the radiogram. Formerly I was inclined to give them little attention. During the last few months, however, I have had a series of cases which have convinced me that such teeth are a source of great danger and when found should be extracted. This statement may be modified perhaps by adding, if these unerupted teeth are causing any symptoms, and evidence of symptoms may be very vague. One of the most important signs, and often the only sign, is a very rapid pulse in an otherwise healthy individual, usually a young person of probably thirteen to twenty years of age. Sometimes there may be headaches in a girl or boy previously healthy, and these symptoms cannot be explained by any other physical condition or abnormality. If the third molars have not come through, and the radiogram shows them unerupted or impacted, it seems to me imperative that they should be extracted at once.

We have now five cases, all of which have come to my attention during the last six months, where the symptoms were directly due to unerupted wisdom teeth and where, after extraction of these teeth, the symptoms rapidly disappeared. The symptoms varied from mere headaches and irritability to profound mental disturbances, lasting for two or three years.

In the youngest patient, a lad of thirteen, there suddenly occurred, without any previous mental or physical condition to explain the trouble, a series of hysterical convulsions followed by maniacal excitement. He was admitted to the State hospital and under rest and care improved materially, as so many of these patients do at the time of their first attacks; subsequently the teeth were extracted. (Fig. 1.)

Another patient, female, seen by me six years previously, had a rather peculiar mental condition at the age of nineteen. She apparently recovered after six months in the State Hospital and was well for five years, but finally had to be recommitted. For the past year I have seen this patient almost daily. I had her bad teeth extracted and could not understand why she did not recover as her trouble was rather superficial from the mental viewpoint.

but her physical condition was very bad as she was anemic and somewhat emaciated. Finally I had her teeth radiographed and found four unerupted molars. These were extracted and her tonsils removed. She improved so rapidly both mentally and physically that today she is entirely well. (Fig. 2.)

Another case was that of a perfectly healthy and robust girl of nineteen who had been ailing for some time. She was cross and irritable, had frequent headaches, and wanted to spend her time in bed. Fortunately for her one day at dinner the gum over the right third molar, which was swollen, ruptured. An x ray picture revealed an impacted wisdom tooth. This was extracted but her symptoms did not abate. All of her teeth were then radiographed and three more unerupted teeth found and extracted with the result that all of her symptoms disappeared and she is now entirely well. I have no doubt that had these teeth not been found she would have had a serious mental disturbance, perhaps of a permanent character. (Fig. 3.)

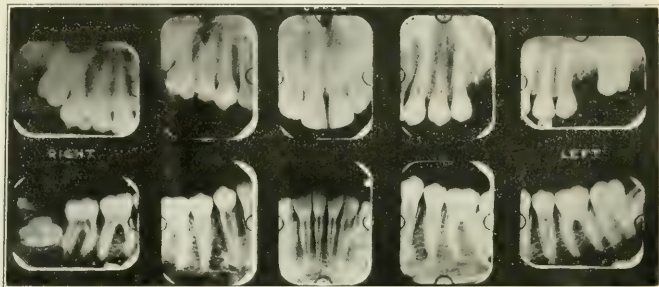


FIG. 1.—Radiogram showing unerupted and impacted third molars.

A fourth case was that of a Princeton University student, of nineteen, who was somewhat exhausted from his work in the students' training corps and suddenly there developed a profound depression with suicidal tendencies. An examination of his teeth showed them to be in good condition, but I noticed that he had no third molars and I told his parents I was confident that the cause of his trouble was unerupted wisdom teeth. An x ray examination proved that I was right. The diagnosis was not difficult to make because as he had no wisdom teeth one could confidently assume that they had not come through. However, I do take credit for the recognition of the relation of these unerupted teeth to the mental condition. This patient had infected tonsils which were removed and also a serious gastrointestinal infection. The young man improved but did not remain under treatment for the gastrointestinal infection. (Fig. 4.) He did not remain under treatment more than a month, but went home. The vaccine for his gastrointestinal infection was given by his local physician, but without result. He improved for a time, but after a few months he became maniacal. He has since been confined in various institutions but no attention has been paid to his infection. There is probably a serious lower intestinal infection and if it is not

eradicated there is little hope for his recovery. There is every reason to believe that the infection originated in the impacted third molars, probably from the tonsils, and then spread to the gastrointestinal tract.

A fifth case was that of a married man, aged thirty-six. He was admitted to the State hospital

patient commenced to develop paranoid ideas. On examination his tonsils were pronounced normal; stomach test showed normal acidity with streptococcus and *Bacillus coli* infections. A full course of autogenous vaccine therapy was given. The patient's infected teeth were extracted in March and April. There was some improvement in his condition. In May two impacted molars were extracted when the improvement was most noticeable, the patient gaining insight into his condition and expressing a desire to be occupied. He was allowed to assist in work in our laboratory. His service was so satisfactory and valuable that on June 30th he was discharged as a patient and placed on the payroll of the hospital. This case is interesting because of the fact that at both the Bloomingdale and Morris Plains Hospitals

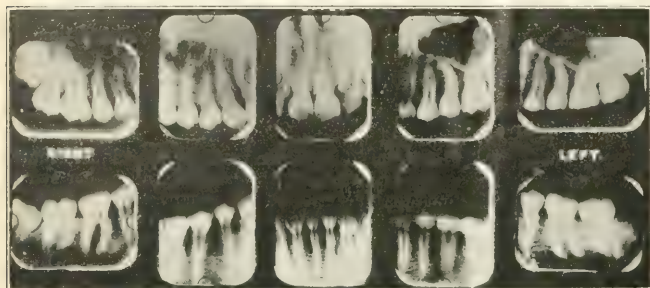


FIG. 2.—Radiogram showing unerupted third molars.

February 19, 1919, as a voluntary patient. Nothing of importance was found in the family history. He was born in Hungary; early life negative as far as known. Was graduated from a military academy at twenty-one, then entered the service where he remained until he was twenty-six. He drank to excess and was said to be a popular social leader. Took a commercial course at the University of Leipzig; worked very hard; became ill and took a trip through Norway and Sweden for his health. He returned to Hungary and engaged in the contracting business; married within a year. He failed in business after four years and became despondent about financial matters, also began to express ideas of jealousy about his wife. Came to the cotton mills in Danielson, Conn., where he soon began to think every one was against him. After several failures in business projects and on account of his persecutory ideas he was sent to Bloomingdale Hospital December 17, 1917. Left there February, 1918, not improved. Went to a police station in Jersey City and demanded the opportunity of a private conversation with the "judge" concerning plots being formed against him. Was sent to Jersey City county jail and six weeks later to Morris Plains (August 2, 1918). No improvement was shown while there and he was transferred to the State hospital at Trenton the following February (1919). On admission the patient expressed paranoid ideas concerning his wife. Was very nervous, sensitive, selfconscious, and introspective. His teeth were in bad condition. Radiograms showed one unerupted and two impacted third molars, also several infected teeth. The onset was three years previous when

a diagnosis of paranoia was made and a bad prognosis given. At present no delusions can be elicited and the man's whole attitude has changed (Fig. 5). He is, however, still under our observation.

The sixth case, F. A., a young single man, eighteen years of age; occupation farmhand. His family history was negative for nervous and mental diseases. Personal history: Birth and early development normal; completed one year of high school at the age of 16; went to work as a carpenter for one and a half years. Since that time has been considered a loafer and only worked at intervals. Wanted to be at home, somewhat asocial; no use for the opposite sex; overreligious. Onset of psychosis: For the last two years had frequent spells of melancholia with irritability which lasted a few days and would then subside. There was an acute onset one week before admission when he

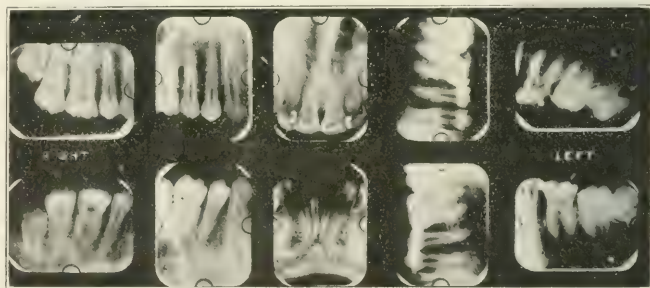


FIG. 3.—Radiogram showing unerupted third molars.

made an attempt to commit suicide by jumping into the lake. Following this he ate nothing; would not engage in conversation; had vague selfaccusations, said, "It is my fault, the devil has got me." He was admitted to the New Jersey State Hospital on June 20, 1919. On admission was depressed, retarded,

could not answer questions, made very slow movements of his lips; not resistive. Physical examination: Well nourished boy, five feet eight inches in height, weight 119 pounds; normal musculature. Since admission had some sort of a spell, partially lost consciousness, upper extremities rigid, lower extremities moved up and down; slight frothing at the mouth, stertorous breathing. Teeth and gums were practically in a healthy condition, but the x ray showed four impacted third molars, otherwise normal. The tonsils were enlarged and red, evidently infected; appetite poor, had to be fed by force.

Mental status: Taken three days after admission, showed a very marked depression with retardation and mutism. Insisted on getting out of bed, and wandered aimlessly about the ward. While in a room he broke the window and stuck his head through the broken pane causing a slight skin wound. He had no spontaneous stream of thought. The mental organization could not be determined owing to patient's mutism. Clinical laboratory report: Urine examination shows a heavy trace of albumin, otherwise negative. Wassermann reaction of blood and spinal fluid negative. The fixation test of the blood showed three plus positive to Type I streptococcus; colon bacillus fixation negative. The stomach examination showed a fair amount of hydrochloric acid, not above thirty, streptococcus from cultures. Treatment: Impacted molars were extracted in August and streptococcus recovered from cultures. Tonsils were enucleated September 4, 1919, and showed streptococcus infection. Autogenous vaccine from the streptococci recovered from his stomach was started June 29th. Subsequent history: Patient began to improve following the extraction of his impacted wisdom teeth August 31st. He improved rapidly, gained in weight, and on September 29th was discharged. At that time he was in a normal mental condition and had good insight into his psychosis. Letters from the family since then show that he is entirely normal. He has made two visits to the hospital and there is no evidence of any psychosis at present.

This case is similar to that of Case IV, in so far as the type of psychosis is concerned. The other patient did not recover with the removal of the infection and treatment by vaccine, but later there developed a maniacal attack, while the latter case recovered rapidly under treatment and was only three months in the hospital. The diagnosis was manic depressive insanity, depressed phase, with a possibility of dementia præcox because of mutism and resistiveness.

Cultures from these unerupted teeth gave in all cases the nonhemolytic streptococcus and from the results after extraction there can be no doubt that the cause of the trouble was in these teeth and that it was expedient to have them extracted. It is difficult to determine from the radiogram whether unerupted teeth are infected, but this can be seen in some cases and if symptoms occur which cannot be explained upon any other basis it is far better to extract the teeth than to leave them and have the symptoms continue. Every suspicious tooth should be extracted. We would emphasize the importance of the complement fixation test of the blood for the

streptococcus group as a means of determining whether or not suspected teeth are causing systemic disturbance. The use of this test would remove all doubt as to the advisability or necessity of extracting impacted molars when the patient is apparently healthy and the infection has not reached dangerous proportions. When the test is positive the impacted molars should be extracted.

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(To be continued)

MAJOR SURGERY OF THE MAXILLARY BONE THROUGH THE ORAL ORIFICE.*

BY STEWART L. McCURDY, M. D., F. A. C. S.,
Pittsburgh, Pa.

The aim of surgery is to cure disease by eradicating pathological conditions with as little injury as possible to the tissues; to prevent deformity; to correct existing deformity and to preserve and improve cosmetic appearance with a minimum amount of scar. "A long cut heals as quickly as a short one," the dashing surgeon has said; but this statement was made by an abdominal surgeon, and not by a facial surgeon. Today, the short cut in abdominal, as well as in all other operations, is to be preferred. The classical incisions through the face for the removal of the maxillary bones are shown in all surgeries, and are well known. When it is recalled that vaginal hysterectomies and other pelvic plastic operations are made through the vulval orifice, recklessness in making even minor operations upon the facial bones occurs too frequently. May we not make even more extensive enucleations through the oral orifice than through the vagina.

Reports of actual cases in which the patients were operated upon will be given, with just sufficient detail in description to make the methods clear. These cases include mechanical defects involving the mandible. Four cases will be reported, and presented in order of their appearance for operation. The first and fourth are cases of ankylosis, and the second and third are cases of prognathism. A number of operations have been performed by the writer for ankylosis, and other methods are recorded.

CASE I.—J. L. P., aged twenty, when six years

*From an address delivered before the Buffalo Academy of Medicine and the Dental Society, in Buffalo, October 22, 1919.

of age, fell upon the symphysis. There is very little in the history, except the nature of the injury and the treatment, which was the use of a Barton bandage. The history shows that the teeth could not be separated during these fourteen years. An examination showed the teeth to be in contact,

mandible being thrown backward, and prevented the mouth from being opened.

Operation.—It was evident that the influences that resulted in the ankylosis were on the right side, since nothing abnormal was discovered on the left side. It is my aim in all cases of mouth surgery to perform operations, including resections of the mandible, through the mouth, where this is possible. In this instance, owing to the absolute proximity of the teeth throughout and to the contraction of the soft tissues, this operation appeared at that time too difficult to attempt. An external incision was made along the ramus and body, and the bone cut off through the third molar, which had not at this time erupted. After the bone was severed, it sprung open very readily, and a tooth, which had been detached by the section of the bone, was removed. The bone swung around so that the teeth were in normal articulation, which left about a half inch space between their free ends. The mouth opened freely, showing that the ankylosis of the right side was absolute, and that the fourteen years of fixation of the left temporomandibular joint did not interfere with its free motion, demonstrating the principle that fixation of a normal joint never results in ankylosis; that ankylosis is always in proportion to the amount of disease or destruction of a joint or of the tissues controlling the movement of that joint. The half inch space left between the ends of the bone was filled with a strip of gauze and left for about forty-eight hours. This packing was removed through the mouth. The external wound was closed at the time of the operation and the wound healed without infection or other complication. The injunc-



FIG. 1. Case I.—Front and side views before operation.

with the jaw thrown backward and slightly to the right. (Fig. 1.) A side view is also shown. Fig. 2 shows an x ray picture of the mandible upon the right side. It will be observed that there is a distinct projection downward at the angle of the jaw below the inferior margin of the body of the mandible. The projection is three eighths of an inch. It will also be observed that the ramus is practically vertical, i. e., the normal angle downward and forward is not found. An opinion as to the nature of the injury at this late date would be that there was a fracture through the body parallel with the anterior margin of the ramus, and that a Barton bandage was applied to the chin, which pushed the mandible backward and to the left, carrying the detached ramus ahead. Union occurred with the bones in this position, leaving the posterior margin of the ramus resting practically against the mastoid, which interfered with the

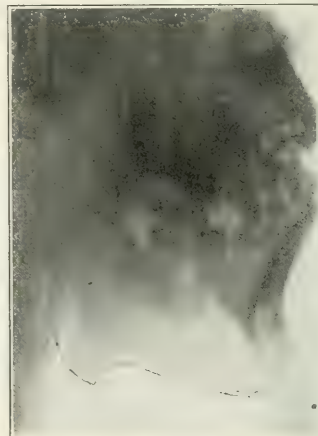


FIG. 2. Case I.

tion to the patient was that the mouth was to be moved freely at all times, and that it was to be propped open for several periods during the day.

The result is shown in Fig. 3. Functional usefulness of the mandible was so completely restored that when this patient volunteered for service in

the army he was accepted without question, and entered as a private and served to the end of the war.

CASE II.—J. W., aged eighteen, presented himself for relief from a condition shown in Fig. 4. It appeared that he was unable to close the incisors



FIG. 3. Case I.—Mouth open and closed showing the permanent range of motion.

by the space of a half inch, because the molars came in contact, leaving the rest of the teeth out of articulation. The mandible persisted in growing directly downward and forward instead of assuming normal angulation, permitting the teeth to articulate.

Operation.—The operation which occurred to me as being the proper one to correct this condition was the removal of a wedged-shaped section of the mandible through the third molar teeth. It was also decided to do the operation through the mouth. Fig. 5 shows a model of the teeth. The first step was to extract the second molars on the two sides. The third molars had not erupted. After the extraction of the tooth on the right side, the periosteum was lifted from the bone for about an inch from the gingival margin to the inferior border, both buccally and lingually, immediately over the extracted tooth. With the biting forceps

shown in Fig. 6, the bone was cut away by successive bites entirely through to its lower border. The same operation was done on the other side. Considerable care was required to make the cuts through the two sides equal, so that after the adjustment of the teeth there would be proper approximation of the four bones, thus guaranteeing union. Figs. 7 and 8 show x ray pictures taken shortly after the operation, and furnish evidence that there is most satisfactory alignment of the ends of these bones. I might remark here that the operation of making a section of the mandible through the mouth is made easy by the use of this particular form of bone cutting forceps, bite by bite, through the cavity left by the removal of the teeth. It was not difficult to cut through the bone, beyond the apex of the tooth socket, and through the body. The teeth were brought into articulation and held there with Angles bands. They were removed six weeks after the operation, and the bones were found perfectly united. Care was exercised in manipulation for several weeks.

The aftertreatment included nothing but antiseptic mouth washes and the removal of the wires that held the teeth together until two months after the operation. The wounds repaired perfectly, without infection or complication, and very little tenderness. Repair was absolutely perfect, as is shown by the perfect use of the jaw for all purposes. Fig. 9 shows the mouth open and closed, as well as side and front views of the face in repose.

Several years ago Doctor Harsha, of Chicago,



FIG. 4. Case II.

reported before the Section on Stomatology of the American Medical Association, a case in which he had resected the two sides of the mandible in a patient for prognathism. This was done by external incisions, these incisions extending for about two inches through the skin. Having in mind the

desire to cause as little mutilation as possible in surgery, I decided to make my resections through the mouth.

The question of nutrition to the mandible is one which occurs to everyone, and was so impressed upon the mind of Doctor Harsha in his operation of double resection, that he attempted to save the

operation was done on the opposite side. Care was taken to remove just enough bone to permit the replacement of the anterior fragment in normal articulation. The wound was closed with chromi-

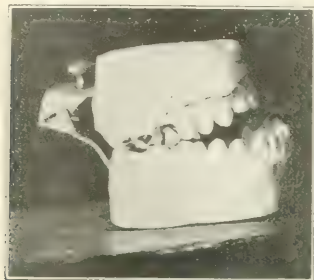


FIG. 4. Case II.

vessels and nerves. One must bear in mind the pathological condition that in the majority of fractures the vessels and nerves are torn off, leaving the bone anterior to the fracture and up to the symphysis without central nerve or vascular supply. In the case just reported, it was desirable, if possible, to interfere with the nutrition to the bones, since growth was too rapid.

CASE III.—L. L., aged twenty-two, presented a condition as shown in Figs. 10 and 11. It will be observed that the prognathism which he had was gradually increasing and had been developing for a period of three or four years. At the time of the operation the incisors below were three eighths of an inch in advance of the upper teeth when the jaw was retracted as far as possible. (See Fig. 11.) This young man had had his second bicuspid and first molar on the right side, and the second bicuspid on the left side extracted. In order that we might save all the teeth I decided to sever the jaw at the points where the teeth had been removed, closing up to some extent the gap thus left.

Operation. The operation included an incision through the gingival tissue down to the bone parallel with the alveolar process. The periosteum was dissected away from the bone along the internal and external surface of the body down to the inferior margin. The bone was then cut away by the bone cutting forceps described. The same



FIG. 6. Forceps.



FIG. 7. Case II.

cized catgut sutures. The lower teeth were wired to the upper teeth in articulation and left for two months, at the end of which time the wires were removed and union was found to be perfect. There was no infection or complication from the operation. The final result is shown in Figs. 12 and 13.

CASE IV.—S. J., aged seventeen, the history of the case is very vague, but as near as can be learned, when this patient was about nine years of



FIG. 8. Case II.

age she had osteomyelitis of the mandible. A scar will be observed on the left side of the cheek over the body of the mandible. There was practically no motion, and it was a question whether ankylosis was fibrous or osseous. This could only be determined at the time of the operation. Fig. 14 (upper

illustration) shows conditions as they existed before the operation.

Operation.—It was my aim to operate through the mouth, thus avoiding further scars. The first step was to make an incision through the mucous

had no molars at this point. The only way that it could be severed through the mouth was by the use of a chisel, and after dissecting away the periosteum from the external surface, a chisel was used, and section was made without much difficulty. After section, the bone became freely movable; i. e., the temporomandibular joint on the right



FIG. 9. Case II.

membrane along the anterior margin of the ramus within the mouth, and dissect the masseter from over the external surface and angle of the mandible. After this was done, an effort was made



FIG. 12. Case III.

to separate the teeth, but with all of the force that could be used it was found impossible. It was decided to sever the body of the bone through the mouth as near the angle as possible. The patient



FIG. 10. Case III.

side, which had not moved for nine years, performed its function as perfectly as though it had not been held in fixation. The ramus on the left side

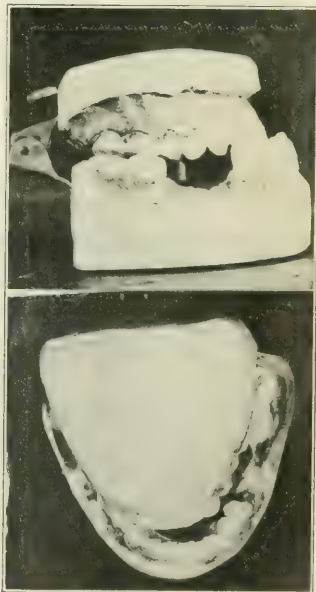


FIG. 11. Case III.

back of the section of bone remained perfectly firm, showing that there was bony ankylosis, or

such dense fibrous ankylosis of the upper portion of the ramus that it was held perfectly firm. It was thought best to remove the angle and lower end of the ramus so as to make a half inch space

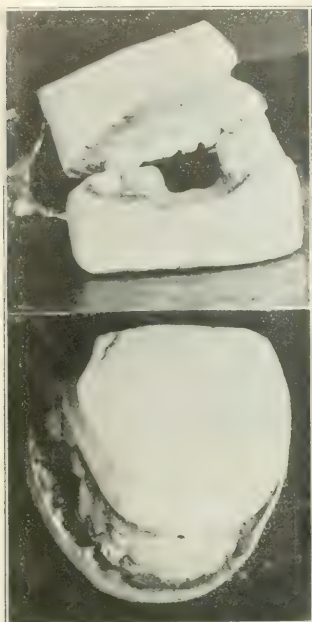


FIG. 13. Case III.

between the two free ends of bone. In cutting away the bone with a biting forcep, there was no motion of the ramus. The cavity between the two bones was packed with a strip of gauze, which pushed the bones apart and held them there. The



FIG. 14. Case IV.

ordinary rubber mouth gag, reduced one third, was wedged in between the teeth on the right side. The packing was removed forty-eight hours after the operation, and not used again during the dressing.

A precaution that appeared essential was that the rubber mouth gag was worn at all times, with the exception of when the patient was eating and at such times as it was necessary to cleanse the mouth. It was worn all night. Sterile liquid foods were given through a sterile tube for the first two weeks, so as to avoid introducing any food particles into the wound. No great care was taken to cleanse the cavity and it did not receive any at-



FIG. 14. Case IV.

tention after the removal of the packing. The soft tissues, as shown by inspection, collapsed between the ends of the bone and repair advanced without infection or any symptoms, with the exception of a slight amount of soreness. The patient was instructed to use the mandible freely at all times.

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ORAL HYGIENE IN RELATION TO PUBLIC HEALTH.*

BY ALFRED C. FONES, D.D.S.,
Bridgeport, Conn.

Although dentistry has been practiced in some form or other for many hundreds of years, it was not until the years 1839 and 1840 that it was started on its career as a profession. In those years the first dental journal was published, the first dental society organized, and the first dental college founded. From this period until the eighties, when Professor W. D. Miller (1) published his book in which he proved conclusively the cause of dental decay, the principal study and effort of the dentist were directed toward repair and replacement of lost tooth structure. This effort still continues to be the chief interest of dental science, but Professor Miller's scientific work, as well as the preceding discovery of Pasteur concerning microorganisms, opens a new field of thought and investigation which has been gradually developed until, at the present time, we are brought to realize the great influence the teeth and their supporting structures play in the production of disease. Heretofore, practically all effort and concentration have been put forth upon

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the hard tissues, namely, the enamel, the dentine, and the alveolar process. Today we realize that dentistry must concentrate upon the soft tissues, the gums, the pericementum and the pulp, for these are the tissues chiefly involved in permitting the ingress of bacteria into the lymphatics and thus in the production of many systemic infections.

Although there are other phases of dental pathology which may produce a detrimental action, either locally or systemically, the following three conditions are most prevalent, and by far the most serious: 1, Unsanitary mouths, with decayed teeth and decomposing food; 2, diseased pericemental tissues, and 3, devitalized and infected teeth.

When it is realized that barely fifteen per cent. of the people in this country use a toothbrush, the picture of the unsanitary mouth cannot be overdrawn, nor can the great prevalence of such mouths be overestimated. Inflamed and congested gum tissue, broken down and decayed teeth, green and brown stains, calcareous deposits and decomposing food débris; these mouth conditions are the rule, and not the exception. The evil influence of the immense numbers of bacteria in such mouths is noticeable on the tonsils, the pharynx and the gastrointestinal tract. The toxic influence of unclean mouths is especially noticeable in children, frequently producing headache, malaise, dizziness, imperfect vision, slight fevers, diarrhea, and a general condition of malnutrition. And these minor ailments can only be considered as secondary to the dangers of systemic infections which are frequently produced by the actual penetration of the bacteria through the mucous membrane of the tonsils, the pharynx, and the intestines.

The next factor is that of the inflamed and diseased tissues supporting the teeth. For a number of years dental pathologists have repeatedly called attention to the dangers of these pericemental infections as a probable cause of systemic disease, and since Professor Noyes's definite demonstration of the network of lymphatic vessels in the pericemental tissues, even to the extreme borders of the gingiva, there can be no doubt of the ingress of bacteria through these vessels into the blood stream, and their subsequent localization in some other tissues of the body. There is much scientific and clinical evidence to prove that pyorrhea alveolaris is a cause of systemic infection which may be produced in three ways: 1, By the constant exudation of pus in the mouth and thence into the digestive tract; 2, the absorption, by the lymphatics of the bacteria and their toxins present in the deeper areas of the infected tissues, and 3, by the pumping action of loose teeth in their sockets during mastication, forcing bacteria and their toxins into the capillaries and thus into the blood stream itself.

It has been estimated, and I believe correctly, that more teeth are lost from pyorrhea alveolaris than from dental caries. These pericemental infections with inflamed gum tissues must eventually be considered in the prevention of tuberculosis, the next great advance in the elimination of which will be accomplished when unhygienic conditions in the mouths of the people are bettered. The medical man must realize that the gingival borders of the

gums present an area eight times greater than that of the crypts of the tonsils, and that in the average mouth the gums are congested and bleeding. This provides the ideal culture medium for the tubercle bacilli. Add to this the lowered bodily resistance induced by the absorption of the poisons generated by the immense numbers of bacteria present in such mouths, and it makes a pathological combination that seriously hinders the medical profession from making any further reduction in the mortality from this disease.

The third phase for consideration is proving even more serious than the first two, for the x ray has revealed to us infected areas within the bone tissue at the apices of the roots of the teeth which we have heretofore never suspected. These apical infections are found only upon teeth with devital pulps and have remained so long undiscovered because the action of the *Streptococcus viridans* is so subtle and produces no local soreness, pain, inflammation nor pus.

Our research workers have clearly demonstrated that, under certain conditions, the *Streptococcus viridans* in the apical infection becomes aggressive and migrates, developing a selective action which varies in affinity for different tissues of the body, and the work of Billings, Rosenow, Hartzell, Thoma, and others has proved scientifically that they are the cause of many of the most serious systemic infections, especially those involving the heart, the kidneys and the joints. The interesting work of Dr. Henry A. Cotton, medical director of the New Jersey State Hospital at Trenton, has firmly established the relation of oral infection to certain types of nervous and mental diseases.

The general practitioner in dentistry who is doing serious x ray work in his practice has abundant clinical evidence of the appalling prevalence of apical infections, and it is not necessary to review the long list of secondary infections that have been directly attributed to these primary foci. It can, however, be truthfully stated that, because they are so prevalent, they are the most serious menace to health that has yet been presented to the dental and medical professions. Is it not plain how hopeless the situation is? Dental caries is so exceedingly common that it is difficult to find two school children out of a hundred with perfectly sound teeth, and even in early childhood our school children average seven cavities for each child. Consequently there are few young people who escape a pulp involvement due to the penetration of the bacteria through the tooth structure, destroying this delicate and sensitive tissue. Pulpless teeth are, therefore, so prevalent that it is the exception for an adult over thirty years of age to present a mouth without one or more devitalized teeth which already have an apical infection or in which one may develop.

This brings us to a realization that dentistry can no longer be considered as a luxury, but that dentistry in some form is an absolute necessity for everyone. We are forced to the conclusion that we are now facing our most serious public health problem in these pernicious mouth conditions, and that there is no one factor so important to public health. Mouth hygiene must be considered as the most im-

portant and most pressing health measure. With whom does the responsibility for the solution of this problem rest? The dental profession? If so, can the dental profession, as it exists today, cope with the problem? Let us make a brief analysis of the situation.

There are, in the United States, about one hundred and ten millions of people. From statistics based upon the examination of the teeth of children in the public schools in various sections of our country, we deduce that fully ninety-five per cent. of these children are afflicted with decayed teeth. There are, approximately, forty-eight thousand dentists in the United States. These men cannot give proper dental service to more than fifteen to twenty million persons. There are, in other words, but fifteen to twenty millions of people who are sufficiently educated to a realization of the importance of the care of their teeth to visit the dentist with any degree of regularity. Even under these conditions, the time of the average dentist is wholly filled with the relief, restorative and repair work needed by these people. This leaves eighty millions who give little or no attention to their mouths, excepting possibly to have a tooth out when it aches. Good dental service is expensive, so expensive in fact, that it has always been considered a luxury. Must we not conclude, then, that the eighty millions of people for whom there is no provision in dentistry form the great working classes to whom sound teeth are a necessity for good health?

Do we need more dentists? Yes. But how are we to secure them? The modern tendency of our dental colleges is to provide the profession with better equipped men, to raise the standards of entrance requirements, lengthen the college course and enlarge the curriculum, until eventually the average dental graduate will be twenty-five or twenty-six years of age. In a short time the standards for dental education will equal those for medicine, and both the dental and medical students will be required to pass an academic college course before entering the four years' professional course. And this is as it should be. The man who is to handle the serious conditions which are present in the average mouth must be fully equipped for this service, for to many of his patients it will be a matter of life or death.

From the foregoing analysis we are confronted with the fact that, although this public health problem should belong to the dental profession, the profession as it stands today is not able to shoulder it, and our colleges can never turn out graduate dentists fast enough to cope with it. And we are further forced to admit that not only is the dental profession unable to cope with the problem of mouth hygiene as a public health measure, but the average dentist cannot cope with the need for mouth hygiene as a private health measure, even for the patients in his own practice. For this condition we do not hold to account the dentist who admits that he cannot cope with the appalling conditions alone; he has been pushed to the last notch in the attempt to meet the great flood of relief, repair and restorative work which has come upon him. But what of the dentist who opposes every

effort to provide the dental profession with the help it must have, and the public with the service it so badly needs?

We have known for many years that these pernicious mouth conditions are unnecessary. It has been proved that eighty to ninety per cent. of dental decay can be prevented by a system of extreme cleanliness and correct diet, especially in the elimination, or at least the restriction, of the consumption of free sugars.

We know first that the bacterial plaque is the initial stage of dental caries, and that frequent removal of these plaques from all the surfaces of all the teeth by hand polishers is the most efficient means, aside from a correct diet, for the prevention of dental caries. Second, that the frequent removal of all calcareous deposits around the necks of the teeth, by the use of instruments, is most effective in the prevention of infection and destruction of the dental tissues surrounding the roots of the teeth. Third, that the faithful use, daily, of the toothbrush and floss silk and of a mouth wash, such as lime water made from coarse calcium oxide, is the best means known for the thorough removal of food debris and dissolving the plaques. Finally, that nearly all microorganisms in the human mouth are harmless if deprived of a pabulum, such as food debris, upon which to feed, develop and multiply. Now, if these are facts, how shall we make a practical application of them to aid the populace in preventing dental caries, pericemental infections, and in appreciating the importance of clean mouths and sound teeth?

The answer, in my judgment, is by means of the dental hygienist, a woman educated and trained in this specialty. The first effort to demonstrate the great service that such women could render was made in Bridgeport, Conn., in 1914 when the first class of dental hygienists was graduated. In 1915 a second and in 1917 a third class were graduated. The efficiency of these women in carrying out educational and preventive measures, and the great benefits that have emanated from her services has resulted in the establishing of organized training schools for dental hygienists at Columbia University, New York city; the Forsyth Dental Infirmary of Boston, the Rochester Dental Dispensary, the University of Minnesota College of Dentistry at Minneapolis and the Colorado College of Dental Surgery at Denver. The organization of several additional training schools is now under way, and during the past five years twelve states have amended their dental laws to permit of the practice of dental hygienists under the general supervision of the dentist. The dental hygienist is firmly established, the present demand for her services is far greater than the supply, and nothing can stop this educational and preventive movement.

The present need of the dental profession, in solving the public health problem of mouth hygiene, is an immense corps of women workers, educated and trained as dental hygienists, and therefore competent to enter dental offices, infirmaries, public clinics, sanatoriums, factories and other private corporations, to care for the mouths of the millions of adults who need this educational service so

urgently. The need in every state is so great that every state must provide its own training schools, and if the dental profession will not meet the situation, the state health or educational authorities must do it. This is the only sane and logical method by which any help can be provided for the adult population, with the almost hopeless mouth conditions which now prevail. The damage has already been done and there are not enough dentists to restore the lost tooth structure in one fifth of these mouths. There is, however, a service that the dental hygienist can give in correcting the uncleanness and in educating for the prevention of further disease.

The real field for prevention is not so much in the adult mouth, but is at the very source where the evil originates, and that is in the child's mouth. The greatest work to be done is in the public schools. For five years we have been demonstrating the value of an educational and preventive dental clinic in the Bridgeport schools, and it has developed into one of the most important parts of our school and health systems.

Under the plan of this clinic, every child in the first five grades undergoes an examination of his mouth and receives a prophylactic treatment of his teeth at regular intervals, accepting it as much a part of the school curriculum as his lessons. Every child in these grades is taught a method of brushing his teeth and is educated in the care of his mouth. In this way the municipality accepts half the responsibility, that of aiding and educating the children in the prevention of dental decay, while the home care of the mouth and proper feeding must be assumed by the child and his parents—a plan on the fifty-fifty basis.

During the past year we have cared for the mouths of twenty thousand individual children with a corps of twenty-six dental hygienists, two supervisors, and an assistant supervisor, who are also dental hygienists, and three women dentists. The service of the dental hygienist consists in the actual cleaning and polishing of the children's teeth in the schools, the examination and charting of mouth conditions for permanent records, individual instruction in the care of the mouth, toothbrush drills and talks in the class rooms. Supplementary to this are stereopticon lectures given by the supervisors and dentists for the education of children in grades four to eight. Illustrated pamphlets are sent to the home for the education of the parent and to gain cooperation.

This has been a pioneer work and was begun during the war period which produced very unsettled conditions in our schools. However, we have proved that the teeth of the children carried through this five year demonstration show, at the end of the period, a reduction of thirty-three and nine tenths per cent. in dental caries. This figure represents the average reduction of dental caries in the fifth grade of thirty schools. The record in some schools was quite remarkable, one school having as high an average as sixty-seven per cent., and several with averages of over fifty-seven per cent. The comparisons which we have been able to make in our health records also convince us that mouth

hygiene is a very powerful factor in the reduction of communicable and infectious diseases in childhood.

We do not assert that mouth hygiene is a panacea for all the ills of the school children. Instead we are daily confronted with the fact that there is a crying need for a general health program of considerable magnitude for the prevention and correction of other remediable physical defects besides those found in the mouth. It has been truly stated that the diseases from which we die in adult life are frequently those which are contracted, or made possible in early youth. The data collected by the draft boards have revealed to us the fallacy of specializing on the child's brain and ignoring his body. Watching the children in the chairs of the hygienists in the schools, and noting some minor physical defects which are apparent to even a casual observer, I suddenly realized that the medical profession was confronted with a problem similar to that of dentistry.

With the long and expensive education and training now required for the prospective physician, could the medical profession hope to send medical men into the public school system in sufficient numbers to examine every child and record the condition of the eyes, ears, nose, throat, chest, back and feet, and the height and weight? Will they not also be obliged to have the data secured and the classifications made for them so that the trained medical mind may concentrate upon the final diagnosis? It hardly seems practical to attempt to add the physical examinations to the field of the medical nurse. Her training is such that she is indispensable in the care of those who are already sick.

For the moment, I would ask you to consider that, by training, neither the medical nurse nor the dental hygienist is especially fitted to undertake the physical supervision of the child, either working separately or together.

This brings us to a plan I would like to present to you to provide the children in our public schools with the same careful supervision of the physical development that is now accorded the mental development. And just as the supervision and training of the child's mind is intrusted to one person, the teacher, so should one person be charged with the supervision of his body. Let us call this person the public school hygienist, a woman trained and educated dentally and medically to a sufficient degree to act as physical inspector, prophylactic operator and teacher of health and hygiene. In other words, we will Burbank the medical nurse and the dental hygienist, and thereby eliminate the unavoidable friction of two workers with separate interests. The public school hygienist will be supplied in much the same way as the public school teacher. She will be a high school graduate trained in the State Normal School for Teachers, receiving, in addition to the regular normal school courses in pedagogics and psychology, the special medical and dental education to fit her for her field of service, and she will enter the public school system on the same basis as the public school teacher.

The practical application of this plan would be as follows: The public school hygienist would be

permanently located in a school and charged with the supervision of a certain number of children. She would prepare a normal diagnosis for each child under her supervision. That would mean the recognition and recording of any deviations from the normal in the eyes, ears, teeth, nose, throat, chest, back, feet, height and weight. The medical and dental men are thereby relieved of the necessity of expending an enormous amount of time and energy upon the sorting and classification of the normal child from the abnormal. The way is thus cleared for the concentration of the highly specialized mind upon the final diagnosis. The recommendations for the correction of remediable defects, either through the family physician and dentist, or through the municipal clinics, are made, and it becomes the responsibility of the school hygienist to work through the child and the home to the end that the defects are corrected.

Once the physical defects which interfere with proper growth and development are recognized and recorded, the school hygienist begins at once the teaching of health habits, the group competitions based upon weight and height, the cleaning and polishing of the teeth, the toothbrush drills, the food talks—in short, the physical education and supervision of the child.

It is not possible, at this time, to give further details of the plan, but it is not necessary to picture to this body of professional men what such a system would do for the boys and girls of the United States, and after all, it is only through the concentration of our efforts upon them that any great improvement in personal and public health can be secured.

In conclusion, I would like to refer to a statement made previously in this paper concerning the relation of dental caries to the use of free sugar. Personally, I believe that in childhood a well balanced diet, with special emphasis on the calcium content foods, and the elimination of free sugar, would result in practical immunity from dental caries, even in the absence of a rigid system of mouth cleanliness. For thirty years we have known definitely that the actual cause of dental caries was the action of microorganisms on sugars and starches, reducing them to lactic acid which is the solvent for the cementing substance joining the enamel rods. The causes of susceptibility and immunity are still under investigation, but I believe that susceptibility is mainly in proportion to the consumption of free sugar, and that immunity is acquired, in great measure, by the absence of free sugar in the dietary. Assuming that the excessive consumption of free sugar is the most important factor in creating susceptibility, the question arises as to whether the detrimental action is purely local or a combination of local and constitutional factors.

In 1913 Dr. Edward C. Kirk (2), in presenting a paper before the Toronto Dental Society, suggested as a subject for research, the relation of the constitutional effects of an excessive carbohydrate diet to caries susceptibility. He said "Let me direct your attention to an aspect of dental caries that has not, so far as I am aware, received the serious consideration that it deserves. The di-

rection of progress of dental caries is from the free surface of the tooth toward its interior until finally the pulp chamber is invaded. If we examine a section of carious dentine cut parallel with the tubuli, under the microscope, we find the bacterial invasion proceeding pulpward from the dentinoenamel junction. The sectional area of the tubules nearest the enamel shows the greatest enlargement and is packed with organisms, whereas that portion farthest from the enamel junction gradually tapers off until at the extreme limit of bacterial invasion the lumen of the tubule is so narrow as to contain but a single micrococcus. If dental caries is dependent upon lactic fermentation of alimentary carbohydrate debris, how is it that the direction of advance of the bacterial invasion is away from the source of food supply rather than toward the food supply? When we consider that the blood plasma itself in caries susceptible individuals probably contains an amount of sugar above the physiological normal, then it seems rational to conclude that the blood plasma, or its equivalent in the juices of the dentinal fibrillae, can furnish a sufficient amount of carbohydrate material for the nutrition of caries producing organisms."

Since the valuable experiments of Dr. Russell W. Bunting and others show conclusively that the enamel is a permeable membrane, the possibility of constitutional influences seems unlimited. If, according to the laws of osmotic pressure, salts from the blood and saliva pass readily through the tooth structure, is it not possible that there could be an interchange of other constituents of the blood and saliva that would also help to establish immunity or susceptibility? Might not the lactic acid formed by fermentation processes on the surface of the tooth be attracted by some constituent of the blood circulating through the pulp, possibly a like product of fermented glucose absorbed from the intestinal tract? Such an attraction would encourage the penetration of the lactic acid through the enamel, producing the initial stage of dental decay. If such were the case, we could account for the fact that many unclean mouths are wholly immune in spite of the presence of bacterial plaques on the teeth, while seemingly clean mouths are vigorously attacked by dental caries. In the former the free sugar consumption might be so limited as to produce no abnormal product in the blood and body juices and the constitutional factor would thus be lacking, while the latter case would be just the reverse.

Cane sugar has been used for hundreds of years by different nations, and they have invariably shown a susceptibility to dental decay. Free sugar is not a natural food and Nature never intended that it should be extracted from the cane and beet to be consumed in excessive quantities as it is today. When we consider that dental caries can only be produced from starch and sugar and that the starch must be reduced to dextrose before it can be converted into lactic acid, it is quite truthful to make the statement that all dental decay is produced by sugar.

Clinical experience and general observation, however, seem to show that the high consumption of

starchy food, if unaccompanied by free sugar does not result in dental decay. In fact, the evidence is all against sugar. Among the peasant classes of Italy, Greece, the Balkan States, and Germany, where the diet consists mainly of coarse foods, vegetables and fruits, but where free sugar is a luxury and cannot be indulged in, decayed teeth are the exception and not the rule. This is also true of the Esquimaux, the African negroes, the American Indians, the Maoris of New Zealand and many of the South Sea Islanders.

In the examination of the mouths of many hundreds of draftees, we noted especially the mouths of the Italians, many of whom had thirty-two perfect teeth without a cavity or filling, and yet these men had reached twenty-one years of age without even owning a toothbrush, and had consumed quantities of starchy foods. They stated that they did not care for sweetened foods, and we found later that the free sugar consumption in Italy averages but thirteen pounds per capita a year—less than a teaspoonful a day. In this country we average nearly one hundred pounds per capita a year. The American mother would be inclined to question this average, but few realize the enormous amount used weekly in the average home, for cooking alone. The medical profession is, to a great degree, responsible for this situation, for the family physician has taught mothers to believe that free sugar is an essential food for growing children.

Under the existing conditions, what chance has an American child to have sound teeth? If he is a modified milk baby, sugar is added to the milk in the proportion of one ounce in twenty, at only a few weeks after birth, and all too frequently cane sugar takes the place of milk sugar. The taste and craving for sweetened foods is developed at once and is steadily encouraged as he progresses to cereals with sugar, puddings, jellies, sweetened crackers, and other sweet foods. To the normal sugar supply found in milk, vegetables, and fruits, and in the conversion of starchy foods is added an ever increasing amount of free sugar at meal time, augmented between meals by soda water, ice cream and candy. The sugar consumption is so excessive that the liver is overloaded with glycogen, and I believe that herein lies the secret of the child's susceptibility; not only in the fermentation of the sugar on the teeth, but also in the action of osmotic forces through the enamel with the blood and body juices which are surcharged with glucose and the absorbed products of fermented surplus glucose from the intestines. There can be but one result: the deciduous teeth are attacked by dental caries, and at the beginning of his school life the child presents a wrecked mouth and it is only a matter of time before the permanent teeth are similarly affected.

And so we find that the medical profession, by advocating free sugar as part of the diet, is constantly creating a disease known as dental caries, which demands a specialty known as dentistry. Dentistry, in turn, has filled, crowned and capped these decayed teeth in innocence and ignorance of the bacterial colonies which exist on the ends of the roots of pulpless teeth, causing secondary infections

of the heart, kidneys, joints and other portions of the body, thus returning the compliment to the medical profession by creating thousands of cases of systemic infection to be given over to its care and treatment, with the public as the victim.

Neither the medical or the dental profession has realized that this vicious circle existed, but no great reduction can be made in dental caries and resultant systemic infections until this circle is broken.

The American people have been slowly educated to a knowledge of the evils of alcohol until we now have national prohibition. Any great reform must be accomplished by the same painstaking enlightenment, and American mothers who have for generations been educated to look upon free sugar as a food, must now be taught that free sugar is the chief cause of dental decay and that dental decay is the chief cause of many of the serious illnesses of childhood and adult life.

A number of years ago one of the leading surgeons of the country made this statement: "The next great step in preventive medicine should be made by the dentists; the question is, will they do it?" I should like to amend that statement to have it read: "The next great step in preventive medicine should be made by the medical and dental professions, by their advocating a correct diet for children from birth to fifteen years of age, and from which free sugar shall have been eliminated.

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A SURVEY OF DENTAL INFECTIONS.

By M. DIAMOND, D. D. S.,
New York.

With the aid of an oft repeated story we can illustrate the situation of both the physician, who has a tendency to attribute almost all constitutional disorders to foci of infection existing about the teeth, urging the immediate removal of all such pathological members of the dental apparatus, and the dentist, who still feels reluctant about making an attempt at eradication of such infections. The story is intended as a joke on the physician and concerns itself with the unfortunate patient, who after experiencing a long list of attempted cures for his arthritis, is finally sent to the dental specialist with a note requesting the removal of all his teeth. Upon examination, the story goes, it was found that the patient carried complete upper and lower dentures. A good story and a good laugh; but the members of the dental profession forget for the moment that the evident loss of a full complement of teeth proves that the unfortunate patient at one time presented a condition of infection general enough to have perhaps produced a resultant accumulated infection in the system.

But this is the point. Should we be interested in the infection and its eradication or in watching the disturbance of such infection upon the constitu-

tion? The dentist seems less interested in the eradication of infection than the physician but to the physician the phrase "eradication of infection" is synonymous with "extraction of teeth." Is it then essential to remove every tooth that shows evidence of tissue degeneration? Handicapped as we

the gradual breaking down of tooth structure. Caries usually attacks the crown portion of the tooth, as shown in Fig. 2, and its development can be arrested easily by a surgical removal of tooth structure somewhat beyond the already decayed substance. If permitted to progress, caries will cause an inflammatory involvement of the pulp tissue (Fig. 3), and in its later stage (Fig. 4) we find a liquefaction of pulp tissue with degeneration of tissue beyond apex of tooth, forming granulomata, cystic forms of tissue degeneration.

This, in brief, is the full course of caries. The first stage of the disease, as already mentioned, can be easily arrested by surgical interference. The mechanically prepared cavity is subsequently restored to anatomical formation with a substance, resistant to the forces of mastication. The highest form of such restoration is known as the gold inlay. In the second stage of the disease, we enter upon a new field of operation. With the involvement of the pulp, it becomes necessary to remove all organic contents within pulp canals. From this point the observance of aseptic conditions is imperative, which means the sterilization of all instruments and the sterilization and isolation of the field of operation. The removal of contents is not always as simple as would be supposed by looking at the perfectly straight, roomy canal represented in the series of diagrams. The conditions we have to contend with are the tortuous, the very constricted canals, and the minute ramifications of the main canal at the lower third of the root. Whatever the mechanical and physical difficulties may be, it is to be remembered that all of the decomposed organic substance must be removed to the very apex, mechanically detaching particles from the canal wall.

The technic employed varies but it might be mentioned that the use of the x ray is an indispensable and invaluable adjunct. Following the removal of the contents sterilization of the canals is effected by a final process of ionization, an electrochemical

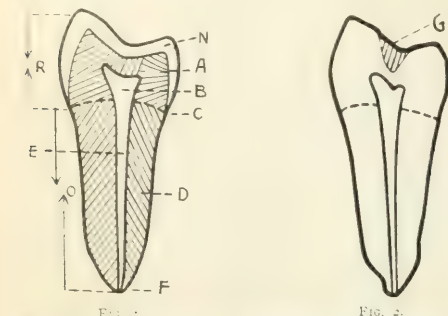


FIG. 1.—R, root; N, enamel; A, dentine; B, pulp chamber; E, pulp canal; D, cementum; C, cervical margin; F, apex; G, cavity superficial.

still are by a decided lack of information on the subject, the answer is emphatically—no.

How then shall we know which teeth to treat and which to remove? Where does the responsibility of the physician begin and where does it end? Is the physician in a position to dictate the procedure of the dentist regarding the removal or treatment of teeth? These are all questions that should be answered. It is not easy to make classifications and yet I know of no better way to answer the questions. The people who come to us for treatment can be classified into two main divisions: Those who have infections within the buccal cavity and underlying strata of tooth forms, with evident constitutional disturbances, and those who have infections within the buccal cavity and underlying strata of tooth forms without evident constitutional disturbances. Those who come within the first group usually consult the physician; those within the second the dentist. I shall first devote myself to the consideration of the second group, which is not necessarily the largest nor the most important, but a careful analysis of which will simplify the problems of the first group and present the subject to the physician in a more intelligent manner.

To familiarize ourselves with the anatomical and structural divisions of teeth, I have attempted a diagrammatic representation of a normal tooth in Fig. 1. It is important to have a proper conception of the normal before we proceed with a consideration of the pathological. Tooth infections may be classified, generally, as, 1, those existing within the body of the tooth emanating through the pulp canal upon the surrounding tissues, and 2, infections existing without the body of the tooth, involving periodental and alveolar tissues, sometimes penetrating the body of the tooth through the apical foramina.

The important disease that characterizes the first group is caries, which is a parasitic producing disease aided by a fermentative reaction process, yielding lactic and subsidiary acids which assist in



FIG. 2.

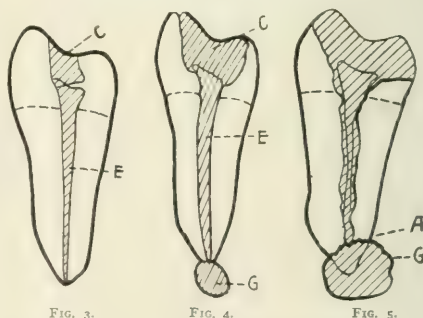


FIG. 3.—C, cavity (progressed); E, inflamed pulp.
FIG. 4.—C, continued progress of caries; E, liquefaction of pulp; G, granuloma.
FIG. 5.—A, destruction of root end; B, large granuloma.

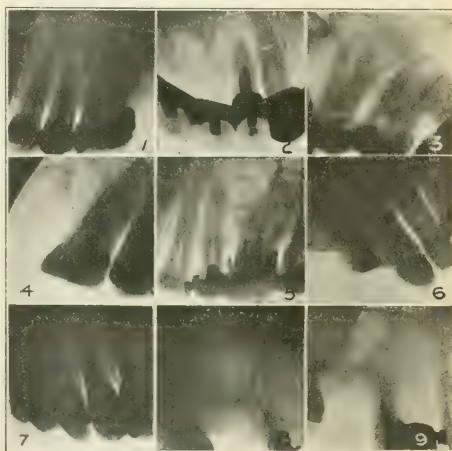
process, which at present is the best method available. It is as yet not definitely known just how much ionization is really needed in a given condition to produce the desired result in destroying the virulent forms of bacteria (*Streptococcus viridans*) to be found within the canals and in the

tissue beyond the apices. However, the greater the area of infection, the more ionization is used, until as a final test a culture may be made for microscopic examination. A negative result leads us into the next step in our operation which is a filling or sealing up of the canal cavities with all the ramifications. The continued success of the operation depends upon the proper condensation and hermetic sealing up of root canals to or through the apex, and at present the opinion varies. Evidence collected over a period of several years shows that the radiographic presentation of tissue destruction or degeneration beyond apices of teeth disappears after a period of several months following the observance of the detailed technic summarized above. We have at present sufficient and definite evidence of tissue regeneration within a period of time. The method of treatment referred to is applicable to such conditions as are graphically presented in Figs. 3 and 4. There are, however, conditions of physical deformities, such as distorted root ends with tortuous and very constricted canals, which make it impossible to carry out the very necessary process of reaching the apex. In such cases the technic is carried on as far as physical condition will permit, the remaining root next being surgically amputated and the tooth retained. And again, amputation is indicated in such cases as are presented in Fig. 5, showing an actual involvement and destruction of root structure. The procedure in technic is exactly the same, the root canal being filled, prior to the root amputation.

We now come to the consideration of tooth infections outside the body of the tooth. The course of this type of infection begins with some form of irritation at the gingiva or cervical margin of the tooth, causing a gradual destruction of peridental and alveolar tissues, destroying the attachments of the root and eventually exfoliating the tooth. The forms of such irritation may be the accumulation of tartar (calcareous deposits from saliva) and an unnatural stress exercised against a single point of tooth during mastication due to a malocclusion and referred to as traumatic occlusion, but at the present day the great majority of such mechanical irritations are caused by the use of the shell crown, improperly constructed fillings, or inlays overhanging upon the gingival margins. Any fixed appliance used as a method of restoration must necessarily lower the resistance of the tissues underlying it by producing a condition of stasis brought about by the limitation of the natural functions of the teeth used as abutments and by the accumulation of food debris harbored by any such appliance. It seems necessary also to include removable appliances which, during their period of use within the mouth, keep the abutment teeth in a fixed relationship, because the natural functions of the abutment teeth again are limited, although it is easier to keep the appliance hygienically clean. The term that is usually applied to this destruction of peridental and alveolar tissues is pyorrhea (literally a flowing of pus) originally applied to the condition that actually showed a discharge of pus, but now broadened to include all forms of peridental and alveolar infections. We are, therefore, in a position to say that

many forms of pyorrhea are curable, because such involvement of peridental or alveolar tissues can be cleared with the removal of the mechanical irritation, whether due to tartar, traumatic occlusion, or any of the forms of partial or whole tooth restorations. Extraction of teeth is indicated: 1. Where destruction of root is so marked that there is not enough to be used as a support for partial tooth restorations. 2. Where the area of necrosis of bone is markedly involved. 3. Where malignant or nonmalignant growths exist within the strata underlying tooth forms, such as carcinoma or dentigerous cysts. 4. Tooth infections leading into the maxillary sinuses. 5. Destruction of the moorings of teeth. 6. Impacted teeth.

I have attempted to enumerate all the various forms of infection that may exist within the buccal cavity and underlying strata of tooth forms without consideration of the influence of such infections



1. Properly filled and hermetically sealed canal in upper 1st bicuspid alongside of improperly filled canal showing area of rarefaction beyond apex; 2. Perfectly straight simple canal of upper lateral incisor under fixed appliance, having no root filling. Marked area of rarefaction; 3, filled canals in lower molar; 4 and 5, in upper molars; 6, double rooted upper bicuspid; 7, bifurcation at lower end of lower bicuspid; 8, tortuous upper bicuspid filled; 9, same tooth previous condition.

upon the constitution. I have concerned myself until now with the patient who does not show any evidence of constitutional disturbance and have attempted to outline a procedure for the eradication of all possible forms of teeth infections with a view to saving the teeth. The procedure is different as we approach the same forms of dental infections in patients having some form of constitutional complication. We are none the less concerned with the eradication of the infection in the first patient than we are with the second, but we are especially concerned about hastening the result in the patient suffering from some form of constitutional ailment, that might be attributable to the teeth. In such cases it is expedient to remove all such offending members immediately, curretting the area of infection in the surrounding tissue and prevent a return of the infection. I hope the physician will be able

to see the futility of demanding the removal of teeth on their own diagnosis and judgment, and that the dentist will be able to appreciate the importance of consulting with the physician.

I have not concerned myself here with the reasons for the existence of certain types of dental infections in the mouths of some people and the absence of similar infections in the mouths of others under similar conditions. It is interesting, however, to observe the rapidity of caries and the extensive destruction of alveolar and periodontal tissues in the mouths of some and the comparative state of immunity in the mouths of others. Our rational explanation for this phenomena is natural resistance or constitutional immunity to disease. There is, however, the following further consideration, What in the constitutional arrangement of the human organism is responsible for the manifestation of that so-called resistance, that comparative state of immunity? The answer leads us into a consideration of two embryo sciences, endocrinology and psychodynamics.

THE EVILS OF FIXED BRIDGE WORK.

By HERMAN E. S. CHAYES, D. D. S.,
New York.

Fixed bridge work is bad for the human mouth, because fixation is bad for the human being; because fixation is bad and uncalled for in any situation, position, and relation with anything which lives and functions. The movements of natural teeth, situated in the natural environment of the human mouth, are determined by the interrelationship of all the teeth, and the stress to which they are subjected; the orbit of their motion is predestined so that during their excursions they will, by activating the tissues which surround them, enhance the blood supply of these tissues and thus keep supplying themselves with the nutrient element necessary for the maintenance of their integrity. Fixed bridgework destroys individual tooth motion in the predestined directions, and thus is a first class fallacy in conception and in practice.

Many cases of so-called focal infection have been attributed to cervical irritation rather than to poor root canal work. This condition, however, is not always the result of cervical irritation, but often, if not most frequently, the inability of the cervical tissue to perform its function of adequately protecting the deeper region, due to nothing but the mechanical interference of a fixed bridge or an improperly executed restoration which may inhibit or augment the mobility in its proper direction of the particular tooth involved.

Nutrition and function are the reciprocal dynamic phenomena of all tissue and any reparative work done in and on any part of the oral cavity must be done with the idea in mind that neither nutrition nor function must in any way be interfered with. It is definitely known that health depends entirely upon a properly balanced circulation. The proper play of cerebrospinal nerves and the sympathetic nervous system depends entirely upon a properly balanced circulation, and, con-

versely, a balanced circulation is dependent upon a smoothly working sympathetic nervous system.

The processes of digestion, assimilation, and nutrition are all under the control of the involuntary or sympathetic nervous system. The interdependence of all these phenomena is clear; it is a process of compensatory dynamics. Briefly, we must think good thoughts, we must have proper food, which, converted into blood, must be sent through the proper channels to feed the tissues.

When the blood reaches the vessels where transudation is possible, the cells of the tissues containing these attenuated vessels assert their needs and, by a power of selective chemiophysiological affinity, abstract the materials necessary for them. The heart, as the great central pump, charged with the task of the initial impulse to send the blood through all channels, calls upon the arteries, arterioles and veins to assist in this task.

Organs at rest need less food than organs at work, hence the rhythmic function of an organ induces a corresponding rhythm of action in the bloodvessels and thus the additional amount of necessary nutrient elements is supplied. You need thought to make money, you need money to buy food, you need food to make blood, you need blood to maintain function, you need function to maintain health, you need health to have thoughts. We come down to the old mystic sentence that our blood is ourselves in solution and since Nature creates and maintains, she must, as a logical corollary, be able to cure and she does this by way of the unfailing supply of a well balanced circulation unless interfered with by outside influences.

It should be manifest to all thinking men and more so to dentists that in the exercise of their function, different teeth move in different directions and these movements conform in rhythmicity and degree to the demand of the vascular structures which surround them so as to activate or cause the supplying of the need of both teeth and surrounding tissues.

If two or three teeth are inflexibly or too flexibly linked together by a fixed or a removable bridge, or if by means of an improperly executed inlay or other restoration, the mobility of a particular tooth is inhibited or augmented, the waves of motion during function are altered in frequency, rhythm and direction. The small vessels in the tissues surrounding these teeth are there loaded with all the things which the tissues and the teeth need for sustenance; but the power of the cells in these tissues and teeth to abstract the required materials is lost by desynchronization. The transuding vessels, in trying to do their part, leave a quantity of material which the tissues and teeth cannot take up and we now have a condition of stagnation or morbidity. A quantity of organic material, the component particles of which are vibrating in a rhythm foreign to the one of the tissues and teeth it was intended for, becomes a welcome pabulum or food for any so-called bacteria always present in us, with us, and around us.

The cycle of feeding, growth, and multiplication of these organisms now begins and proceeds at a rapid rate, the breaking down of the gingiva,

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alveolus, and finally the tooth root follows; and this is the ultimate history of the inflexible or too flexible dental restoration, otherwise known as fixed bridgework.

The intense activity of the medical profession in its search for the cause of many cases of obscure disease is, of course, to be greatly commended, and as members of an allied profession we are in duty bound to provide every aid in our power. As a dentist I welcome their enthusiasm, but I deplore the direction or rather the limited direction of this expression. The medical men have about decided that root canal fillings are responsible for all sorts of systemic ailments which they have been unable to cure and, as a consequence, patients are compelled to indulge in a perfect orgy of extraction, in most instances uncalled for and without resulting improvement in the patient's condition.

While it is undoubtedly true that many poorly filled teeth are responsible for some cases of systemic infection, and I refer particularly to the roots of these teeth, the majority of mouth infection is brought about by ill fitting crowns, fixed bridges, and the ordinary type of removable bridges.

NOTES ON MOUTH SEPSIS.

BY LESTER R. CAHN, D. D. S.,
New York,

Member of the Oral Surgery Clinic of the New York Throat,
Nose and Lung Hospital.

Much has been written within the last ten years upon the influence on the system of suppurative conditions in the mouth. There have been many controversies concerning the gravity of oral sepsis, some investigators contending that too much significance has been attached to it, others asserting the opposite. There is much to be said in favor of both sides. There are faddists in every profession. Just as hundreds of ovaries and appendices have been needlessly sacrificed, so have hundreds, yes thousands of teeth. Yet we can not lose sight of the fact that a great number of obscure and seemingly hopeless cases have been cured by the eradication of oral sepsis. Focal infection plays an important part in systemic disease and surely the work of Mayo, Rosenow and Billings cannot be ignored by even the most conservative. Doctor Rosenow, in an address before the First District Dental Society, at the New York Academy of Medicine, made the assertion that in a case of obscure infection, if there was a dead tooth in the mouth, although it presented no apical infection röntgenographically, it should be removed. Surely we cannot call Doctor Rosenow a faddist. In my experience I have found that a dead tooth need not be present, and all that there may be present of a pathological nature is a pyorrheal pus pocket which is only revealed after a most diligent search. A favorite site for these pockets is back of the third molars. Why do we not get results all the time from the removal of oral sepsis? First, because the focus of infection in the mouth may not be the only one present in the body and may not be the cause of the trouble. Then again the dam-

age caused by the infection may be so irreparable that a cure can no longer be obtained by eradicating the cause.

By oral sepsis we mean any infective or suppurative process going on within the buccal or oral cavity. These pathological conditions can be divided into two classes, namely: Conditions affecting the gums and peridental membrane, such as the various forms of stomatitis and pyorrhea alveolaris; and infective processes occurring around the apices of the teeth, or apical infections.

PYORRHEA ALVEOLARIS.

Of the diseases of the gums and peridental membrane, pyorrhea alveolaris is by far the most insidious and dangerous. Playing such an important rôle in oral sepsis, a brief consideration of its etiology, pathology and treatment is permissible.

Etiology.—The cause of this disease is not understood, yet we know that trauma in the form of ill fitting crowns, ill fitting fillings, tartar, clasps, and other mechanical devices play an important part in the etiology of this condition. Malocclusion of the teeth, infective organisms, and systemic involvements are other etiological factors.

Pathology.—The disease can be grouped into two classes: 1. Suppurative; and, 2, nonsuppurative. The suppurative type has its inception at the gum margin. It first forms a condition known as gingivitis. As a rule trauma is a common cause of this phase of this disease. The peridental membrane is next involved and as the inflammation continues, the membrane breaks down and pus appears. As the pus forms a liquefaction necrosis of the alveolus takes place, so that finally, the tooth's investing tissues being destroyed, it becomes loose and is exfoliated. With the destruction of the peridental membrane and the alveolus a pocket is formed between the gum and the tooth, which is called a pyorrheal pus pocket. The absorption of bacteria and their products from these pockets is great and constitutes one of the greatest oral foci of infection.

Clinically we find the mucous membrane congested and the gums more or less tumefied around the necks of the teeth. Pus can be squeezed from the pockets and the gums bleed freely. The patient will complain that they cannot brush their teeth because of the excessive bleeding. This type of pyorrhea is the more dangerous of the two types because of the copious discharge of pus and the absorption from the pockets.

Treatment.—The treatment consists of radiographing all the teeth and determining which may be saved. Where more than half of the alveolus is destroyed the tooth had better be extracted. Those teeth that can be saved are relieved of all trauma. The tartar is thoroughly scaled away, all ill fitting and irritating crowns and fillings are removed. Next the pyorrhea pockets are curetted, all serual calculus, necrotic peridental membrane, and alveolus are removed. Where the pocket is so deep as not to permit thorough curettage the overlying gum tissue is completely excised. This is by far the most positive way of clearing up the pus pockets. This is also done where the systemic condition is such that quick elimination of all foci is

imperative. The operation is very simple. Under infiltration anesthesia or nerve blocking with a two per cent. novocaine suprarenin solution, the loose retracted gum overlying the pockets is excised, the line of incision following, as nearly as possible, the normal festoons of the gums. This incision is preferable to a straight one as the result has a better cosmetic effect. The area exposed is thoroughly curetted so as to remove all necrotic tissue. The wound is painted with Churchill's iodine and covered with a strip of iodoform gauze. The patient is given instructions in proper oral hygiene.

The choice between this operation and the scaling and curetting of the pockets is determined by the operator. There are many cases where this operation is uncalled for, where simple scaling and curettage of the pockets will accomplish the purpose. Then again there are cases where a combination of both these methods can be used. In cutting away gum tissue the ultimate cosmetic result must be considered. Many times the labial muscles of the patient draw the lips up to such an extent, that excising the gum may result in a rather hideous appearance. The one great factor is the eradication of the pockets, now matter how, as long as it is efficiently done.

OTHER INFECTIONS.

Of the other diseases of the gums there are the various forms of stomatitis. These do not have much bearing upon focal infection as they are not of long duration as a rule, and are eradicated before the system is altered by any absorption from these lesions. Before passing from this group of diseases of the gums a word or two must be said about an infection of the gums caused by the organisms of Vincent. This condition attacks the gum margin. At some point of lowered resistance in the mouth these organisms, the *Bacillus fusiformis* and the *Spirillum Vincenti*, gain entrance into the tissues, incubate and multiply. A favorite site for these bacteria to lodge and become activated is under the flap of inflamed gum covering an erupting wisdom tooth, or in the pocket caused by an impacted third molar. The infection spreads along the free margin of the gum and around the necks of the teeth until a good portion of the mouth is involved. This infective process may extend backwards to the soft palate, fauces, tonsils and larynx, causing a severe angina with serious complications and creating a condition that closely resembles diphtheria. The gum margin becomes necrotic and the dead epithelial cells are thrown off becoming enmeshed in a fibrinous exudate, and give the appearance of a grayish membrane. The patient feels quite ill and shows a temperature around 100° F. In some cases there is much difficulty in swallowing. The mouth is painful and the glands in anatomical relationship are usually involved.

The membranous appearance may simulate a purulent discharge and this has led not a few dentists to call this disease pyorrhea alveolaris. Calling this condition pyorrhea is a rather dangerous procedure because the men that make this diagnosis are likely to treat it as such with serious results. The ordinary pyorrhea treatment which

consists mainly in scaling is absolutely contraindicated, because by using instrumentation of any kind, during the acute attack we are likely to cause deeper infection of the tissues. A true Vincent's gingivitis attacks only the soft tissue. If neglected, secondary infection by the pyogenic organisms sets in and the alveolar process is destroyed. So we must be sure to make a proper differential diagnosis. The pseudomembrane, glandular involvement, pain, and most important, the bacteriological examination, and the finding of the Vincent's organisms help us differentiate it from an ordinary case of pyorrhea alveolaris.

The treatment consists in antisepticizing the mouth. During the acute stages instrumentation is not indicated. The membrane is wiped away with sterile gauze and the ulcerated areas are painted with Churchill's iodine. The patient is instructed in oral hygiene. After the acute stage has passed the mouth is thoroughly cleaned and all infected gum flaps are removed.

APICAL INFECTIONS.

Now we come to those pathological conditions occurring about the apices of the teeth. These infections constitute another form of oral sepsis. Together with pyorrhea alveolaris they represent the two most serious forms of mouth sepsis. These apical infections are of both the acute and the chronic varieties. They are caused by infection through the root canal. In the acute variety the periodontal membrane is overcome by the infecting organism with the accompanying pus formation. We also have all the symptoms of acute inflammation, namely, pain, redness, swelling, and the accompanying manifestations. This type of the apical infection is the less insidious of the two, because there is fair warning that some abnormal process is going on and the patient attends to the condition, but the chronic form of apical infection is by far the more dangerous, and the one that we are most interested in.

These conditions are also caused by infection through the root canal. This type of inflammation is of the productive variety. Due to toxic irritation the periodontal membrane proliferates, and this proliferation is called the dental granuloma, or under the old terminology, a chronic dentoalveolar abscess. These so-called granulomata are infectious and cultures of *Streptococcus viridans*, *Streptococcus hemolyticus*, and other varieties can be grown from them. Histologically they possess a great many capillaries through which the bacteria and their products gain access to the blood and lymph streams. As these granulomata grow the centre breaks down and the lining membrane becomes of an epithelial character and they become radicular cysts. These cysts at times assume large proportions.

The treatment of the apical infections is usually the extraction of the offending tooth and the thorough curettage of the sockets. The curettage of the socket is most important as these granulomata are sometimes tenacious and do not come away with the tooth, but grow and continue to do as much damage as though the tooth had not been removed at all. I have seen many cases where these granulomata persisted after an extraction and

developed into cysts causing both local and systemic trouble. In anterior teeth the root canals may be thoroughly cleaned, sterilized and filled, and then the apex amputated, and the infected area curetted. No matter what the treatment is it must be thorough and radical. If the patient shows any systemic involvement we cannot temporize.

The results of oral sepsis may be local, that is, where neighboring parts become involved through direct contact with infected material from pus pockets. Under this class of local contamination we have cases of pharyngitis, tonsillitis, and sometimes parotitis. This type of contamination is usually due to pyorrhea. Gastritis and gastric ulcer are often due to direct extension of an infective process in the mouth. During the process of mastication the cheeks, lips and tongue, coming in contact with the gums, massage the pockets and squeeze the pus out of them. This discharge becoming mixed with the bolus of food is swallowed. Some observers may state that the antiseptic properties of the gastric juice deprive the swallowed material of any potency. We know that the gastric juices' antiseptic properties are due to the hydrochloric acid and that hydrochloric acid is only produced during eating. What then sterilizes the swallowed discharge when one is not engaged in eating? In a large number of cases of malignancy of the stomach, F. St. J. Steadman, of London, reports that in every case of cancer of the stomach he has found chronic suppurations of the gums, or pyorrhea alveolaris.

Systemically, oral sepsis causes many obscure conditions. Due to the absorption of bacteria and their products from foci in the mouth we find conditions of arthritis, myositis, infective endocarditis, and toxic neuralgias. These are only some of the disturbances caused by oral sepsis. The toxic neuralgias are very interesting. The writer has seen some very persistent cases of headaches almost miraculously disappear after the extraction of an infected tooth, or after the eradication of an old pyorrhea. In some cases the results of eradicating oral sepsis have been little short of wonderful.

In conclusion it might be said that while a great number of teeth have been needlessly sacrificed, yet the great good that has been done by the eradication of oral sepsis should not dampen one's ardor for the eradication of focal infections in the mouth. Supposing the systemic affection is caused by a focus not situated in the mouth, and an oral focus was removed, what harm has been done? We have given the patient the benefit of the doubt, and a focus of infection should be removed whether it is causing immediate trouble or not. It may at some future time. If we have the welfare of the patient in mind, we should advise the removal of any affected area no matter where it is, be it in the mouth, throat or prostate. The removal of vital and healthy teeth for the supposedly clearing up of an oral focal infection is gross ignorance and criminal malpractice and should be treated as such, but the removal of dead infected teeth, or the clearing up of a pyorrhea alveolaris can only be complimented and strongly advised.

895 WEST END AVENUE.

PARIS LETTER.

Paper Scarcity a Menace to Scientific Publications.—Two Large Prizes for Successful Investigations on Medical Subjects.

PARIS, February 1, 1920.

Scientific, including medical, periodicals and other publications are now being seriously menaced by the scarcity of paper. Publishers can still obtain profits from certain publications with a large circulation or from high priced publications that are in the nature of a luxury. Publications adapted to the needs of only a restricted circle of readers, however, no longer yield adequate returns. Among the latter are scientific books and periodicals, works on history and archeology, monographs, special journals—in brief, the bulk of the output of the higher intellectual workers of France.

Various learned societies throughout France have taken up the problem with a view to its satisfactory solution, and among the solutions proposed that are most likely to be adopted consists of the formation of a cooperative association for the printing of scientific publications. The possibility of establishing University Presses similar to those existing in England and America was canvassed, but the conclusion finally reached was that it would be useless or impossible to reproduce exactly these undertakings. While awaiting the institution of a cooperative printing association various measures have been decided upon with a view to carrying scientific publications safely through the existing crisis and to promoting their further diffusion.

* * *

About twenty-five years ago, F. J. Audiffred established under the auspices of the Académie de Médecine a prize in the form of an annual income of 24,000 francs, the principal drawing three per cent. interest. The conditions under which the prize was to be awarded were set forth as follows: "This prize shall be awarded to any person, irrespective of nationality or profession, even if a resident member of the Académie, who shall, within twenty-five years after April 8, 1896, discover a curative or preventive remedy recognized as effectual and sovereign against tuberculosis by the Académie de Médecine of Paris, from whose decision in the matter there shall be no appeal." With accumulated interest this prize now amounts to the sum of 1,400,000 francs. If no investigator shall have succeeded by April, 1921, in discovering the desired remedy, the offer of the prize then terminates without any award.

In some respects similar is the prize of 100,000 francs (prix Bréant) offered by the Académie des Sciences "to any one who shall have found a means of curing Asiatic cholera or shall have discovered the causes of this terrible scourge. Until this prize of 100,000 francs has been won, the interest shall be given as a prize to any one who shall make scientific advances in relation to the problem of cholera or of any other epidemic disease. This annual prize, consisting of the interest on the original capital, may be awarded to anyone who shall demonstrate a means of rapidly curing eczematoid affections or shall explain their cause."

Needless to state, there has been no occasion as yet for awarding either the Audiffred or the Bréant prizes.

Editorial Notes and Comments

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NEW YORK, SATURDAY, APRIL 17, 1920.

TEETH AND HEALTH.

The relationship of the teeth to health has been seriously considered only during recent years. When it was first discovered that the foci of infection harbored in the buccal cavity were frequently responsible for many systemic conditions, the teeth were ruthlessly dealt with. In cases of rheumatism, endocarditis, joint disturbance, and numerous other affections, the teeth and tonsils were always suspected. Frequently the offending teeth were removed and the patient got better; at other times careful eradication of all removable foci of infection was of no avail. Then was advanced the hypothesis that the removal of primary foci did not cure because new foci had been established in other parts of the body—for example, the heart valves—which seemed plausible enough. Other observers contended that the foci found in the teeth were secondary to foci in other parts of the body, and that they were localized in the teeth because the resistance here had been lowered by defects in the dentine, unclean gums, lack of exercise of the teeth, malocclusion, and other contributing factors.

Adler, in his monograph (*Study of Organ Inferiority and its Physical Compensation: Nervous and Mental Disease* Publishing Company, Monograph Series, No. 24) calls attention to the rôle played by the teeth as indicators of general inferiority of the intestinal tract. This rather upsets the theory that bad teeth, by improper mastication of food, cause the intestinal inferi-

ority. His contention is that the teeth are the stigmata not only of oral but of general inferiority, which may be more marked in any portion of the gastrointestinal tract—gastric ulcer, pancreatic affections, appendiceal abnormalities—all of these are closely interrelated to bad teeth, not on an etiological basis, but only on the basis of general inferiority. Adler shows how compensation is frequently effected, and how people with this generalized gastric inferiority become obese in the overcompensatory effort of an inferior organ to keep pace with the rest of the body.

We now come to a more serious side of the question—something which we encounter every day in our practice—the matter of crowns and fixed bridgework. Cotton states that in five per cent. of crowns and fixed bridges the teeth are found to be uninfected. This is an extremely optimistic point of view, or perhaps this writer does not want to take a more radical stand. Kouindjy has shown that any part of the body which is immobilized loses its secretory function; in the case of articulations the secretion of synovial fluid is stopped, fibrous bands appear, and finally ankylosis sets in. Function is lost, and the result is atrophy, which may extend to the bone. If any trauma, internal or external, is superimposed upon this condition, it may easily become the seat of infection on account of the lowered resistance. The same may be said of teeth when fixed bridges are used. It must be remembered that every tooth has a certain amount of physiological movement, and when a fixed bridge in any way limits the movement of the tooth, atrophy and infection result. The same is true of shell crowns, where we have limitation of the normal movement of the tooth and the added irritation at the gum margin.

From the evidence at hand it may be asserted that any shell crown which has been in place for a year will reveal infection when it is removed. It is somewhat of a mystery that here in the United States, where more dental work is done than in any other country, we should find so many disastrous mouth infections. This sort of dentistry, in place of reducing oral infection, has increased it. There is no place for fixed bridges and shell crowns, and their use betrays either great ignorance or a lack of ability in accomplishing more modern dental restoration. This serious problem should not be left in the hands of the dentists who are content with obsolete dental work. The use of infection causing apparatus in the mouth should be prohibited. We do not need more dentists. We need better dentistry.

THE TEETH AND ARTHRITIS DEFORMANS IN CHILDREN.

The etiology of rheumatoid arthritis is still a subject for a certain amount of speculation, although, if some writers are to be believed, its causation in the great majority of cases is well known. Many medical men state with little hesitation that this crippling disease is due almost wholly to infection of the gums and teeth. It follows that the obvious way of getting rid of this infection is by wholesale extraction of the teeth. Other means are sometimes tried, as ionization and the use of quinine, but it is usually asserted that the only radical cure when pyorrhea alveolaris has gained a hold is to have the teeth removed. There are signs now of a reaction against this practice, and while it is allowed that pyorrhea should be dealt with, it is agreed that this can be done frequently without resorting to extreme measures.

Of course, in the case of children suffering from arthritis deformans, the gums and teeth have not been pointed to as the source of infection with the frequency they have been in adults, but the condition of the gums and teeth in children are regarded by some as a cause of arthritis deformans. So far as children are concerned, the tonsils and adenoids and the accessory sinuses of the nose are usually looked upon as the seat of infection. Dr. Albert H. Byfield, in the *American Journal of Diseases of Children*, February, 1920, refers to chronic infection of these organs as the chief means of inciting arthritis deformans in children. Byfield makes a slight distinction between arthritis deformans and rheumatoid arthritis. The principal interest in Byfield's paper lies in the fact that he attributes the existence of arthritis deformans in children to chronic infection of the tonsils and adenoids and of the accessory sinuses of the nose.

From a study of ten cases he thinks it may be concluded that: 1. Arthritis deformans in children results chiefly from a chronic infection situated in the tonsils and adenoids and in the accessory sinuses of the nose. 2. In children less than three years of age the portal of infection seems to be limited to the tonsils and adenoids. After this time removal of tonsils and adenoids is ineffective in arresting the progress of the disease. 3. A sinus infection should be suspected as an etiological factor, if, after the tonsils and adenoids are removed, there remain elevation of temperature, even if slight, leucocytosis, and poor appetite. Relapse and exacerbations are definite indications of the need for nasal treatment. 4.

Poncet's disease is probably no more than arthritis deformans in an individual infected with tuberculosis. 5. Although supportive and orthopedic measures are helpful, surgical treatment of the nasal sinuses is to be regarded as the most important therapeutic measure indicated in arthritis deformans in children. 6. The prognosis in uncomplicated cases is good as far as arrest of the disease is concerned. The deformity and functional disability may persist for a considerable time. The teaching in the paper is that the main cause of arthritis deformans in children is infection of the tonsils and adenoids and accessory sinuses of the nose, and that the surest methods of arresting the course of the infection is by operative measures.

The theory, which has been taught for long and which is substantiated to some extent by clinical experience, has a good deal more in its favor than the theory that for the most part the rheumatoid arthritis which attacks adults is brought about by pyorrhea alveolaris and that the sole certain cure is wholesale extraction of the teeth. Is pyorrhea a primary infection and does it produce the grievous ills which are ascribed to it?

SYMPTOMS FURNISHED BY THE TEETH.

The value of careful observation of the teeth as a diagnostic factor is of great importance. First of all, local conditions in the mouth are ascertained and disturbances in the vicinity of the buccal cavity, such as swollen lymph glands, can at once be determined by the condition of the teeth. Then there are general infections which leave their stigmata on the teeth. Hutchinson's teeth in hereditary syphilis will serve as an example. Recently a new value has been assigned to the teeth as diagnostic aids, due to their intimate relation to the endocrine glands. We find in thyroid deficiency cross markings of the teeth, which may at times resemble those found in Hutchinson's teeth, and frequently a careless observer will make the error of confusing the two conditions. Then, in hypersecretion of the gland the teeth have a bluish cast, they are regular, and have the lustre of high glazed semitransparent pottery. This appearance is ascribed to a change in the metabolism of calcium salts.

One of the most interesting findings is the intimate relationship existing between the lateral incisors and the gonadal endocrine chain. We find that in the male the position of the testicle is indicated by the position of the lateral incisor of the opposite side; an undescended testicle will accompany

an unerupted lateral incisor. A twisted lateral incisor is indicative of torsion of the cord. In the female the same relationship applies to the ovaries. Furthermore, a faintly developed lateral incisor indicates a similar condition of either ovary or testicle. When there is a complete absence of the lateral incisors in the female she will not bear children and her menstrual discharge will be scanty. It seems as though the sex of the offspring is in direct relationship to the lateral incisors. The right one controls the male and the left one the female. If the right lateral incisor is missing the mother will give birth to girls only; if the left one is missing she will give birth only to boys. Of course this refers to a congenital absence of the teeth and not to their loss by accident or to removal. It is also interesting to observe the close relationship that the incidence of mumps bears to the maldevelopment of the lateral incisors. A person with poorly developed lateral incisors is much more likely to contract mumps than one with well developed lateral incisors. The canines seem to bear a direct relation to the adrenals, but this has not thoroughly worked out. Many valuable diagnostic points are to be gained by observing the teeth of your patients.

RACIAL IMPROVEMENT.

So many pessimistic utterances have followed the reports of the physical examinations of the draft that it is encouraging to find any evidence that would show that twentieth century man is not degenerate beyond his forebears. As a matter of fact we ought to be greatly encouraged by the figures of the draft in that they show an enlightenment on the part of the examining physicians. Whatever our shortcomings may be in therapeutics, there can be no question that the physician of this generation is a hundred per cent. more keen in diagnosis than was he of a generation ago. It is little wonder then that he find a much higher proportion of defects, defects which our ancestors had in at least as large proportion according to the occupation they followed. If there has been an increase in the number of defectives modern preventive medicine can be blamed in part for allowing such to survive.

The volume of statistics has also had its psychological mass effect and we make much of figures which, in recruiting station examinations for many years past, in all countries, have been much the same. Even in the examination of men who desired to enter the service and therefore would seem to be physically fit, the rejections have been very high indeed. Among the voices raising an optimistic cry in the pessimistic wilderness, is that of

Professor Dreyer, whose studies of vital capacity and comparison with the former findings of Hutchinson lead him to believe that, for England at least, there has been an improvement rather than a decline in the quality of the physique of man.

The sickness surveys which have been carried on of late by some of the insurance companies, have brought out the fact that each working male loses somewhere between 6.8 and 10.2 days a year from sickness or accident, the former figure being for a Boston survey and the latter for North Carolina. These figures do not appear promising, but when compared with estimates of sickness made less than fifty years ago, we can feel encouraged, for then it was found that thirteen days labor was lost by sickness for each productive person in the Commonwealth of Massachusetts, while in Europe the loss was estimated at from nineteen to twenty days. Had the same methods been employed in making the estimates of sickness in the earlier surveys as in the more recent ones, the contrast would probably have been greater. There is room for improvement in health and bodily perfection, and we should be encouraged that our keenness of observation and our ambition to prevent sickness are, within certain limits, likely to bear much fruit in future.

News Items.

Asks Appropriation for Vocational Training.—The Federal Board for Vocational Education has asked Congress to appropriate \$99,303,000 for 1921, to be used in the rehabilitation of wounded soldiers.

Public Health Service Appointments.—Dr. Rupert Blue, former surgeon general of the United States Public Health Service, and Senior Surgeon Joseph H. White have been named assistant surgeons general at large of the U. S. Public Health Service.

Doctor Blake's Home Burned.—Dr. Joseph A. Blake suffered burns about the hands while fighting a fire which destroyed his home at Tarrytown, N. Y. He was finally overcome by smoke while fighting the flames and was carried from the building.

Osler Presentation Volumes.—The printing of the volumes that were to have been presented to the late Sir William Osler on his seventieth birthday has been completed and the volumes sent to England. The long delay in their appearance has been due to the strike in the printing trades.

Doctor Simms Leaves Brain to Science.—Dr. Joseph Simms, who died of cerebral hemorrhage in New York, on April 11th, in his eighty-seventh year, bequeathed his body to Dr. Edward A. Spitzka for scientific study. The brain of Doctor Simms, removed eighteen hours after death, weighed 1520 grams (53.58 ounces avoirdupois) and has been preserved by Doctor Spitzka for the detailed study of its morphological features in comparison with the brains of other notable men.

Conference of Health Authorities.—The eighteenth annual Conference of State and Territorial Health Authorities with the U. S. Public Health Service will be held May 26th and 27th in Washington, D. C.

Honor for Doctor McCollum.—Dr. E. V. McCollum, professor of chemical hygiene in the School of Hygiene and Public Health of Johns Hopkins University, has been made a corresponding member of the *Académie Royale de Médecine de Belgique*.

Medical Students Strike.—Word comes from Buenos Ayres that students of the medical school of the University of De La Plate went on strike and consequently engaged in a riot in which one student was killed and 130 arrested. The strikers are said to demand reforms in university administration.

English Blind Walk 180 Miles.—A deputation of eighty blind men has set out from Manchester, England, to walk to London. With other bands of blind men from various parts of the country they intend to urge Premier Lloyd George to make provision for the training and security of livelihood of blind civilians.

Palace Becomes Hospital.—The Achilleion palace at Corfu, formerly the possession of the ex-Emperor of Germany, was converted into a hospital by the French after the Serbian retreat, and is now known as the Tribondeau hospital, after the naval medical officer and bacteriologist who died of influenza in the epidemic of September, 1918.

Umberto I Prize.—The Umberto I prize of 3,500 lire for the best orthopedic work of invention is open to members of the medical profession in any country. The competition will close on the last day of this year. Full particulars will be supplied those wishing to compete upon application to the president of the Instituto Ortopedico Rizzoli, Bologna, Italy.

Doctor Jablons Returns to New York.—Dr. Benjamin Jablons has returned to New York city after an absence of five years, during which time he served with the American Ambulance Hospital in France and later with the American Expeditionary Force. Doctor Jablons, previous to his release from military service, was attached to the Army Medical School in Washington, where he taught anaerobic bacteriology and completed researches begun in France on wound bacteriology.

Bill for Children's Commission in Legislature.—A bill creating a Children's Code Commission which shall overhaul the laws of the State relating to children has been introduced in the New York State Senate by Senator Charles W. Walton, of Kingston, and in the assembly by Assemblyman Marguerite L. Smith, of New York. The commission would consist of two senators, three assemblymen, five persons representing the State departments, and five citizens to be appointed by the governor. It is intended to make a thorough study of the confused, conflicting and scattered laws relating to children, with a view to revising the statutes and modernizing the methods of child care throughout the State. The commission, if the bill is passed, would report its recommendations to the next session of the Legislature.

New Surgical Degrees at London University.—The Senate of the University of London has sanctioned two new branches in which students may proceed to the degree of M. S.—ophthalmology and laryngology, otology, and rhinology.

Gift for Tuberculosis Research.—Announcement has been made of a gift of \$500,000 by members of the family of Henry Phipps, of Philadelphia, for medical research in tuberculosis. The money will go toward establishing an endowment fund for the Henry Phipps Institute of the University of Pennsylvania.

Smallpox on Mexican Border.—A modified quarantine, consisting of vaccination of travelers, disinfection, and fumigation, as well as the encouragement of sanitation, is being maintained on the Mexican border by the U. S. Public Health Service to prevent the spread of smallpox from Chihuahua, Mexico. From November 3rd to March 11th there occurred 143 cases of smallpox in five towns in Chihuahua close to the border. Only seven cases (six Mexicans and one American) occurred in the United States, of which number one Mexican died.

Health Insurance in Assembly.—The New York State Assembly has sidetracked the matter of health insurance and proposes instead to appoint a committee to study the conservation of health in this State and report at the next session of the Legislature. It is proposed to create a commission of ten residents, five to be appointed by the temporary President of the Senate and five by the Speaker of the Assembly, to serve without pay until February 1, 1921, to make an exhaustive study of the extent, prevention, and treatment of sickness. Two of the commissioners are to be named from a list of State-wide medical organizations, two from employers' organization, two from employees' organizations, and the remainder from a list of the National Civic Federation of New York. An appropriation of \$25,000 is made. The commission may receive contributions from sources other than the State.

Physicians Form American Legion Post.—Caduceus Post of the American Legion was formed April 6th by the amalgamation of the Medical Department Post of New York and the Harry D. Gill Post. The great majority of the members are physicians. It is hoped to have a large post of physicians who will be able to make their influence felt in the legion and to look out for the interests of the medical profession in general, including the Medical Corps of the Army and Navy. All physicians desiring to join the Caduceus Post either as regular or associate members (the latter class for those who are active members of other posts) should communicate with the secretary, Dr. Samuel Bradbury, 116 East Sixty-third Street, New York.

The following officers were elected: president, Dr. Howard Fox; first vice-president, Dr. Harlow Brooks; second vice-president, Dr. George E. Maurer; third vice-president, Dr. Graeme M. Hammond; secretary, Dr. Samuel Bradbury; treasurer, Dr. William F. Cunningham; county delegates, Dr. Harlow Brooks, Dr. Charles J. Imperatori; members of the executive committee, Dr. Wiley E. Woodbury, Dr. Samuel Lloyd, Dr. Russell L. Cecil, Dr. Hector J. MacNeile, Mr. Charles H. Rose, Mr. Paul M. Wood.

Book Reviews

MODERN SURGERY.

Modern Surgery. General and Operative. By J. CHALMERS DA COSTA, M. D., Samuel Gross, Professor of Surgery, Jefferson Medical College, Philadelphia. Eighth Edition, Revised, Enlarged, and Reset. With 1177 Illustrations, Some of Them in Colors. Philadelphia and London: W. B. Saunders Company, 1919. Pp. 1697.

Da Costa's textbook is too well known to require extensive comment or description, and the eighth edition comes to us with all the virtues and merits that its predecessors possessed; likewise their faults. Where virtues are many and faults few, it is better to overlook the latter. This edition was revised under the stress and difficulties of the late war in which the author participated, and he frankly admits certain shortcomings which must be ascribed to the abnormal conditions under which all of us worked during those four tense years.

There is a vast fund of surgical lore confined within the covers of this book, most of it sound and conservative, but not all of it up to date. We look in vain for some of the newer things, especially in genitourinary surgery. No mention is made of the surgical operations that have been devised for the cure of vesiculitis; the old, discarded three glass test for the determination of the source of shreds in the urine is the only test mentioned, and we find precious paper devoted to a description and illustration of Harris's urine segregator and Luys's urine separator—devices which have been relegated to limbo these many years.

The employment of radium in the treatment of cancer of the bladder is not mentioned at all, and in prostatic cancer "radium may be tried."

The paper used in the book is not of good quality, with the result that some of the illustrations do not illustrate. On the whole, however, the book represents the teachings of Da Costa, and that is sufficient guarantee of its merits and virtues. It is a good book on surgery.

DEMOCRACY IN EDUCATION.

Were You Ever a Child? By FLOYD DELL. New York: Alfred A. Knopf, 1919. Pp. ix-202.

Education, as Floyd Dell reminds us many times in the course of these pages, is a subject which includes everything under the sun. For that reason it is well at the outset to warn the pedagogic minded reader that these pages are tinged—or rather dyed—with the author's economic theories and with his views on art, love, social organization, and other topics. Having warned our tentative reader that he may disagree with this book, we are inclined to add that whether he agrees with it or not, he will find it, to use the author's adjective, "mordantly" suggestive.

In the "precarious beginning of a leisure class culture" which is being administered in our schools today there are four elements—the child, the school building, the teacher, and the book. Inasmuch as the child is the pivot of the whole system he can not well be abolished, but Mr. Dell says that if the school isn't careful it may get itself replaced "by a combination theatre-gymnasium-studio-office-and-model factory building." The problem of the teacher

can be solved by "firing all the teachers at the beginning of the summer vacations, and engaging their services as human beings for the next year." As for the book, he thinks that not much can be done with it. The book is "a good servant but a bad master. And only as a servant can it be tolerated—as an adjunct to the gardens and workshops and laboratories and kitchens and studios and playgrounds of the school world." If Mr. Dell is talking about the terrible textbooks foisted on school children, we heartily subscribe, but this is no reason for subordinating books generally to workshops and kitchens.

At about this point the reader will have some inkling of what Mr. Dell is driving at. The Gary plan! Yes, the Gary plan, shorn of its compulsive features and designed "to provide for idle and happy children fascinating contacts with reality—through games, tools, books, scientific instruments, gardens, and older persons with passionate interests in science and art and handicraft." In a Utopian sketch entitled *Education in 1947 A. D.*, the author shows his plan in operation—the "little park, about the size of a large city block," minus the traditional school building but "bordered by a theatre, a restaurant, an office building, several handsome factory buildings of the newer and more cheerful style, a library, a newspaper plant, and a church. In the children's theatre they present their own plays and pageants, learning in connection therewith singing, dancing, scene painting, costume, and dramatic literature. The factories include a carpenter shop, a pottery, a machine shop, which make everything used in the school, a power house which furnishes electric current and material for theoretical study, and a textile and garment factory which designs and makes the costumes for the theatre. The library is the centre of the research groups—history, sociology, economics, and so on. The restaurant is run cooperatively by the cooking groups. Finally, the church is really an assembly hall. The shops are managed by shop committees of the workers. Pupils have complete control of school expenditures. It may be sentimental of us, but we can not help wondering what will happen to the shy, sensitive, book-loving child in this wilderness of handicrafts. Or aren't there enough shy, sensitive, book loving children to bother about?"

Mr. Dell's system of education assumes several things—the new industrial democracy, the new parenthood (self determination for children), and the universality of art. The new industrial democracy has arrived, in some countries, and the new parenthood is arriving more slowly, but it may be doubted whether all children are or ever will be artists by nature. The creative impulse is not limited to the artistic temperament. Possibly the author means to imply that all creative work is art, but this encouraging of words to expand beyond themselves is one of the things which detracts from the book.

For there are detractions, and one of them, at least, is unique. Mr. Dell has heeded so well the journalistic axiom that writing *must* be interesting that his pages are too facile, too professional. One

sometimes wishes he would let down and be commonplace or difficult.

Were You Ever a Child offers suggestive material to anyone who is a parent and everyone who has been a child. Educators will probably not read it. Literary critics, on the whole, hail it with enthusiasm. Some of its theories could be adopted with profit. But does Mr. Dell seriously think that any system of education will purge humanity of solemnity, and dullness, and puritanism, and hypocrisy—of the tendency to institutionalize its most beautiful and vital things—of its negation of individual freedom under the guise of uplift or affection? For it is these qualities even more than its formalism and artificiality which are the bane of education today. We wonder if they can be eliminated by 1947!

BEYOND THE HORIZON.

Beyond the Horizon. A Play in Three Acts. By EUGENE G. O'NEILL. New York: Boni & Liveright, 1920. Pp. 165.

Mr. O'Neill has presented a masterly work, the result of keen observation of the emotions of men and the actions and reactions prompted by their environment. The central figure is a youth who as an invalid child was put by his mother in a chair facing the window, so he would be out of the way while she did her housework. He sat by the window for hours, looking out at the road that led to the sea and the great unknown. In his phantasy he drew pictures of the sea which he had never seen, and determined that some day he would escape beyond the narrow rim of hills which held him prisoner. He was going to break away from the bondage of the farm; he was going to compensate for the defects of his sickly body; he was going to overcompensate for his deficiencies.

New factors of overpowering influence enter in, and the point of the needle is deflected. Just as he is on the point of going to sea and gratifying his ambition to see the world of his child phantasy, he finds that the girl who he thought loved his brother is really in love with him. Momentarily overcome, he decides to stay on the farm, for which he is not fitted. The brother, who has been happy working the farm, is so upset by the discovery that Ruth does not love him that he goes to sea in Robert's place. A rapid series of catastrophes follow. Robert is unable to cope with the material things of life, his father dies, he is left with Ruth's nagging invalid mother, and Ruth herself proves a hindrance instead of a helpmate. A new love comes into his life with the birth of his little daughter. The relationship between the two, with the jealousy of the mother, is beautifully worked out.

Ruth has discovered soon after her marriage that it is not Robert she loves after all, but his brother, and in a moment of anger she tells Robert this. He is stunned; the second libido of his life is destroyed. Ruth is on the point of telling Andy when he returns from his sea voyage but is prevented by his confession that he outgrew any affection he had for her six months after leaving. Andy leaves once more to seek his fortune in the Argentine. Things remain as they were, but Robert has to bear the added burden of realization of the loss of his wife's love.

We see the sodden family group after the passage of five years more; Robert's own mother dead, his daughter dead, debts on every hand, and the farm neglected. Nothing is left but Ruth's nagging mother and Ruth herself, grown slatternly and having lost interest in everything. Robert, having lost his last libido, his daughter, seeks solace in the arms of tuberculosis. In a feeble protest he calls out against the country quack who allowed his mother to die, who did not save his little girl, and on whom he lays the blame for not curing him. The return of Andy, accompanied by a specialist, is awaited with hope—Andy who has seen the far places of the earth and not cared about them. But self-destruction has gone too far. He has pushed himself too far from the world of reality because he found in the reality surrounding him things which he did not want.

Andy comes and tells of his success and failure. He has tried to make money quickly and has lost everything he had gambling in grain—Andy, who was by nature a farmer.

And so the scene closes, showing the worn square pegs in round holes, held fast by circumstance, enfeebled by struggle; we see the suicide by disease of the confessed failure. Gorky has written such plays but they were more impressionistic and episodic. Here we have a more complete picture—life portrayed in all its sordid realism, and we have the ends of the rope in the unraveling of the chain.

SEX ETHICS.

Rational Sex Ethics: Further Investigations. By W. F. ROBIE, M. D., M. R. C., Superintendent of Pine Terrace, Baldwinville, Mass.; Author of *Rational Sex Ethics*. Boston: Richard G. Badger. Pp. iii-330.

If the casual reader will go through the case histories presented in this book he may be impressed by the apparent clarity and clearness even to the point of boldness with which they are presented. A more careful analysis will disclose that the author has gone only a very little below the most superficial aspects of the material presented. He inadvertently admits this when speaking of psychoanalysis. He states that it is a good thing but not necessary. He then goes on to give histories and even has the boldness to present the patient's dreams. His analysis is merely a corollary of the conscious material which his patient has presented with the dream. The wealth of symbolism which is presented he does not attempt to unravel. This apparent superficiality in a supposedly scientific man, who assumes the task of dealing with an important subject, is not pardonable. It points to either an unwillingness on his part to face the situation for fear it might reveal himself, or that it may mean more work than he is willing to do. Doctor Robie insists that the analysis of the unconscious or as he so carefully and erroneously calls it the subconscious—whatever that may mean—is not new with Freud; that he himself has used it for ever so many years before he heard of Freud. Inasmuch as Freud has gone about the matter in a more intelligent fashion and inasmuch as he has gone further than Robie he has gone too far. We wonder what fears underlie his reluctance to accept the things that

have been proved, what other more important things he has to do that prevent his giving the subject the time it requires. Perhaps the writing of another book.

Another favorite topic taken up in a pseudo-scientific fashion is the one of masturbation. He does not attempt to use the material which he could so easily procure on the subject. Much time is devoted to it and while he firmly advocates it, he does not consider its etiological significance. He does not attempt to show how it is a transition sex phenomenon belonging to the infantile cycle of development. It is to be sincerely hoped that Doctor Robie will give the subject a great deal of careful study before he presents further investigations.

HYGIENE AND SANITATION.

A Manual of Hygiene and Sanitation. By SENeca EGBERT, A. M., M. D., Professor of Hygiene, University of Pennsylvania; Formerly Professor of Hygiene and Dean of the Medico-Chirurgical College; Sometime Major, Medical Corps, U. S. Army. Seventh Edition. Illustrated. Philadelphia: Lea & Febiger, 1919. Pp. vi-554.

This volume, pruned and revised in its seventh edition, contains much valuable information relative to sanitary procedure. Emphasis is laid rather on the larger aspects of public health than on individual hygiene, though there are closely packed chapters on personal hygiene and food values. The author devotes a good deal of attention to the technical aspects of water supply, ventilation, sewage disposal and lighting, all of which is clearly presented. One might wish that less space had been given to military and more to industrial hygiene, especially as the treatment of industrial hygiene is somewhat perfunctory, but after all this is only representative of the attitude of many sanitarians—since that it is difficult to tell where the influence of unsanitary home conditions leaves off and industrial diseases begin, the best thing is to stick to descriptions of respirators and guards for machinery. On the whole, the descriptions are detailed, and there is a wealth of illustrations and diagrams.

THE WOMAN OF FORTY.

The Woman of Forty. By EDITH B. LOWRY, M. D. Chicago: Forbes & Co., 1919. Pp. v-203.

"A fool at forty is a fool indeed," and Byron says woman at that age either takes to the devil or writes a novel. Another author speaks of her vain effort to appear young by "all the glaring impotence of dress," and Shakespeare, in his sonnets, with kindly irony, asks her what she will do when Time has robbed her of that which renders her attractive. But here, in 1920, we find her still cradling and rearing Shakespeares and Byrons while, at the same time, burying those weaknesses they satirize.

To aid her comes Doctor Lowry, who without "lecturing" or flabby metaphor or irritating condescension invites the woman of forty to face and discuss what measures should be taken at middle age to learn the secret of perpetual youth. The real evils, engendered by foolishness or environment, whether physical, mental or moral, are plainly set forth and the power to conquer them assured. The imaginary ones are proved to have their origin in something so ordinary as conventionalism or constipation. She does not deplore the entrance into

the business world but gives plain advice how to keep young and healthy when there. There is no advising of "devotion to the home," but a certain amount of unselfish selfishness urged in the way of rest, exercise and reading, so that the devotion may not lead to her becoming a mere servant and not a companion to her husband and the growing sons and daughters. Community work is counselled as an escape from the one mile radius brain condition and an avoidance of dowdiness in clothing is shown to be wise. There is everything in the book to caution those who are overzealous to appear young by unseemly means and to cheer those who dejectedly submit to what seems to them the inevitable dreariness of the road leading on to Old Age.

New Publications Received.

Rupert Brooke and the Intellectual Imagination. A Lecture. By WALTER DE LA MARE. New York: Harcourt, Brace & Howe, 1920. Pp. iii-41.

Modern Spiritism, Its Science and Religion. By A. T. SCHOFIELD, M. D. Vice-President Victoria Institute, etc. Author of *The Unconscious Mind*, etc. Philadelphia: P. Blakiston's Son & Co., 1920. Pp. i-259.

International Medical Annual. A Year Book of Treatment and Practitioner's Index. Illustrated. Thirty-seventh Year. New York: William Wood & Co., 1919. Pp. i-519.

White Shadows in South Seas. By FREDERICK O'BRIEN. With Many Illustrations from Photographs. New York: The Century Company, 1919. Pp. iii-450.

Special Tables of Mortality from Influenza and Pneumonia. In Indiana, Kansas, and Philadelphia, Pa. September 1 to December 31, 1918. Department of Commerce. Bureau of the Census. Sam L. Rogers, Director. Illustrated. Washington: Government Printing Office, 1920. Pp. iii-181.

Henry Mills Hurd. The First Superintendent of the Johns Hopkins Hospital. By THOMAS STEPHEN CULLEN. Illustrated. Baltimore: The Johns Hopkins Press, 1920. Pp. iii-147.

Tales of My Native Town. By GABRIELE D'ANNUNZIO. Translated by Professor RAFAEL MANTELLINI, Ph.D. Instructor of Romance Languages at the Berkeley-Irving School, New York, N. Y. With an Introduction by Joseph Herge-sheimer. Garden City, N. Y.: Doubleday, Page & Co., 1920. Pp. iii-287.

The Chorus Girl and Other Stories. By ANTON CHEKHOV. Translated from the Russian by Constance Garnett. New York: The Macmillan Company, 1920. Pp. iii-301.

Manual of Tropical Medicine. By ALDO CASTELLANI, C. M. G., M. D., M. R. C. P. Lecturer at the London School of Tropical Medicine, and ALBERT J. CHALMERS, M. D., F. R. C. S., D. P. H. Director, Welcome Tropical Research Laboratories. Third Edition. Illustrated. New York: William Wood & Co. Pp. iii-2436.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

THERAPEUTIC NOTES.

By CHARLES GREENE CUMSTON, M. D.

Geneva, Switzerland.

TREATMENT OF ALOPECIA.

Very frequently infectious diseases give rise to more or less marked alopecia, and this is particularly true of typhoid fever and influenza. In some cases the depilation is diffuse, at others less so, as in secondary syphilis. The scalp may be normal but quite as frequently one meets with areas of pityriasis desquamation of mild degree. Usually the hair soon ceases to fall out and permanent baldness is only to be feared in those who are so predisposed. The treatment recommended by Thibierge in these cases is as follows:

The scalp should be washed with a small brush using one of the following formulas:

Liq. ammon.	2 to 5 c. c.
Sol. cresoli comp., }	
Alcohol, camphorat, }	ââ 15 c. c.
Alcohol, 60°,	40 c. c.

Acid. acetic,	1 c. c.
Tinct. capsici, }	
Bals. fiovarenti, }	ââ 15 c. c.
Spt. lavandulæ,	70 c. c.

Quinin hydrochlor.,	1 gram
Tinct. jaborandi,	20 c. c.
Liq. Hoffmann,	80 c. c.
Ess. verbenæ,	q. s.

The general treatment of the patients must not be overlooked, and the following may be prescribed:

Sodii methylarsinæ,	50 cgm.
Aq. dest.,	100 c. c.
S. A teaspoonful before the two principal meals.	
Sodii arseniat,	4 cgm.
Strychnine sulph.,	6 cgm.
Vini hispan.,	300 c. c.
S. A teaspoonful in a little wine before the two principal meals.	

INFLUENZA.

The treatment of influenza with camphor has been used in France during the late epidemics of this disease and from all I can learn, especially from Toulouse, it would seem to have been successful. It consists of intravenous injections of camphorated serum which is prepared as follows:

In a litre of physiological salt solution, three gm. of absolutely pure camphor are allowed to macerate for not less than forty-eight hours at the temperature of the room. It is shaken three times a day, filtered and then sterilized at 110° C. and afterwards placed in sterile bottles of suitable size.

This serum contains one gm. and fifty cgm. of camphor for each litre and ten c. c. are given for one intravenous injection. It is said to possess an absolute curative value if injected during the first few hours after the onset of the symptoms but during the progress of influenza or its complications it acts as an antithermic, an antiseptic of the blood, a eupneic, tonic and diuretic. It improves the general condition, thus giving the patient a chance to ward

off complications. At Toulouse camphorated serum has been preferred to other medications having a similar therapeutic action. The antithermics usually employed do not always possess a prolonged antipyretic action; some of them reduce the absorbing power of the red blood corpuscles for oxygen, depress the nervous system, weaken the hepatic functions as well as those of the kidney. This cannot be said of camphorated serum.

As compared with the colloidal metals camphor serum is superior, according to those who have used it. In doses of ten c. c. it does not give rise to chills or a rise of temperature, while its intimate action on the organism appears to be more perfect than that of electrargol. It is to be remarked, however, that when more than sixty c. c. of the serum is injected the chills will occur.

As to the therapeutic results, it has been found that a single intravenous injection was enough, but in the last epidemic several injections of ten c. c. each had to be given, although twenty-four hours later the rectal temperature had dropped three to four degrees F., and if pulmonary lesions were present their evolution was favorable. Although like any other therapeutic measure camphorated serum has its imperfections, it nevertheless is well worth trying.

RHEUMATISMAL CARDIOPATHIES.

In rheumatismal attacks in cardiopathies salicylate of sodium should be administered. The physician must act quickly and energetically. A purgative should be first given, after which the sodium salt should be exhibited at the daily dose of from six to eight grams for several days. This dose is then decreased, but it should be maintained at four grams for some time and then reduced to three, then to two grams and finally it can be stopped. In children about fifty cgm. of the sodium salt should be given daily for each year of age up to six years, but from six to fifteen years three grams daily may be given for some time and then gradually decreased.

Sodium salicylate should be given in the form of a potion in several doses a day and it should invariably be combined with sodium bicarbonate as follows:

Sodii salicylat,	15 gm.
Sodii bicarb.,	10 gm.
Syr. cort. aurant,	50 c. c.
Aq. dest.,	250 c. c.

Each soup-spoonful contains about one gm. of the salicylate. By the addition of the bicarbonate the phenomena of gastric intolerance are avoided, so that the exhibition of the drug can be continued without any setbacks.

Treatment with sodium salicylate is usually employed with too much timidity, in small doses and for an insufficient length of time, and the failures with this treatment have been from no other cause. Rheumatismal infection is particularly resistant to treatment, and if, when the acute symptoms have

subsided, the treatment is prematurely stopped the infection will often persist in a subacute state, perhaps almost latent, continuing its work silently to end finally in irremediable lesions. Therefore, it is important to remember that the treatment with sodium salicylate is without danger and the fear that some patients have of the drug is perfectly unjustified. The urine should be carefully examined before commencing the treatment and if albumin is present prudence must be exercised. Nevertheless, in these circumstances the drug can be exhibited, but in smaller doses, always being on the alert to stop it should indications arise for so doing.

The succedaneums of sodium salicylate can be resorted to, particularly aspirin at the daily dose of two grams and a half or even three grams, divided into doses of fifty cgm., but the sodium salt is usually more active and if combined with the bicarbonate of soda it is well tolerated by the stomach. When there are signs of cardiac insufficiency, particularly in febrile asystolia, digitalis should be associated with the salicylate. When the insufficiency is not marked sodium salicylate may be given, but if after a few days the cardiac asthenia persists digitalis is to be given as well.

PAROXYSMS OF DYSPNEA IN ARTERIOSCLEROSIS.

In the treatment of paroxysms of dyspnea to which arteriosclerotic patients are subject and which are due to autointoxication, prophylaxis is most important. In patients who have already had these paroxysms, however, the amount of meat consumed must be very considerably reduced and stopped altogether if there is the slightest evidence of mild functional disturbances after the evening meal. The paroxysms, although mild, will sometimes continue to occur even when the patient is on a diet of milk and vegetables, in which case an absolute milk diet must be resorted to. If the patient dislikes milk he should be persuaded to try to overcome this, but if there is gastric intolerance with diarrhea, bicarbonate of soda, lactic acid or hydrochloric acid may be given with advantage.

When prescribing the diet the digestibility, the toxicity, and the amount of fluid supplied to the organism must be considered in the selection of the various articles of food. Milk has a low degree of toxicity, it is thoroughly eliminated, and in its elimination carries off the toxins retained in the body. In these patients, it is not the heart that should be treated, the danger is in the liver and kidneys.

The treatment of the paroxysm of dyspnea when violent consists of bleeding, especially when the blood pressure is high and the toxic origin of the dyspnea is evident. After blood has been withdrawn the blood pressure is slightly lowered, the respiration is less rapid, the face resumes its normal aspect, air hunger progressively subsides, and the patient falls asleep. About 400 to 500 c. c. of blood should be withdrawn. In the milder cases wet cupping may be enough, about fifteen to twenty cups being applied over the area of both lungs. Some patients are benefited by wet cupping, others by bleeding, but in either case the relief is always great. Wet cupping is indicated especially when basal pulmonary congestion is very marked. The action of wet cupping is more rapid, but less durable.

Morphine can be given with safety if the patient can be closely watched, when bleeding cannot be resorted to for one reason or another, or when abstraction of blood has not brought about a complete sedation of the respiratory disturbances. When the patient complains of a slight dyspnea—the forerunner of acute dyspnea—syrup of ether of the French Codex will be found an excellent remedy. During the early part of the milk diet the urine will be voided in large amounts, but when the diuresis decreases, theobromin is indicated.

THE SWEATING SICKNESS.

If it could be proved that this epidemic disease was due to contagion from the field mouse, all that would be necessary would be the extermination of this animal, but the etiology is still uncertain, in spite of the biological analyses undertaken by Marchoux at the Pasteur Institute at Paris and by Prof. Ferret, of Bordeaux, who undertook microscopical examination and cultures of the blood and cerebrospinal fluid of the mice and inoculation of monkeys.

As to the treatment of sweating sickness, the patient should be isolated and severe measures of disinfection carried out, as in any other epidemic disease. The production of sweating should be avoided as far as possible, likewise chilling of the patient. The bed linen must be changed as often as necessary and two beds and even two adjoining rooms for alternate transportation of the patient are desirable.

A milk diet, acidulated drinks, and quinine represent the medication, while the constipation must be controlled by enemas or castor oil. For high temperatures, cold sponging, tepid or cold baths are in order. Paroxysms of suffocation are to be treated with morphine and atropine. To favor the outbreak of the eruption mustard baths are useful. During convalescence the diet must be restricted for some time.

Protein Requirement of Maintenance in Man and the Nutritive Efficiency of Bread Proteins.—

H. C. Sherman (*Journal of Biological Chemistry*, January, 1920) has collected from the literature 109 experiments belonging to twenty-five different investigations and including sixty-seven experiments upon twenty-nine men and forty-two experiments on eight women, in order to determine the indicated protein requirements for each seventy kilos of body weight. He found that when the protein of the food was almost entirely derived from bread or other grain products, with a diet sufficient in energy value, a daily intake of about 0.5 gm. of protein per kilo of body weight was adequate to meet the actual requirements of maintenance in healthy men and women. If the older experiments showing higher values are included, the average is a little less than two thirds of a gram of protein for each kilo of body weight, so that a standard daily allowance of one gm. of protein for each kilo of body weight would provide a margin of safety of fifty to 100 per cent., as far as the requirements of adult maintenance go. Grain products should of course be supplemented by milk products, and the proportion of milk in the diet should be more liberal in the case of growing children and of pregnant or nursing mothers.

Sodium Cacodylate and Sodium Hyposulphite in Dermatology.—P. Kavyant (*Presse médicale*, January 28, 1920) has for one year been trying injections—usually intravenous—of sodium cacodylate in ten per cent. solution in various skin diseases. Hypodermic injections of 0.1 to 0.3 gram of the compound are first given, and if well borne, intravenous injections are at once proceeded with. Cases of eczema refractory to all treatments for months or even years were relieved by these injections, either permanently or with the aid of further injections given at increasing intervals. Beginning with doses of 0.3 or 0.4 gram, the amount is progressively augmented until one gram or even grain is being given in twenty-four hours. The average duration of treatment required was three weeks, fifteen to twenty grams of sodium cacodylate being given in divided doses daily or in larger doses every three or four days. In a few patients, chiefly children, small, repeated doses of calomel by mouth were combined with the cacodylate treatment, causing rapid disappearance of eczema where arsenobenzol injections had already failed. Sodium hyposulphite was used intravenously in a variety of skin affections, with considerable success. The pure drug was injected in daily amounts of four to fifteen grams, dissolved in water in a twenty per cent. solution. Smaller doses were used at first to test the patient's sensitiveness to the remedy. Sometimes the drug was given instead by mouth, the solution used being made up of one part of the hyposulphite to five parts each of syrup and distilled water. Good results were thus obtained in various erythemas, urticaria, furunculosis, eczema, artificial dermatitis, and strophulus. Pityriasis versicolor gradually disappeared without external treatment, and in a case of extensive trichophytosis of the neck the lesions were rapidly reduced. Thirteen patients with eczema were greatly improved by intravenous injections of sodium hyposulphite.

Treatment of Postdysenteric Colitis.—James Cantlie (*Practitioner*, March, 1920) says that the treatment of the postdysenteric lesions resolves itself into a surgical manipulation, because the lesions come within the view of the sigmoidoscope. His method is as follows: Introduce the sigmoidoscope without an anesthetic, as the patient's feelings indicate any danger point, push the tube up as far as pain will allow, withdraw the stilette, dilate the rectum above the point by squeezing the air into the bowel from the air bag, and push the tube onward until the mouth of the sigmoid is exposed. Wipe the surface gently with cotton and inspect. There may be ulcers, excoriations, minute hemorrhages into the mucosa, or a velvety and edematous appearance of the bowel surface. The adjacent rectal mucosa may be normal or edematous. If pain allows, or the narrowed bowel permits, push the sigmoidoscope on until well into the sigmoid flexure, when, as a rule, a healthy surface will be found extending from two inches above the lesion at the lower opening of the sigmoid. Now withdraw the lamp, leaving in the tube. Dip the head of the rod-stilette into pure carbolie acid, push it along the empty tube and touch the affected surface at its highest point with the carbolie acid. Withdraw the

tube one inch, withdraw the stilette, dip it again in the carbolie acid and reintroduce it as far as it will go along the tube. The whole instrument is now withdrawn. After two days the bowel should be washed out by an enema of salt water every day for four days, then every second day for a week, twice during the next week, and then once a week for a month. The salt water should be sea water whenever it is available, but a treble strength of normal saline will do. The addition of a tablespoonful of rectified spirit, or whiskey, does away with the lowering effect the enema tends to produce. A teaspoonful or two of castor oil every night at bedtime is the only drug usually required. The treatment may be repeated should a relapse of mucus, or mucus and blood, occur. A relapse of true dysentery is treated with ipecac or emetine. Ordinary food may be taken except when blood is present in the evacuations. Milk and milk puddings are to be rigidly excluded. Rice water may be given.

Palliative Treatment of Gastric Pain in Hyperchlorhydria.—P. Le Noir (*Journal de médecine de Paris*, January 20, 1920) states that sodium bicarbonate, by reason of its solubility and the carbon dioxide set free from it, is the most rapidly acting remedy for the tardy pains in the stomach occurring some time after meals in hyperchlorhydria. The bicarbonate should, however, be used alone only for a short time, as there is a possibility of its making the existing gastric affection worse. Bourget's combination may be highly serviceable:

Sodii bicarbonatis,	8 to 10 grams
Sodii phosphatis exsiccati,	4 grams
Sodii sulphatis,	2 grams
Aquæ destillatæ,	1 litre

The dose of this solution is 50 to 100 grams. Often magnesium oxide and prepared chalk are given with the sodium bicarbonate on account of their greater neutralizing power and insolubility, which prolong their action. From 0.3 to 0.5 gram of each of these agents in admixture in equal parts may be given at a dose. It is well to diminish the proportion of sodium bicarbonate and, unless the patient is constipated, likewise that of magnesia:

Sodii bicarbonatis,	0.1 gram
Magnesi oxidî,	0.2 gram
Crete præparatæ,	0.4 gram
Pone in chartulam No. i.	

In the presence of diarrhea or to correct the effect of the magnesia, subnitrate or, better, subcarbonate of bismuth, may be used. The so called Patterson's powder is:

Bismuthi subnitratîs,	} of each 0.5 gram
Magnesi oxidî,	
Sacchari pulveris,	
Pone in chartulam No. i.	

The addition of opium, codeine or belladonna to such alkaline powders is of doubtful advantage. Chloroform water, however, may serve well as an adjuvant, the powders being administered, for example, in a tablespoonful of 0.5 per cent. (by weight) chloroform solution. The alkalies should be given just before pain is expected, or at least when pain is just beginning, rather than when it has reached its height. Pain should be completely relieved either by a single powder or repeated doses at ten minute intervals.

High Frequency Treatment in Tuberculous Osteitis.—F. Doumer (*Bulletin de l'Académie de médecine*, January 27, 1920) reports that in four cases of tuberculous osteitis which he recorded some years ago, in which the patients recovered under high frequency treatment, three patients have remained well after intervals of eight, seven and six years respectively, while one showed recurrence three years after apparent cure. Since 1912 the author has used the method in about twenty cases of various types. The voltage employed always exceeded 80,000, and the frequency of current oscillations varied from 800,000 to one million a second. Ten minute treatments were given daily or three times a week. Results in tuberculous osteitis of the foot were particularly encouraging. Great variation in the duration of treatment required was noted, however, some patients recovering in a few weeks, and one in eighteen months. The high frequency treatment acts only with difficulty in deep seated tissues, and in general the deeper the lesions, the slower the treatment. Yet the treatment failed in one case of tuberculosis at the wrist and in a case of spina ventosa. Hence success in the treatment would appear not to depend solely upon the depth of the diseased tissue, but also upon some other factor—possibly the habitual temperature of the parts, the hand, for example, being continuously exposed to a low temperature and thus lending itself less well than other parts to defense of the tissues against infection and to the processes of tissue repair. On the whole, however, the results from the treatment were sufficient to warrant its general employment.

Ulcers of the Mouth and Pharynx Harboring Vincent's Organisms.—David and Hecquet (*Presse médicale*, January 21, 1920) comment on the frequency of apparently scorbutic lesions of the mouth and pharynx in which the fusiform bacilli and spirochetes of Vincent are in reality responsible. Their observations were made in the Rumanian army. In many of the cases the disease began in the vicinity of the wisdom teeth and other large molars. In a few cases the vocal cords were involved, causing persistent hoarseness. The customary tonsillar involvements were also frequent. The buccal lesions could only be confused clinically with those of mercurial stomatitis, which is readily excluded by inquiry from the patient as to previous mercurial injections. In one of the authors' cases, however, a pemphigus of the buccal mucosa had been wrongly diagnosed as fusobacillary stomatitis. The tonsils and large portions of the oral cavity were covered with a whitish deposit, but here and there were partly detached pieces of mucous membrane—the remains of broken bullae. Some time after, a bullous skin eruption appeared, confirming the diagnosis of buccal pemphigus. In most cases of Vincent infection, the course of the disturbance was torpid, little or no constitutional effects occurring, with no lymphatic enlargement. The characteristic fusiform bacilli and spirochetes were always found, but the authors do not maintain that these organisms were exclusively responsible for the lesions found. In the treatment, local application of arsenobenzol proved more active than intravenous

administration of the same agent, but the combined treatment was applied whenever practicable. Locally, the lesion is first cleansed with a ten per cent. solution of silver nitrate, which lightly cauterizes the surface. The ulcerated and bleeding area is then treated with a solution of 0.9 gram of arsenobenzol in thirty grams of glycerin. Pain, dysphagia, and difficulty in mastication soon disappear under this treatment. The wound becomes cleaner and the false membrane covering it firmer. A few days later, when the false membrane is removed during treatment, the wound is found to project beyond the surrounding mucous membrane; instead of an excavated ulceration, granulations are seen, tending to bring about repair. Gradually a scar corresponding to the interdental line is formed. Part of the tonsil, viz., its upper pole, is likely to have been destroyed, however, by the disease. Intravenous arsenobenzol injections, where used, are given at six-day intervals with an initial dose of 0.3 gram, increased by 0.15 gram at each successive injection. Usually a milk diet and a five per cent. sodium bicarbonate gargle are ordered, the ordinary diet being resumed when deglutition no longer gives pain.

Births, Marriages, and Deaths.

Died.

BODWELL.—In Phenix, R. I., on Thursday, March 25th, Dr. James M. Bodwell, aged fifty-two years.

CHAMFON.—In Hilldale, Mo., on Monday, March 8th, Dr. James R. Chamfion, aged fifty-eight years.

GAZZO.—In Raceland, La., on Saturday, February 14th, Dr. Jean B. C. Gazzo, aged sixty-three years.

GIBBLE.—In Philadelphia, Pa., on Tuesday, April 6th, Dr. Elmer E. Gible, aged fifty-three years.

HEARING.—In Philadelphia, Pa., on Thursday, April 1st, Dr. Wellington R. Hearing, aged fifty-two years.

JACQUES.—In Marlboro, Mass., on Sunday, April 4th, Dr. Joseph Alexander Dambourges Jacques, aged forty-four years.

KIMBALL.—In Providence, R. I., on Sunday, March 28th, Dr. Harry Waldo Kimball, aged fifty-two years.

LA GARDE.—In Washington, D. C., on Sunday, March 7th, Col. Louis Anatole La Garde, Jr., M. C., U. S. A., aged seventy-one years.

LEE.—In Brooklyn, N. Y., on Sunday, April 4th, Dr. John A. Lee, aged forty-eight years.

LOUNT.—In Hempstead, L. I., on Monday, April 5th, Dr. Robert Lount, aged seventy-six years.

POINTON.—On S. S. *Royal George* en route to New York, on Sunday, April 4th, Dr. James Pointon, of the Cunard Line service, aged sixty-nine years.

PRESOTT.—In New Bedford, Mass., on Friday, March 26th, Dr. Charles Dudley Prescott, aged seventy-five years.

PROCTOR.—In Union City, Ind., on Wednesday, April 7th, Dr. Jeremiah A. Proctor, aged ninety years.

SEIBERT.—In Lebanon, Pa., on Monday, March 29th, Dr. George W. Seibert, aged sixty-five years.

TWITCHELL.—In Santa Barbara, Cal., Dr. Edward Thayer Twitchell, of Boston, aged sixty years.

WALKER.—In Moriah, N. Y., on Tuesday, March 30th, Dr. Edgar Leonard Walker.

YEAGY.—In Dillsburg, Pa., on Tuesday, March 30th, Dr. William A. Yeagy, aged fifty-seven years.

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Original Communications

INCIDENCE OF MALIGNANCY IN DISEASES OF THE GALLBLADDER.*

By JOHN F. ERDMANN, M. D., F. A. C. S.,
New York.

During the early part of last year I was startled by the repeated occurrence of malignancies of the gallbladder occurring among patients in my private practice. In a period of six weeks I opened thirty abdomens for suspected cholecystitis and found malignancy in six cases. In the following eight weeks I saw, in operations for cholecystitis, three more carcinomata of the gallbladder, in about forty-five gallbladder patients. While such an occasion can be classed only as a pursuing evil, or a coincidence, nevertheless it gave me much food for thought on the subject of the incidence of malignancy in gallbladder disease. For years I had been accepting the fact that malignancies of this viscus occurred in about four and a half per cent. of all gallbladder operations, and was therefore forced by this occurrence to believe that my reading, observations, and earlier contributions were in error, or that I had encountered a phenomenal number of carcinomata of this zone.

In addition to the malignancies of the gallbladder, several cases of general carcinomatosis of the abdomen were encountered and in these, in view of the fact that the most frequent occurrence of the malignant tissue was found to be in the hepatic zone, I felt that they were also malignancies of the biliary tract, but for want of better definition as to origin, these have been included in my statistics under unclassified carcinoma.

In an earlier contribution (about twelve years ago) on gallbladder surgery, I cited 105 operations in which series five were carcinomatous, or almost five per cent. In a later contribution of about three or four years ago, I failed to take account of the malignancies, as I felt quite sure that the rate would not exceed five per cent.

In the present report I shall begin with the first half of last year and record nine carcinomatous gallbladders, out of sixty-eight operations upon the gallbladder, occurring in an operative list of 502 patients. The second half of 1918 presents three malignancies in a series of sixty-three operations on the gallbladder, in a total of 491 operations.

The second half of 1918 presents but two malignancies of this viscus in forty-seven operations, out of a series of 474 major operations. The last half of 1917 gave but one malignancy in forty-seven gallbladder operations, out of a list of 506 operations. These figures and statements show, in the main, the remarkable occurrence of malignancies in the early months of this year and go to prove my contention that the occurrence of these malignant cases in the first portion of the year 1919 must be considered coincidental.

A summary of these cases for the past two years—feeling that this period of time would be ample for a relatively satisfactory conclusion on the part of an individual operator—gives the following: From June 15, 1917, to June 15, 1919, 1,903 patients were operated upon. Of these 224 were operated upon for cholecystitis. There were 15 malignancies found in the gallbladder, making a percentage of six and seven tenths of all gallbladder operations, and eight per cent. gallbladder malignancies, found in my entire operative work during these twenty-four months.

I wish again to emphasize the fact that there were a number (thirteen) of operative cases of general abdominal carcinomatosis, in which the primary focus could not be positively demonstrated, but in the majority of these, the point of greatest involvement was in the neighborhood of the gallbladder. The stomach and immediate structures were not the source of origin.

In this total of 1,903 patients operated upon, malignancies of all kinds, excluding the lip epitheliomata, were found 285 times. Recalling that fifteen of the 285 malignancies were of the gallbladder, you will observe that the occurrence of gallbladder malignancies to the whole number of malignancies positively specified in the collection are as follows: Gallbladder, fifteen; stomach, forty-three; breast, sixty-six; cecum, twelve; colon and sigmoid, twenty-eight; rectum and rectosigmoid, twenty-nine; not specifically classified, seventy-nine. This group of seventy-nine included the uterus, the kidney, larynx, tongue, liver, thyroid and other organs.

The ages of the patients included in this series of gallbladder malignancies varied from forty-two to sixty-seven. In all of the cases reported the diseased condition was found in females. I believe malignancies of the gallbladder to be more frequent by far in the female than in the male, just as cho-

*Presidential address presented before the American Association of Obstetricians and Gynecologists, Cincinnati, Ohio, September 15, 1919; also read before the Medical Association of the Greater City of New York, January 19, 1920.

lecystitis presents itself more frequently in the female, while malignancies of the duct and pancreas and papilla occur more frequently in the male.

Through the kindness of the registrar of the board of health of New York city, Dr. W. H. Guilfooy, I am able to present a few of the data of deaths from malignancy in 1918 in New York city. Unfortunately for the purpose of this article, no line was drawn by the health department between gallbladder and liver cases, but all were lumped under liver and gallbladder. In this class there were 192 deaths, in a list of 2,170 deaths from cancer. Therefore over ten per cent. died from hepatic and gallbladder malignancies; of these 192, ninety-seven of the deaths were in females. In reviewing this board of health list, one must recall that the majority of the patients were not operated upon. In other words, the autopsies and *autopsy in vivo* were few, compared with the number of deaths in cases treated medically. Guilfooy also tabulated 192 gallbladder and liver malignancies as follows: Four male and two female patients were operated upon, while the remaining 186 patients were not; bearing out my supposition as recorded above.

While the condition of gallbladder malignancy occurs in any decade, the fourth, fifth, sixth and seventh are chief ones, as evidenced in malignancies elsewhere in the body. Five of the deaths recorded by the board of health in the year 1918 were, one at fifteen, one at twenty-four, one at twenty-five, and two in the third decade. In the same report the board of health records 957 deaths from cancer of the stomach and intestines, 516 being among males and 441 among females. I feel it can safely be stated that cancer of the biliary system as to frequency, occurs in about the following order: First, gallbladder, cystic duct, and liver; second, pancreas, with common duct contiguity; third, common and hepatic ducts; fourth, papilla of Vater.

Stones were found in the gallbladders of all the patients with carcinoma of the gallbladder recorded in this communication. It would seem that the presence of gallstones or biliary sand is a provocative factor in the production of malignancy. This being a fact, or even an hypothesis, the early elimination of such agents is advisable.

While not wishing to take the ultraradical stand of advising operation in all cases of gallbladder disease, nevertheless the statistical side of malignancy, compared with the operative mortality, should be definitely, clearly, and positively placed before the gallbladder patient. It is recognized today that the mortality of cholecystostomy and cholecystectomy is well under four per cent., in fact, two to three per cent. in the hands of all skilled operators, and if it is recognized that the malignant incidence is between four and six per cent., one readily sees that the patient selecting operative risk has the advantage of avoiding death from malignancy by two to three per cent. Nevertheless, death is as certain as day to all of us and the selection of the type of demise must be left to the individual, after careful illumination of both sides of the question.

Symptoms.—No definite symptoms of malignancy can be described in the early onset of the disease, thus necessitating the advisability of opera-

tion when symptoms point to a cholecystitis, both to relieve the physical suffering of the lesser disease and to relieve the mental anxiety when malignancy is suspected. When the gallbladder or mass in the right hypochondriac region becomes so large as to be palpable in nonacute cases, with or without an ever deepening jaundice, malignancy must be given weighty consideration. Ever deepening jaundice, slow or insidious in onset, is in itself a strong sign of malignancy, but as occasionally happens, a stone may be painless in its impaction and the after jaundice may be not intermittent in depth of color. A Courvoisier gallbladder can often be felt through the wall of the abdomen and, although tender, it is not of necessity painful. Loss of weight is evident only when the malignancy extends to the common duct, pancreas, or adjacent viscera. A number of patients with malignancy of the gallbladder mention pain as the first symptom, and this symptom is prone to be in evidence, therefore, when the growth has made an inoperable advance.

Treatment.—The operative treatment of this disease should receive very careful consideration. Personally I have found that interference with the gallbladder, unless a complete cholecystectomy can be done, is prone to be followed by a rapid death. By the term interference I wish to convey the idea of removing the stones, since they are erroneously felt to be the entire source of pain; or of doing a cholecystostomy or a cholecystectomy, if the growth begins to be or is established in the cystic fissure, or if any suspicious metastases are in surrounding viscera. A satisfactory cholecystectomy can be done in certain fundus and body of the gallbladder involvements. These are the cases found as a rule as accidentals to the operation for a cholecystitis.

Excision of sections of the common and hepatic ducts has been done frequently enough to stimulate further efforts in this direction. While resection of the head of the pancreas has been well illustrated by various experimental operators, the mortality in the human race has been so high as practically to forbid undertaking this operation.

The involvement of the papilla and ampulla is best overcome by a cystogastrostomy, unless the growth of the papilla is obstructive to the duodenum, when a gastroenterostomy is added, relying upon a back track current of the bile and pancreatic juice by way of the common duct to the cystic duct, to the gallbladder into the stomach, and then into the intestines by way of the new stoma. Such operative cases, as the two described above have been reported by myself and Dr. C. G. Heyd (1) and again by me (2.)

The youngest patient in my series of this type of involvement was a male eighteen years of age, who had an obstructive carcinoma at the papilla of Vater, also obstructing the duodenum. The combined operation of cystogastrostomy and gastroenterostomy, with excision of a large gland at the midportion of the duodenum, and repair of a hole in the duodenum, resulting from pressure slough, was successfully done, the boy living for over twenty-two months.

A close review of the statistics herewith presented will, I am sure, justify the advice that an

established diagnosis of cholecystitis predicates the possibility of the occurrence of cancer, almost double that of the possibility of death in the event of operation.

Since completing this paper with cases reported for the period of January 15, 1917, to June, 1919, I feel that it might be interesting to note the number of gallbladders with malignancy, and other malignancies, operated upon from June 15, 1919, to December 15, 1919. There were forty-three gallbladder cases in this six months' period, with two malignancies, while there were forty-five other malignancies, in a series of 410 major operation. There were the following malignancies: Breast, fourteen; sigmoidorectal, five; sigmoid, two; cecum, two; colon, hepatic flexure, two (making eleven of the colon in all); bilateral cystic papilloma of ovary, four; pancreas, one; kidney, one; stomach, five; sarcomata of the extremities and nerves, four; general abdominal carcinomatosis, one; lung, one; tongue, one.

When it is recalled that these statistics of the gallbladder are based upon the sum total of all gallbladders operated upon, and that very few of all the gallbladders operated upon were frank in their expression, the percentage, therefore, of malignancies of proved symptom bearing gallbladders very naturally would be markedly increased.

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68 WEST FIFTY-SECOND STREET.

DRAINAGE AND THE MERCURY ION IN CYSTIC GOITRE.

BY G. BETTON MASSEY, M. D.,
Philadelphia.

For a number of years I have treated an occasional case of cystic goitre by a method that is original with me; and until lately it was supposed that the details had been given to the profession, but diligent search among reprints, proceedings, and other records fails to reveal such a report.

The method is the establishment of free drainage of the cyst by a small opening into the sac through the skin, converted into a temporary sinus by cathodic electrolysis, through which cauterant and antiseptic ions are subsequently diffused from a conductor acting as anode. The sac walls and cavity are obliterated gradually by repeated small diffusions of the ions by the direct current at intervals of three days, final healing of the cavity showing a minute, solid scar at the end of about seven weeks.

This apparently bold procedure is done entirely safe from septic or other infection by the development of the mercury ion within the sac every third day, an ion that possesses great antiseptic value. There has been no rise of temperature or untoward incident of any kind in the cases treated.

I was led to use this method during the septic

infection of a cystic goitre that had been opened and placed under ordinary electrolysis with a plain gold anode. The oxygen and chlorine developed about the gold anode were doubtless somewhat germicidal, but they disappeared from the cavity in a few hours, leaving a wound that was a suitable nidus for infection during the greater portion of the intervals between treatments. The mercury ion was first employed by amalgamating the gold anode with it at this juncture in this case, with excellent results in permanent obliteration of the cyst.

Preliminary puncture and aspiration.—With the patient recumbent on the operating table, an indifferent dispersing pad is placed beneath the back and connected temporarily with the anodic binding post of a direct current shunt controller apparatus. The skin over the most prominent part of the cyst is anesthetized to an area of about a square inch by endermic injections of a two per cent. solution of either procaine or apothesine, and the rather large needle of an aspirator is prepared to function as a cathode, as well as an aspirator, by winding the end of a sufficient length of No. 34 copper wire about its shank near its attachment end, the wire to act as conductor. The other end of the wire is attached to the cathode binding post.

The aspirating needle, attached to its aspirator as well as to the electric apparatus, is carefully inserted into the cyst and the contents of the latter withdrawn. A fully developed cyst, with little or no parenchymal tissue overlying it, usually collapses at this time. The needle, still in position within the cyst, is detached from the aspirator and employed as a cathodic electrode, ten or fifteen milliamperes of current being turned on for ten minutes. This will produce a frothy liquefaction of the tissue in immediate contact with the needle, making subsequent insertion of the ionizing probe easy after the current has been turned off and the needle removed.

The mercury ion diffusion.—At the completion of the aspiration and the electrolysis of the sinus, the wire of the dispersing pad is changed to the cathode binding post and a short zinc probe with fine point, made from one thirty-second inch zinc plate, is freely coated with mercury by amalgamation, attached to the anode binding post by fine wire, and inserted into the sac by the opening made. A current of five to fifteen milliamperes is then turned on and maintained for a quarter of an hour. The site of puncture is dressed after the application and daily thereafter with dilute zinc oxide ointment and gauze. The patient may remain ambulant.

In three days a second ionization with mercury on the zinc probe is applied through the opening in the tiny slough. At the end of a week or ten days the skin slough will be found loosened, revealing a minute sinus leading into the cyst, through which additional mercury ions should be diffused every third day from an amalgamated zinc probe passed into the sac. At the end of the third week the zinc probe should be insulated with fused sealing wax before amalgamation, the insulation leaving a half inch at the point bare. The purpose of the

insulation is the protection of the sinus walls from further enlargement by confining the ion diffusion to the sac itself.

During the course of the treatment the later insertions of the ionizing probe are made less painful by placing a drop of cocaine or procaine solution on the opening five or six minutes prior to its insertion. All ionizations are of fifteen minutes' duration, with a current strength dictated by the sensitiveness of the patient, or between three and ten milliamperes. The final ionizations, during the fifth to the seventh week, are not much more than probings, with a little current for sterilization, until the wound closes fully from the bottom.

This technic may be varied by making a free opening with a small bistury and immediate ionization at the first application; or by the use of the mercury ion alone, held in amalgamation on a solid gold probe. The use of the zinc ion, in association with the mercury ion as described above, is thought, however, to be more quickly destructive of the cyst wall than the mercury ion alone. But in any case the mercury ion is essential to the method on account of its high antiseptic action.

Results and contraindications.—All the cases of cystic goitre which I have treated in this manner have been uniformly successful, and there have been no failures nor setbacks of any kind. About seven weeks' time is required for the full healing of the little wound.

The chief difficulty in the use of the method is the selection of patients in whom a cyst is actually present. I recall at least four cases in which no cyst was revealed after other physicians had concurred in the diagnosis, and two in which the cyst was smaller than supposed, the exceedingly elastic goitrous tissue rendering palpation deceptive. A preliminary aspiration is now performed for diagnostic purposes, and if no fluid is found the proposed treatment is abandoned.

In the patients with disappointingly small cysts, who were placed under this method of treatment the final result was a shrinkage that was equal at least to the size of the obliterated cyst. In one patient, a woman in middle life, in whose goitre no cyst was revealed, persistent treatment through the sinus with mercury ions and with iodine ions, the latter dispersed from the cathode, left the goitre practically the same as at the beginning.

1825 WALLACE STREET.

DIFFUSE VASCULAR GOITRES.

Causes of the Exophthalmus.

By J. CHRISTOPHER O'DAY, M. D.
Honolulu, Hawaii.

Diffuse vascular goitre occurs usually within the years of adolescence, affecting females many times more often than males, in what proportion we were unable to ascertain. Of the seventy-seven patients observed by us no males were included. The majority were high school students and fifty-two had been engaged in active physical exercise. After the agility test, the bruit, always present in vascular goitre, became intensified. The remaining twenty-

five gave no history of having indulged in athletics. In our research we have been unable to find anything to show that vascular goitre is ever endemic. Its cause may be summed up in two words—venous stasis; when we try to determine the cause of the venous stasis the issue becomes obscure.

While hyperthyroid or toxic goitres are extremely vascular, it must be remembered that true vascular goitre is never hypersecretive, nor does it ever give rise to any constitutional disturbance. It only annoys by the deformity it produces, but this deformity never endures for long—it is typically the transitory goitre. In considering the answer to question five (1), to avoid confusion we shall include but two types, namely, retentive and vascular.

One need only recall the various types of retentive goitre to be impressed by the way a colloid retention may be changed to an aqueous cyst by the pressure effect upon the epithelium. It is also apparent that hemorrhage may occur and produce a change from one of the foregoing retentions to that of a cyst with a grumous content, but the transformation of goitre from one type into another, and that which is most frequently reported, is that of a goitre, quiescent for years, suddenly flaring into the hypersecretive or toxic type.

How may this be explained? Will our knowledge of goitre pathology and thyroid histology permit of our believing such a change to be possible? It is not so. Admitting that individuals with retentive goitre of long standing have suddenly taken on the disturbance of hyperthyroidism must not be taken to mean that the existing goitre *per se* is the source of the toxicosis. The contents of a retentive goitre are inert, except where hemorrhage has been observed to have had some degree of a general hemolytic action, the so-called hemolytic goitre.

We have observed many cases of colloid goitre where most unexpectedly hyperthyroid symptoms were introduced, but where removal of the goitre failed to relieve either the tachycardia or the tremor. It is an error in judgment to place the responsibility on the goitre. Experience has taught us that the removal of functioning glandular tissue is more toward the establishment of a cure than the removal of any given number of retentive goitres.

There is always much to discourage one who is seeking the truth. When in three of our cases of hyperthyroidism, in association with retentive goitre, the patients failed to respond to extirpation of each lobe, we sought more satisfactory results in excision of the superior cervical sympathetic ganglia. There was no reward. A review of the literature of sympathectomies left us quite convinced that the procedure is practically without value. The way in which a colloid goitre may change into a distinctly cystic one, or the way in which a hemorrhage may convert it into a grumous cyst has been made quite clear by Murphy, yet these changes are of no therapeutic importance, for enucleation covers them all. It is only when the hyperthyroidism, or the so-called toxicosis appears that we are likely to be led into error of treatment. Enucleation alone will not suffice. Secreting glandular tissue must also be removed. Of course enucleation of the retentive goitre will correct the

deformity, and there will be great temptation to follow the lines of least resistance.

The only answer that can be given to our seventh question is retroocular pressure. The literature is a jumble of opinions relative to the cause of this phenomenon. Vague notions of its cause having to do with the sympathetic nervous system seemed to enjoy a rather wide range of popularity. The unknown so blended with the manifold mysteries of the thyroid that, at first thought, it seemed quite the proper deduction. It is only when one can get away from the mysterious and return to the horse sense of the situation that he is made to realize how exophthalmus can be but the result of a mechanical factor. To induce an eye from its normal position requires force. What then is the retroocular pressure? What is the force? What is it due to? On March 20, 1916, I discussed the etiology of the exophthalmus in hyperthyroid goitre before the Portland Ophthalmological Society (1). I exhibited a specimen prepared from a subject who had died of Graves's disease accompanied with marked exophthalmus. The skull was sawed horizontally just above the level of the orbital roof. Parallel to this a similar cut was carried through the face just below the level of the orbital floor. Gently cutting away the thin bone of the roof and floor immediately showed the exophthalmus to be caused by a pressure that in turn was the result of varicose orbital veins and an actual infiltration of the orbital fat. Edema, approximating an ascites of the orbital cavity, was present. What produced all this? What was the first cause? The answer is obvious—venous stasis. Why the venous stasis? The result of the tachycardia. Let us trace it in order. Inability of the ventricles to fill; engorgement of the entire venous system; stasis of the cavernous sinus into which the orbital veins drain; then their varicosing within the yielding fat, and lastly, as the final step, the extravasation producing the edema.

The tachycardia of hyperthyroidism is no more than a tetany of the heart's muscle. Its tendency is to hold the heart in systole. Every attempt at diastole is caught in the spasm and immediately flung back into the attempted continuous systole, thus enabling the ventricles to fill. Engorgement of the auricles represents the first step in the general venous stasis which sooner or later makes its presence felt, as already indicated, within the orbital veins themselves. "While exophthalmus occurs in but three out of every four cases of hyperthyroidism, or thereabout, when it does occur, it is always as a late symptom, and tells of a prolonged and violent tachycardia." (1)

It is clearly evident how a venous stasis originating from a tachycardia would be more pronounced in the upper extremity than one that resulted from either myocardial or valvular insufficiency. Engorgement of the right auricle alone is quite enough to hinder the head's normal gravity drainage, and with such a cerebral hyperemia, is it strange that so fearful a degree of nervousness obtains?

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SURGERY IN CHRONIC DIARRHEA AND LOCAL ANESTHESIA IN ANORECTAL OPERATIONS.*

BY SAMUEL GOODWIN GANT, M. D., LL. D.,
New York.

There many types of diarrhea, such as gastro-genic, enterogenic, neurogenic and others that are not surgical conditions, since they are relieved or cured by rest, diet and medication. Mild forms of enterocolitis also respond to this treatment reinforced by medicated colonic irrigation. Chronic diarrhea is a surgical condition when the rectum and colon are extensively involved through catarrhal, or mixed infection processes, accompanied by a violently inflamed or extensively ulcerated mucosa causing frequent fluid evacuations containing a considerable amount of mucus, pus, and blood. Formerly, when a patient complained of severe diarrhea, abdominal pain, and mucus or bloody evacuations a diagnosis of dysentery was made, but the term should be discarded since this symptom, complex accompanies several types of ulcerative colitis.

Considering the subject from an etiological viewpoint we have to deal with catarrhal, tuberculous, luetic, amebic, bacillary, balantidic and helminthic colitis. There is another form of diarrhea requiring surgical treatment, viz, obstructive, and this is seldom correctly interpreted. This variety of loose movements may be induced by benign or malignant neoplasms, stricture, hypertrophied rectal valves, or any lesion that constricts or occludes the colon or rectum, and patients afflicted in this manner are usually treated for constipation in the beginning and ordinary diarrhea later, without the physician having suspected an obstruction.

The surgical treatment in such cases consists in excising the lesion, or if inoperable and dangerous obstruction prevails, in making an artificial anus. Several operations have been employed in the surgical treatment of chronic diarrhea due to catarrhal or specific ulcerative colitis, appendicectomy, cecostomy, Gant's ileocecostomy and colostomy, procedures not resorted to until medical treatment and irrigation by way of the anus have proved ineffectual.

Appendicectomy is simple, effective and requires but ten minutes to perform when the cecum is exposed through the right rectus and the appendix is brought out and anchored in a stab wound incision. When diarrhea is increased and the stools contain an abundance of pus, blood, and mucus the appendix is opened, a Gant appendiceal irrigator or catheter is inserted and the colon immediately flushed; but in less severe cases the appendix is amputated a week later and irrigation inaugurated, which diminishes danger of infection and skin abscesses.

Cecostomy.—This operation is resorted to following previous appendectomy and when appendicostomy is attempted and found impracticable, because the appendix is congenitally absent, too short, narrowed, strictured or otherwise diseased. The

technic of stab wound cecostomy is not difficult; leakage is prevented by infolding pursestring sutures and the cecum is suspended to the parietes to lessen danger from peritonitis. Mortality of this operation is slightly higher (two per cent.) than appendicostomy and there may be superficial infection owing to opening of the bowel during operation.

Gant's Ileocecostomy.—Appendicostomy and cecostomy and through and through irrigation are effective in colitis, while ileocecostomy is indispensable in cases of ulcerative, catarrhal and specific ileocolitis. In this procedure which is not dangerous, following the opening of the cecum, a Gant rubber enterocolonic irrigator is introduced and fastened by circular infolding sutures after its distal end has been projected through the ileocecal valve into the ileum. This instrument enables the attendant to separately or simultaneously irrigate the colon and small bowel after the plan demonstrated. Patients suffering from chronic diarrhea, anemia and autointoxication rapidly improve in appearance and weight when the bowel is thoroughly cleansed daily by irrigation, using warm water, normal saline or an ichthyol two per cent. balsam Peru two per cent. solution or an oil and bismuth emulsion provided the position of the patient is changed from time to time during the irrigation in order to insure the solution reaching the ulcers wherever they may be. My patients are placed upon practically a normal, full diet when irrigations are inaugurated and on account of this and feeling that a cure is being accomplished the mental attitude of these patients is quickly improved. The catheter or irrigator is not removed and the opening is not closed earlier than from three to six months, otherwise recurrence sometimes takes place. Appendiceal and cecal openings are closed by electric cauterization or preferably fulguration of the mucosa and adjacent skin, which may require one or several applications.

Colostomy.—This procedure has been employed formerly but has been superseded by appendicostomy and cecostomy in the treatment of chronic diarrhea, because of the severity of the procedure, the patient objecting to bowel movements though the side and serious operation required to close the artificial anus.

LOCAL ANESTHESIA IN ANORECTAL OPERATIONS.

Owing to the time required to show the different operations performed under local anesthesia I will give but a brief résumé of the indications for, contraindications to, and technic of local anesthesia in colonic and rectal surgery. I have resorted to local anesthesia for fifteen years, in eighty per cent. of my anorectal work with entire satisfaction to the patients and myself. Local anesthetics are useful for operations and allay or prevent pain incident to strong applications made to sensitive lesions and wounds when applied superficially or injected into underlying tissues.

Solutions of cocaine, novocaine, eucaïne, apothesine, quinine and urea, and other agents of varying strength, have been utilized and have proved to be more or less effective, but I prefer eucaïne in a one eighth per cent. solution as employed in more than 10,000 operations, because it invariably pro-

duces complete analgesia in about ten seconds, is nontoxic, can be resterilized and apparently keeps indefinitely.

My patients do not complain of pain or squirm if previously told they will feel the needle prick but not the operation and the first few drops of the warm solution is slowly introduced and, infiltration is gradual until the tissues are white which indicates anesthetization. Effectiveness of the anesthetic is due almost as much to pressure upon terminal nerves as to the contained chemical and since the blood vessels are also compressed bleeding is slight. Because of the tendency of adrenalin, first to contract and then to relax vessels possibly leading to delayed hemorrhage, the drug is not combined with eucaïne.

The amount of anesthetic employed depends upon the operation, a slight amount being required for hemorrhoids and from a half to three or four ounces for fistula. Local anesthesia is suitable for some cases and impracticable in other anorectal operations and should not be employed in cases except those in which the operator knows in advance exactly what he has to do.

I operate upon all patients with uncomplicated cases of fissure, ulcers within the anal canal, enlarged papillæ, external and internal hemorrhoids, inflamed crypts, low lying polyps, hypertrophy of the levator ani or sphincter muscles causing constipation, and the majority of fistulæ, under eucaïne, one eighth per cent., anesthesia.

General narcosis is employed for extensive abscesses, deep burrowing or complicated fistulæ, second and third degree procidentia, removal of malignant growths, large benign tumors, and other major rectal operations. I have successfully used infiltration anesthesia in appendicostomy, cecostomy, colostomy and sigmoidopexy, but general anesthesia is preferable in abdominal operations, because local anesthetics are impractical when intraabdominal complications are encountered.

Postoperative pain is diminished or prevented by the administration of a quarter of a grain of morphine hypodermically just prior to operation and repeating the dose in half an hour if required. This is not always necessary when quinine and urea are used, which is seldom, since sloughing or delayed healing always follows employment of this form of anesthesia.

616 MADISON AVENUE.

THE SCOPE AND LIMITATIONS OF LOCAL ANESTHESIA IN INGUINAL HERNIA OPERATIONS.*

BY ALBERT S. MORROW, M. D.,
New York.

The field of local anesthesia has been broadened to such an extent within the past decade, through the development of the technic of infiltration and nerve blocking and the discovery of nontoxic substitutes for cocaine, that the painless performance of many major operations, for which general anesthesia was formerly essential, is now quite feasible.

*Read by invitation before the Alumni Society of the City Hospital 131, February 18, 1926.

Local anesthesia has been associated in our minds with minor surgery for so long a time, however, that it is difficult to convince a large proportion of the medical profession that this form of anesthesia can be adequate for the so-called major operations. While today it is still accepted without question for such operations as the opening of an abscess or the incision of an infected finger, when proposed for an operation like that for inguinal hernia it is viewed with skepticism and suspicion. This distrust is not without reason, and frequently has as its basis the unsatisfactory results that have been observed from the use of local anesthesia in the hands of surgeons who are not sufficiently familiar with its application, or who, not appreciating its limitations, employ the same operative technic they would upon an unconscious patient.

For anatomical reasons, the operation for inguinal hernia is especially suited to local anesthesia, the structures involved lying comparatively superficially and the sensory nerves supplying the field of operation having a definite course, which enables them to be readily identified. These nerves are the hypogastric branch of the iliohypogastric, the ilioinguinal, and the genital branch of the genitocrural. As a painless operation depends upon blocking the nerves supplying the operative field, a knowledge of their course is essential.

The method of anesthesia I have found most satisfactory is a combination of infiltration and nerve blocking. The technic was described fully in a previous paper (1) and will be only briefly outlined here. In preparation for the operation, the patient is given one sixth of a grain of morphine one hour beforehand. This serves the purpose of allaying the patient's natural nervousness and removes the psychic element; it also somewhat deadens the sensibilities. It should be remembered that operations under local anesthesia consume considerable time and it is important to make the patient as comfortable as possible upon the operating table, which should be covered with several thicknesses of blanket or with an air mattress. The patient's arms should not be restrained and he should be directed to assume a relaxed position with the arms folded over the chest or clasped above the head.

The line of proposed skin incision is infiltrated with a one half of one per cent. procaine adrenalin solution, and the subcutaneous tissues with a solution half as strong, down to and including the aponeurosis of the external oblique, paying especial attention to the region of the external ring. The incision is then carried down to the aponeurosis of the external oblique, and, if it is found that dissection about the external ring causes discomfort, this is postponed until the nerve trunks are blocked, as their terminal branches supply this area. Upon reflection of the aponeurosis of the external oblique, the iliohypogastric and ilioinguinal nerves are sought for. The former will be found in the upper angle of the hernial incision, usually running downward and inward on a line drawn from a little below the anterior superior spine of the ilium to a point about one inch above the external ring. The ilioinguinal nerve is smaller than the hypogastric and in some cases may be absent. Usually it will be found in the line of incision, just beneath the

aponeurosis of the external oblique, on a lower level than the iliohypogastric, running down in the long axis of the canal. In some cases it may be found lying as far outward as Poupart's ligament. Both these nerves are blocked with a few drops of a one per cent. procaine solution and the genitocrural nerve is similarly blocked when found. As the latter lies with the cord some difficulty may be met in distinguishing it, in which case an injection of from ten to fifteen drops of the anesthetic into the structures of the cord will suffice. These nerves should be protected from injury and care must be taken not to include them in the sutures during the process of sewing up. The cord is then dissected free from the sac, avoiding as far as possible handling the vas, as this causes the patient severe pain.

In some cases opening the sac may be slightly painful, and this seems to be more common in recent hernias than in those of long duration with thick sacs. Infiltration into the sac along the proposed line of incision will obviate complaints in these cases. The interior of the sac is then inspected and the contents are dealt with as may be deemed necessary. Any difficulty in reducing intestine or omentum is overcome by placing the patient in the Trendelenburg position; the nonadherent contents will then readily return to the abdomen without the necessity of any handling. To avoid pain in ligating the sac it is well to twist it into a cord, and infiltrate the neck at the point where the ligature is to be applied. The sac can then be transfixed, ligated, and painlessly amputated. The operation is completed without additional anesthetic, using any of the methods for the repair of the canal that the operator may desire.

The operation is not a difficult one and in suitable cases can be performed with far less distress to the patient and with more satisfaction to the operator than are some of the so-called minor procedures for which we are taught to employ local anesthesia. My experience with the use of local anesthesia in the surgical treatment of hernias dates from 1907 when I became associated with the late Dr. John A. Bodine, to whom is due much of the credit for forcibly bringing to the attention of the medical profession of this country the efficiency of local anesthesia in this particular operation. In a large number of hernias personally operated upon under local anesthesia practically all the usual complications that are common to hernia have been satisfactorily met. Among them may be mentioned conditions requiring the separation of adherent gut and omentum, removal of the appendix, ligation and amputation of omentum, and resection of the intestine. The type of operation performed has been in most cases the Bassini or its modification without transplantation of the cord. In a few cases the rectus muscle or its sheath have been transplanted, and it is my experience that the various steps of the operation are no less thoroughly performed under local methods properly used.

The advantages of local anesthesia in hernia operations are many. From the standpoint of safety there can be no question as to the desirability of avoiding a general anesthetic when possible. While it is true that in the average patient in good condition, the danger from a general anesthetic in the

hands of a skillful anesthetist and competent operator is slight, yet it must be remembered that, under similar conditions, local anesthesia which produces less shock, no kidney, heart, or lung complications, no blood changes or gastric disturbance, is still safer. Furthermore, the absence of any aftereffects from local anesthesia produces a less disturbed convalescence than that following general narcosis. Nausea, vomiting, and backache are all avoided, and postoperative pain, postoperative abdominal distention, and the necessity for catheterization are less frequent than when general anesthesia is employed. The picture of a patient immediately following a hernia operation under general narcosis and a patient operated upon under local anesthesia in a similar case is indeed convincing. On the one hand we have a patient, half conscious, nauseated, vomiting, and with the prospect of twenty-four to forty-eight hours' fasting; on the other, a patient in possession of all his faculties and with none of the unpleasant symptoms mentioned above.

Another feature of local anesthesia is that certain causative factors of recurrence are eliminated and for this reason it is especially valuable in hernia operations. First, the nausea and vomiting of a general anesthetic are avoided, consequently there is no danger of the stitches being separated or torn loose under the strain of retching. In the second place, the nerves supplying the inguinal region are sought for as one of the steps of the operation, and are carefully preserved from injury. Cutting a nerve, as is well known, produces thinning and atrophy of the muscles supplied, and I am convinced that many of the recurrent hernias are the result of destruction at the time of operation of the nerve supply of the lower fibres of the abdominal muscles, resulting in thinning of the newly formed muscular wall. This was emphasized in a previous paper already referred to, and an article on this subject by Dowd has appeared under the title *Preservation of the Iliohypogastric Nerve in Operations for the Cure of Inguinal Hernia* (2). Dowd's paper produced considerable discussion at the time, but the importance of preserving this nerve is not generally recognized or admitted is evident from the failure of even the more modern textbooks on surgery to mention it. By way of further emphasis, it is only necessary to point to the development of right sided inguinal hernia after operations for appendicitis through the McBurney incision where the iliohypogastric nerve was destroyed.

For strangulated hernia, local anesthesia is especially valuable, and this applies, not only to the inguinal but to strangulate hernia of any variety. These patients, when they come to operation, are frequently already overwhelmed from toxic absorption and a general anesthetic simply adds to their depression, and the shock is often more than the patient can survive. Under local anesthesia, any amount of time may be spent in applying hot towels to the intestines in attempts to restore the circulation in gut with questionable vitality without adding a particle to the shock or danger for the patient, and in the meantime, the patient remains as comfortable as he would be in bed. If the gut is gangrenous, resection may be performed, or a temporary fistula

may be established, without the use of a general anesthetic. In connection herewith I should like to call attention to the lack of sensibility of the abdominal organs. From Lennander's work, as well as from clinical experience, it is evident that the intestines in themselves have no pain sensation and may be cut or divided with a cautery without discomfort to the patient. Dragging upon the mesentery, however, is painful and often produces a feeling of slight nausea. Ligation of the mesentery may also cause slight discomfort, but this may be readily controlled by the infiltration of additional solution if necessary.

It is sometimes asserted that wound healing is disturbed by the use of local anesthesia. As a matter of fact, the contrary is true. Gentleness in handling the tissues is one of the first essentials for the successful employment of local anesthesia, and an operator accustomed to working with this form of anesthesia will inflict the minimum amount of traumatism upon the tissues, and the most favorable conditions for primary union are thus obtained. As for the solution, if it is properly sterilized and is isotonic with the body fluids, it produces no harmful effect upon the tissues. While some operators base their objections to local anesthesia on the fact that the patient is conscious and can see and hear what is going on, in hernia operations consciousness is, in my opinion, a distinct advantage, for it is possible at any stage of the operation to have the patient demonstrate his hernial protrusion by coughing.

The limitations of the method are well defined and can be definitely stated. Local anesthesia is not suitable for children and should be limited, as a rule, to those beyond the age of twelve. Also some adults, if of a very nervous or a hysterical type, are not good subjects on account of the difficulty of getting them to cooperate with the operator. In stout individuals with very fat abdominal walls, a hernia operation under local anesthesia is often rendered difficult on account of the depth of the wound in which the operator has to work, and the difficulty of obtaining the deep and wide retraction necessary for the proper closure of the canal. Fat is not a distinct contraindication, however, as with care and patience the operation can be successfully done in these cases though it requires a wider area of infiltration and a larger incision than is ordinarily necessary. On the other hand, the majority of recurrent hernias are not suited to local anesthesia. They usually demand a very wide dissection and it is difficult properly to infiltrate the scar tissue.

An individual's method of operating may also place a limitation upon the use of local anesthesia, and, for this reason, some operators will find it impossible to perform an operation for hernia under local anesthesia without changing their operative technic. For example, an operator accustomed to doing rapid work upon an unconscious patient without paying attention to sensitive regions will meet inevitable failure if he employs these methods in his work under local anesthesia. During the entire operation a most careful handling of the tissues is essential. Rough wiping of the wound, separation of the sac from the cord by means of a swab, tearing of the tissues, or un-

necessary pulling with the retractors by a careless assistant, causes pain by dragging upon structures outside the anesthetized area, and this is often sufficient to cause restlessness and apprehension on the part of the patient which may end in complete demoralization. It is the neglect in observing these small and apparently trivial details that is responsible for many of the failures with local anesthesia, and often results in undeserved condemnation of the method.

There is no doubt that operations under local anesthesia require more time than similar operations under general anesthesia, and are a tax on the attention and patience of the operator. The personal inconvenience to which the operator is subjected, however, should not influence one in rejecting a method that has no mortality, that causes no disagreeable aftereffects for the patient, and which, in the majority of hernias, is sufficient to meet all the requirements of the operation.

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616 MADISON AVENUE.

INDUSTRIAL INGUINAL HERNIA.*

BY ALBERT E. SELLENINGS, Ph.B., M.D., F.A.C.S.
New York,

Director of Surgery, Gouverneur Hospital.

The subject of hernia is as old as medicine itself. The earliest theories held that in the production of hernia there occurred a tearing of the peritoneum and that the abdominal contents prolapsed through the defect in the parietal peritoneum. This early concept explains the colloquial term rupture which expresses the notion of a breaking forth of the bowel from within the abdominal cavity. The German word *Bruch* conveys a similar meaning and the same idea may be found in other languages. The term rupture is an unfortunate one when used as the equivalent of hernia, as, in that connection, it is misleading and fallacious. In the interest of scientific fact the synonymous use of the terms should be deprecated.

Through anatomical study and observations at the operating table, our knowledge of hernia has been materially enhanced, especially in the last two decades. The passage of compensation laws in comparatively recent times has further stimulated inquiries as to the rôle played by congenital defects, trauma, and occupation. Among the factors concerned in the etiology of hernia, an increase in intraabdominal pressure has been regarded as of great significance. The results of accumulated experience, however, cannot attach to intraabdominal pressure such importance, and it must be regarded as only a factor in the clinical manifestation in the larger proportion of cases. It is often possible to obtain a history of coughing or straining preceding the manifestations of hernia. Such histories are easily established by observers whose questions may

be influenced by traditional medical beliefs regarding cause and effect. Patients are ever willing and accommodating, especially in the face of leading questions. In the popular mind, readily influenced by these traditional beliefs, strain has become an easy solution of the etiology of inguinal hernia. It is obvious that hernia makes its appearance where the abdominal wall is abnormally weak. That this local weakness is a real adjuvant in the production of hernia is observed in the incidence of hernia following abdominal section.

It is recognized that in abdominal incisions, even those which heal by first intention, a considerable number of hernias result. The severing of the component parts of the abdominal wall has so weakened these structures that they are unable to resist even the normal intraabdominal pressure and hernia follows. That local weakness is probably of importance in hernia at other situations also is shown by the fact that they occur in certain well defined locations where the abdominal parieties are structurally lacking. At the internal inguinal canal the abdominal wall is necessarily deficient for the purpose of permitting the passage of the spermatic cord. By a wise provision of nature, the external and internal rings have not, in the normal individual, been directly superimposed. Abdominal pressure tends to keep the anterior and posterior walls in close apposition providing a valvelike action which compensates in a manner for the inherent deficiencies of the abdominal wall in this region. Notwithstanding these structural barriers, it is clear that the inguinal canal is lacking in defensive strength. And in spite of these obvious and important facts, it must be acknowledged that the etiology of inguinal hernia is not so simple of determination. Weakness of the abdominal wall, even in the presence of an excessive pressure from within, will not suffice to explain the occurrence of the vast majority of hernias. For a time the theory was held that a long mesentery was a predisposing cause of hernia. There is no question but that the mesentery exhibits great extensibility, but it must be manifest that when other conditions are favorable the shortness of the mesentery will not serve to prevent the formation of hernia. At least it can be dismissed as an unimportant factor.

In the condition known as congenital hernia, a structure is present which must assist materially in the production of inguinal hernia. There is a preformed sac, the processus vaginalis. The frequency of this variety of hernia encountered in the young offers striking evidence that this congenital remnant is an outstanding factor in the etiology. The view of a preformed sac was held by Pellatin, Cloquet, and others in the eighteenth century but received scant attention. Within comparatively recent years, Russell, of Australia (with whose name is linked the modern concept of hernia), published the results of his investigations and concluded that all hernias were congenital in origin, that the protruding bowel always found waiting for it a sac which had existed from birth. In short, Russell maintains that an acquired hernia does not exist. Despite the fact that well recognized authorities quite uniformly concur with Russell, the contrary

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fact remains that in certain quarters a traumatic theory of inguinal hernia is maintained.

Following the enactment of compensation laws in this country, there promptly appeared frequent claims for hernia as a disability resulting from the accidents of employment. Compensation boards, supported by the plausible testimony of witnesses both lay and professional, quite uniformly upheld such contentions and awarded damages in these cases, thus validating their alleged traumatic origin. Like much of our legislation, the new compensation law has been interpreted along the lines of decisions handed down by European courts, especially the English. That "excessive strain must be regarded as an injury" is the substance of a judgment rendered by the highest tribunal of England. Sheen, commenting on his experience before English compensation boards, states that "the arbiter in these claims, in the mass of ill understood technicalities, following the line of least resistance, has given judgment in favor of the workingman—the *post hoc ergo propter hoc* view being naturally considered the easiest one." Sheen further remarks that it has now come to pass that hernia cases are seldom legislated upon and the workman receives the compensation which the law enacts.

Kauffman, of Switzerland, formulates the following conditions under which a sufferer from hernia is entitled to indemnity: a, It must appear suddenly; b, it must be accompanied by pain; c, it must be of recent origin; d, it must immediately follow an accident; e, there must be proof that the hernia did not exist prior to the accident. It will be observed that under these prescribed conditions the burden of proof is conceded to the claimant whose honesty in a great measure determines the matter of indemnity. It would be pointed out, moreover, that in the Swiss law the damages awarded in alleged hernia due to accident are made proportionate to the predisposition.

The French higher courts have held that there does exist "evidence of a relationship between the work performed by the laborer and the manifestation of the hernia." This appears to be a very fair statement but it does not take into consideration the possible existence of a hernia before the "work performed" was undertaken. Nor does it take into consideration that the hernia may have existed previously but was not manifest to the claimant. Daget has made a classification of industrial hernia as follows: 1, Traumatic hernia; 2, accidental hernia; 3, hernia of weakness. He regards traumatic hernia and accidental hernia as compensable but that sufferers from hernias of weakness are not entitled to awards.

In Germany the causal relationship between the accident and the hernia must be fully proved by an examination made within forty-eight hours. It must be shown to have appeared suddenly. It must be accompanied by pain and must immediately follow an accident. Proof must be given that the hernia did not exist prior to the accident. Proof of a predisposition, congenital or acquired, in most cases has influenced the courts to lessen the indemnity.

As for the position taken by the New York State compensation commission on the matter of indus-

trial inguinal hernia, no published reports have been available. Through the courtesy of a medical officer of the commission I have learned that traumatic hernia is considered very rare. The opinion was ventured that it occurred in possibly one out of ten thousand cases. During 1918, only 362 cases of hernia were submitted to this officer for review and all other cases were compensated as vocational hernias, eight weeks' disability being given—two weeks in the hospital and six weeks for recovery. Comment based on data as recited above would seem to justify the following statements: 1, Traumatic hernia is but a surgical curiosity and assumes no practical importance; 2, only a small number of the cases may be carefully investigated; 3, a great proportion of the cases seem to be relegated to the convenient classification of "vocational hernias." Whatever may be said of the attitude of the New York commission applies equally well to many other sections of the country.

It is gratifying to note, on the other hand, the following ruling of the California industrial commission which to the author's mind constitutes the modern concept of hernia as an industrial condition: "The consensus of medical and surgical opinion runs to the effect that hernia is very rarely, in any proper sense, the result of an accidental injury; that the accident is at best no more than the occasion, instead of the cause of the malady; that the origin of the difficulty is congenital and more in the nature of a disease than an injury; that every claim for compensation based upon an alleged rupture is to be viewed with suspicion."

The Nevada industrial commission, too, follows the modern trend when it puts itself on record as follows: "Medical science teaches now what it has taught for the past twenty years and is now accepted as a medical and scientific truth, corroborated as such by the foremost surgeons and anatomists in the world; that is, that hernia, or so-called rupture, is a disease, ordinarily developing gradually, and is very rarely the result of an accident."

It is worth while to consider the rules which have been promulgated by the Nevada commission in reference to hernia:

Rule I. Real traumatic hernia is an injury to the abdominal wall (belly wall) of sufficient severity to puncture or tear asunder said wall and permit the exposure or protrusion of the abdominal viscera or some part thereof. Such injury will be compensated as temporary total disability, and as partial permanent disability, depending upon the injured individual's earning capacity.

Rule II. All other hernias, whenever occurring or discovered and whatsoever the cause, except as under Rule I, are considered to be diseases, causing incapacitating conditions or permanent partial disability; but the permanent partial disability and the cause of such are considered, as shown by medical facts, to have either existed from birth, to have been years in formation, or both, and are not compensatory, except as provided under Rule III.

Rule III. All cases coming under Rule II in which it can be conclusively proved, first, that the immediate cause which calls attention to the presence of the hernia, was sudden effort or severe strain

or blow, received while in the course of employment; second, that the descent of the hernia occurred immediately following the cause; third, that the cause was accompanied or immediately followed by severe pain in the hernial region; fourth, that the above mentioned facts were of such severity that they were noticed by the claimant and communicated immediately to one or more persons, and are considered to be aggravations of previous ailments or diseases, and will be compensated as such for time or loss only, depending on the nature of the proof submitted and the result of the local medical examination.

In contrast to this scientific exposition of the subject, I submit for your deliberation a decision of the Pennsylvania workmen's compensation board, handed down in the case of Smith vs. Pittsburgh Coal Company. The opinion is to be found in a paper by Colcord (2) and recites that "where a strain causes prolapse of the bowels it is a compensable injury, even though the protrusion is at a point weakened by a congenital malformation or preexisting hernia." Rulings of this nature are in defiance of medical science and moreover are unfair both to the liability companies and the employers. The word strain, like the term rupture, has in many decisions been rather loosely employed. The layman, too, has appropriated the word strain as a satisfying addition to his vocabulary and, aside from the question of hernia, has on occasions sought to apply it as a balm to a guilty conscience. Mindful of some of these rulings, one is tempted to inquire whether the beneficent logic of the official mind may not become sufficiently elastic to uphold the frequently alleged contention of a causal relationship between a strain and a Neisserian infection. A spirit of optimism, however, gives reasonable assurance that medical knowledge will prevail.

The following decision makes interesting reading:

The Supreme Court of Washington affirms a judgment in favor of the plaintiff for a hernia claimed to have been received under circumstances entitling him to relief under the workmen's compensation act. The claim was rejected by the commission on the ground that the hernia, derived from trying to start a heavily loaded truck, was not the result of some "fortuitous event" within the language of the act, which provides that the words "injury" or "injured," as used therein, refer only to an injury resulting from some fortuitous event as distinguished from the contraction of disease. The court says that the sustaining of an injury while using extreme muscular effort in pushing a heavily loaded truck is as much within the meaning of a fortuitous event as though the injury were the result of a fall or the breaking of the truck. To hold with the commission that if a machine breaks, any resulting injury to a workman is within the act, but if the man breaks, any resulting injury is not within the act, is too refined to come within the policy of the act as announced by the legislature in its adoption and the language of the court in its interpretation. The machine and the man are in the same class as producing causes, and any injury resulting from the sudden giving way of the one, while used as a part of any industry within the act, is as much within the contemplation of the act as the other. When the commission admits that the breaking of the truck because of the application of unusual force, with resultant injury to the workman, is covered by the act, then it must admit that the tearing of muscles or the rupture of fibres, or whatever it is that causes hernia, while exercising unusual effort, is likewise covered by the act; for there can be no sound distinction between external and internal causes arising from the same act and producing the same result.

The American cases arising out of acts of this character sustain this court's conclusion that there is no distinction between the accident and a fortuitous event. (14)

The history of the claimant in cases of hernia as a disability is usually a very short story. He states that while at work he had a feeling of something giving way in his groin, but he continued his work as usual. The next day, or several days later, he says he found a lump in his side. At his leisure he went to a dispensary and the doctor told him that he had a "rupture." Some claimants will exhibit a scrotal hernia which is presented as the result of a recent "strain." In some cases there will be found evidences of a truss having been worn for a long time. A few men will recall a blow upon the groin or abdomen preceding the onset of the hernia; others will assert that multiple hernias developed from a single accident.

Under the rulings of certain compensation boards, a claimant presenting a history along lines recited above will have no standing whatsoever, but under the decisions of other boards will receive a prolonged vacation with pay, contingent only upon the evidence of an operation having been performed and the presentation of a form containing answers to a number of irrelevant questions. As Sheen, Salmon, and others have pointed out, the usual associations of strain and hernia are fallacious. They do not hold that the claimant usually intends to deceive (although cases of deception occur often enough), but he is influenced, first, by the desire common in the lay mind to find a cause for his disability; second, by his unfortunate introduction to that most misleading term rupture, used originally perhaps by the claimant's medical adviser; third, the desire to realize a monetary exchange for his hernia. It is a natural human instinct to sympathize with the bearer of the hernia, but in the interests of science and surgical truth, it is incumbent upon us to determine under what circumstances, if any, the contention of the claimant is a true one. If the hernia is due to a sudden traumatism, then it must follow that the traumatism has caused: a, the sudden separation of the structures about the inguinal rings; b, the sudden formation of a distinct pouch of sufficient size to contain a prolapsing viscus or viscera; c, the sudden laceration of the nerves and blood vessels of the canal. Any traumatism sufficiently severe to produce a hernia acutely, should of necessity be accompanied by considerable shock, but shock is conspicuously not recorded in these alleged traumatic hernias. Indeed the claimants in these cases quite generally continue their daily pursuits until seized by the inspiration of cause and effect.

It must be evident that the sudden first appearance of inguinal hernia in the sense that it constitutes an accident is an impossible event. The important element which precludes such an acute pathological condition is the very nature of the peritoneum itself. Most of us are familiar with the failure of the experiment on the cadaver of trying to protrude (suddenly or gradually) the peritoneum through one of the abdominal orifices. The peritoneum in the living subject shows little difference or practically no difference in this particular. The peritoneum has, however, the property of very great

gradual extension, but it is incapable of sudden or rapid extension. It follows then that the sudden complete development of the hernial sac is impossible, for the reason that the extensibility of the peritoneum is such that it cannot be all at once elongated into a distinct pouch. What may take place in these so-called traumatic hernias is the sudden projection of a small amount of contents into an unfused funicular process which is of sufficient size or laxity as to be able at once to constitute a definite sac. In other words, the phenomenon present is the clinical appearance of the hernia (unnoticed before), the manifestation of which is probably due to an increase in the intraabdominal pressure.

In the opinion of some the preformed sac is already a hernia, but there are no signs by which it may be detected. If there is an interruption in the continuity of the abdominal peritoneum as evidenced by a persistent funicular process, then such a protrusion may be called a latent hernia. It has been held also, that the empty sac is an undiscovered hernia and the filled sac a known hernia. A very novel way of indicating the onset of the hernia is expressed by saying that "the patient has the hernia because he has it." On these premises also the conclusion is drawn that hernia is not an accident, but a disease. Local blows cannot cause a hernia. A vulnerating agent spending itself locally may cause a subcutaneous laceration of the abdominal wall and will allow the protrusion of a viscus, provided there is a tear in the peritoneum, but this condition does not constitute a true hernia. The term traumatic rupture is more appropriately applied to such a condition. I have seen a number of cases of traumatic ruptures, but there has been no case of hernia whose origin could be attributed to an accident.

Tillmanns holds that the supposed sudden development of a true hernia is really a mistake in observation. Sultan puts the matter concisely by saying, "In the critical examination of a causal relation between hernia and accidents, we must remember, first of all, that a hernia complete in all its parts, can never arise at the moment of an accident, or by a single augmentation of the intraabdominal tension, be it ever so great." Personally, I have always believed that the cases reported in the literature as examples of traumatic hernia were either strangulation of small, already existing hernia (possibly previously undiscovered), or cases in which the empty preformed sac suddenly received hernial contents. The acute symptoms in either of these conditions may give rise to the assumption of a traumatic origin.

Reference has already been made to the divergence of opinion as to accident and hernia in the awards made by compensation boards in various sections and it would seem timely to attempt to harmonize such conflicting opinions as constantly arise. It is interesting to observe that in academic discussions of hernia apart from the medicolegal aspect, there seems to be a uniform acceptance of the congenital origin of hernia. Before compensation commissions, however, scientific data become discredited both from within and outside of the medical profession, and the result is that accident

claims are allowed on the most flimsy and indefinite grounds. Compensation commissions have taken a most paternal view of the matter and, tinged with what seems to be a spirit of class legislation, rule that these cases of inguinal hernia are accidents and are therefore compensable. Believing that much injustice was being wrought, a number of corporations both in this country and abroad made observations that showed a surprisingly large number of alleged traumatic hernias had been present for a long time. The investigations disclosed that in cases where a hernia was alleged to have developed from an accident, the claimant had not undertaken any more hazardous work on the day the so-called accident occurred than he was in the habit of performing on previous days. Still further, several cases were found in which a hernia extending to the upper part of the scrotum was alleged to have been due to a "strain" of a week previous. In many cases, too, it was learned that a swelling and not a pain had first directed attention to the inguinal region.

That an unfair burden has been placed upon the employer can not be gainsaid. If it is considered of economic importance to compensate workmen's hernias, let compensation be provided for on an economic basis wholly. The present order of things rests on a distortion of the facts of surgical truth and of surgical experience. Truth permeates but slowly. Through rulings persistently upheld by hoary precedent, an all too active traffic in hernias has been established, and the task before us is to convert courts and commissions to the surgical truth, that hernia is a disease and not an accident. A revision of the existing compensation laws on hernia is imperative.

In conclusion the following points are emphasized: Inguinal hernia, in general, is the product of muscular effort long continued in the presence of structural defects, and is not the result of immediate and sudden effort. Hernia is always of slow formation and very few individuals are aware of its oncoming. Its development is gradual and almost painless. Hernia complete in all its parts can never arise at the moment of an accident. Increased abdominal pressure may aggravate an existing hernia but this fact does not permit the deduction that traumatism is a cause of hernia. The relationship that exists between trauma and hernia is interpreted to the effect that, first, the accident is the occasion which called attention to the hernia, and second, that the accident is only the last of a series of forces or circumstances that resulted in the clinical development of the hernia, in the presence of congenital defects. The theory of Russell is the only tenable one in the etiology of inguinal hernia. Inguinal hernia is a disease and not an accident. Traumatic rupture is a clinical entity and the term should not be used interchangeably with traumatic hernia. A hernia is a matter of scientific fact and not one of court interpretation, neither is it to be compounded out of sympathy, rupture or strain.

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- 132 EAST THIRTY-SIXTH STREET.

RELATION OF RECTAL DISTURBANCES TO OTHER PELVIC DISEASE.

BY CHARLES J. DRUECK, M. D.,
Chicago,

Associate Professor of Rectal Surgery, Post Graduate Medical School, Rectal Surgeon to People's Hospital.

The symptomatology of affections of the rectum frequently gives the false idea that the lesions have their origin in other pelvic viscera. This impression leads to a wrong diagnosis, and patients undergo futile operations because of such mistakes. All of the pelvic organs are united in one grand nerve plexus and an irritation arising from any source may be reflected so as to appear to originate in another. The etiology of every symptom must be carefully investigated and all of the pelvic organs, together with most of the abdominal organs, are to be examined in every patient who complains of rectal disturbance. Unless such an extended and painstaking examination is made, treatment will be directed exclusively to the rectal pathology and prove futile. In some instances of disease elsewhere the symptoms are referred to the rectum although no pathological rectal condition is found. On other occasions symptoms of definite pathological rectal conditions will be found due to extrarectal causes.

Extrarectal disturbances may incite rectal expression by: 1. Pressure of some other pelvic organ upon the rectum; 2, lymphatic extension of chronic inflammations from the various pelvic viscera; 3, indirect pressure through the blood column, as in cardiac, hepatic or splenic disease; 4, continued coughing due to respiratory or cardiac disease; 5, undue straining due to urethral stricture, vesical calculus and cystitis; 6, reflex nervous symptoms.

Although the primary pathological condition may be extrarectal, positive disturbances within the rectum may occur, as for example proctitis, ulcerations, hemorrhoids, fistula, and fibrous stricture. No pathological condition of the rectum can be considered properly diagnosed unless its etiology has been determined.

Constipation coming on in adult life always warrants diligent investigation as it is frequently due to extrarectal causes. A given causative factor may produce entirely different symptoms in different patients, as is exemplified in the following two case reports:

CASE I. (A-27)—The history dated back six

years. The patient, a single woman, aged twenty-five years, worked in a factory. Six years ago she had a peptic ulcer which was cured medically. Two years ago she had a recurrence of stomach trouble and again responded to medical treatment. One year ago she consulted the author for rectal ulcer and constipation. The ulcer was excised and healed but the constipation persisted and became intractable. Anorexia and nausea on the partaking of any food developed later. Nothing was palpable about the abdomen. Rectally a distinct tumor was found to the right of the uterus. Laparotomy was performed, and the right ovary, which was the size of a lemon, was found adherent to the sigmoid and pelvic wall. The entire colon was filled with hard fecal masses which could not be disintegrated between the fingers. The ovary was removed and the denuded surfaces well covered. The expulsion of the fecal concretions was facilitated later by administering an enema each night of equal parts of mineral oil and olive oil with instructions to retain as long as possible. It was usually retained all night. During her stay in the hospital the colon was thoroughly emptied of its old contents, and since her convalescence she has had regular passage of the sigmoidoscope to keep the rectum and sigmoid well dilated at the former seat of the angulation. She has had satisfactory bowel movements almost daily since her return home and is now in normal health.

To emphasize how differently a similar condition may be expressed the next case is reported:

CASE II. (B-1)—Seen with Doctor Steele. Patient's mother died at the age of seventy-four years of cancer of the axilla. Her father, now aged seventy-four years, was in good health but had had five rectal operations for hemorrhoids and fistula. The patient was forty years old and had had an operation for hemorrhoids which bled and protruded. She enjoyed good health after the operation and had had no rectal symptoms until eighteen months previously, when she began to have bleeding from the anus after bowel evacuations. This bleeding was of red liquid blood and quite free if she had solid formed stools or if she strained after evacuation. Doctor Steele found a small ulcer on the anterior rectal wall which he cauterized and the patient suffered no more loss of blood for two months. Then the bleeding reappeared irregularly, occurring after each bowel movement for several days and not occurring at all for a few days. By keeping the stools soft there was very little blood shown, but formed evacuations were always streaked with blood and usually followed by bleeding. There was a heavy sensation in the pelvis or rectum but no pain.

EXAMINATION.

The inspection was negative. The finger could be introduced its full length without obstruction. Bimanually a mass the size of a small fist could be felt in the pelvis to the left of the uterus and above the reach of the finger. The speculum could be easily introduced about four inches when it met a firm obstruction beyond which it could not be passed. Through the speculum there could be seen a bulging of the rectal wall and a probe passed through the speculum noted a firm but not solid

mass. The mucosa of the anterior rectal wall at this point was ulcerated and easily made to bleed.

There was evidently a pelvic tumor causing obstruction of the rectum. A pelvic laparotomy was performed and a firm cystic tumor two and one half inches in diameter was found in the left ovarian region. Firm adhesions held this mass to the rectum, the pelvic wall and the broad ligament. The mass ruptured during the enucleation and there escaped an unabsorbed corpus luteum about the size of a blue grape. During the enucleation several others were ruptured before the sac was removed. One corpus luteum about the size of a pigeon's egg was delivered complete. Following the operation the protoscope could be easily passed above the level of the former obstruction. There has been no bleeding since.

Uterine myomata seldom compress the bowel, and rarely fill the pelvic cavity snugly, but usually rise above the brim in the same manner as a pregnant uterus. Ovarian cysts, pelvic hematocele, hematoma, and inflammatory exudates into the broad ligament usually cause some degree of constipation. Advanced malignant growths of the uterus or its appendages invariably cause constipation and inflammation of the pelvic bowel. Carcinoma of the cervix and of the vagina invade the rectum and cause fistulous openings, but only when in an advanced stage. On the other hand, low cancer of the rectum involves the vaginal wall comparatively early.

Fistula.—In all pelvic operations where adhesions exist, the rectum may easily be injured. All wounds of the rectal wall must be carefully sewed up to avoid fistulae. Most postoperative fistulae occur where the damage to the rectal wall was only partial and escaped the surgeon's notice. If gauze drainage is placed in contact with one of these injured parts a fistula is inevitable. Many of these postoperative fistulae heal spontaneously and should be given that opportunity before surgical repair.

Rectocele.—The rectocele which follows laceration of the perineum interferes with proper defecation, and is an annoyance to the patient on account of the sense of protrusion from the vagina. The repair of rectovaginal fistula and laceration of the sphincter ani is an important part of the reconstruction after injuries of childbirth.

Localized pain either complained of or elicited on palpation in the region of the left ovary may be diagnosed as ovaritis or salpingitis, when in reality an impacted sigmoid may be the cause or an angulation of the sigmoid due to adhesions to the ovary or perhaps the stump of an extirpated ovary. Sigmoiditis, perisigmoiditis or diverticulitis are often overlooked. Pain or tenderness made worse by walking and sharply localized by combined abdominal and vaginal examination may be the expression of any of these conditions and calls for a careful sigmoidal examination.

The second class of etiological factors are those due to lymphatic extension of chronic infections from other pelvic organs. The loose pelvic cellular tissue is an avenue of easy dissemination of infection, extravasations of blood, or the spread of neoplastic tumors.

Periproctitis (pelvic cellulitis), microbial infection of the pelvic cellular tissue, occurs through the lymph channels and may be localized or may spread widely, even to a general peritonitis. This infection may be limited to the stage of infiltration, or it may progress to extensive abscess formation. If suppuration develops the abscess may rupture into the rectum, bladder or vagina. The healing of cellulitis results in dense scar formation which may cause serious immobilization and dislocation of the pelvic organs, and in the rectum or sigmoid very sharp angulation or stricture of the lumen.

ETIOLOGY.

Periproctitis most frequently results from ulceration within the rectum or traumatism of the wall by a foreign body in the fecal bolus, or careless instrumentation. This type of cellulitis usually goes on promptly to abscess. Angulation or stricture of the rectum by a pelvic tumor or even a retroflexed uterus may occur. Simple contact of a normal uterus is not likely to excite irritation of the rectal peritoneum but a congested or inflamed uterus or its adnexa crowding the bowel can interfere with the normal rectal peristalsis and by this stasis produce inflammation of the rectal peritoneum with lymphatic congestion of the perirectal cellular tissue, and the development of adhesions fixing the rectum and sigmoid to the other pelvic organs. This process may result from constipation even without pressure upon the bowel of any organ. This infiltrative type of periproctitis is a painful and intractable condition.

Pelvic cellulitis usually includes, together with the infective agency, a thrombosis of the veins passing through the involved tissues. This thrombosis may be confined to the smaller vessels or it may extend to the internal iliac, common iliac, and even to the vena cava. The relationship between the inflammatory process and the formation of thrombi is not a constant one. Extensive thrombosis may follow a very slight pelvic infection and vice versa. Extension to the crural vein causing phlegmasia alba dolens (milk leg), or pulmonary embolism is most to be feared. All pelvic operations, where some active infection of the cellular tissue exists, may be followed by this complication. Minor rectal operations and even traumatisms incident to examination of the pelvic bowel and rectal ulcers have caused periproctitis.

This point is of vital clinical importance in arriving at prognosis where there is a sloughing tumor or ulcer of the rectum, possibly malignant, because it is important to determine by palpation whether the periproctitis is due to infection or cancerous infiltration. The decision of this point may decide whether or not the case is operable. Rare causes of periproctitis are perirectal hematoma which later become infected, and also a spreading infection of actinomycosis.

SYMPTOMS.

The chief symptom of periproctitis is pelvic and rectal pain, usually more accentuated on one side than the other. On account of the proximity of other pelvic organs symptoms of metritis, ovaritis and cystitis may appear. There is some rise of

temperature and if suppuration develops there is a marked increase in the leucocytosis. Periproctitis of the infiltrative, nonsuppurative type, though milder in its course, has a tendency to recurrences after subsidence of the first attack. In this manner the convalescence following operation may be delayed many weeks.

Digital examination usually detects periproctitis quickly by finding the fixation of the rectum in a mass of hard, boardlike tissue. This immobilization is simulated only by the infiltration of cancer or by a hematoma in the cellular tissue. The indurated area, usually very tender, is situated on one or both sides of the rectum or perhaps extends all around the bowel and reaches out to the pelvic wall. Suppuration is indicated by increased swelling and localized softening of the mass, aggravation of the subjective symptoms, and a rise in the leucocyte count.

DIFFERENTIAL DIAGNOSIS.

The differentiation of periproctitis and hematoma cannot always be made, although in the latter there is less systemic intoxication, less pain, and a normal leucocyte count. Periproctitis due to septic absorption from a cancerous mass cannot be positively distinguished from the infiltration of the malignant disease. All rectal cancers present a degree of periproctitis as soon as ulceration occurs and this cellulitis is aggravated if radium or the x ray has been used. Both of these agents produce an inflammatory reaction in the pelvic cellular tissue, which makes radical operation immediately following their use exceedingly dangerous as regards post-operative sepsis.

TREATMENT.

Periproctitis tends to resolution rather than supuration and palliative treatment with close observation should be tried. Rest in bed, constant use of the therapeutic lamp, rectal irrigations, and in women hot vaginal douches usually suffice. In some instances recovery occurs in a few days, although it may require several weeks. If suppuration develops the abscess must be incised promptly. Postoperative periproctitis may sometimes be relieved by enlarging the drainage opening or by removing one or more stitches and inserting drainage.

Diverticulitis of the sigmoid may cause symptoms very like pelvic cellulitis and acute salpingitis. Because of the mobility of the sigmoid, the inflammatory mass in which the diverticulum is included may be on either side of the median line and be so deep that it cannot be distinguished digitally from an enlarged ovary or tube.

ABSCESS.

Pelvic cellulitis often goes on to abscess formation with rectal stricture resulting at times. Appendicular abscesses may also rupture into the sigmoid colon. Abscesses which drain into the rectum do not heal satisfactorily but usually have very small openings and tend to repeated accumulations and discharge of pus. These necrotic diverticula are always a menace to life. Bodkin (1) mentions an enema entering such an abscess cavity which burst and caused peritonitis. Retrouterine abscess invading the pouch of Douglas is associated with

pain high up in the rectum occurring on defecation and this pain continues long after the abscess has been relieved because of the scar. Pelvic abscesses of gonorrheal or tuberculous nature are made much more virulent by the mixed infection caused by adhesions to the rectum which permit the migration of intestinal microorganisms into the abscess cavity.

HEMORRHOIDS.

A form of vicarious menstrual loss is the increased tendency of hemorrhoidal veins to bleed at this time, when no actual hemorrhoids may exist. Hemorrhoids which may have existed previously have a tendency to become worse at the climacteric and most hemorrhages from the bowel at this time are from this cause, although malignant disease of the pelvic bowel must be carefully sought after and excluded before deciding that the case is one of true climacteric intestinal bleeding from the mucous membrane.

Hemorrhoidal symptoms frequently date from childbirth. The pressure and stretching of the anal sphincters at this time cause hemorrhoids or aggravate small ones already present, leaving the veins permanently dilated and sometimes fissured. As extrarectal causes of hemorrhoids we must remember diseases of the heart, liver, lungs and atheroma of the vessels. Valvular insufficiency of the right side of the heart, through the venous back pressure and hepatic engorgement which it causes, induces hemorrhoids because the hemorrhoidal vessels cannot empty themselves. Cirrhosis of the liver acts similarly and causes piles.

REFLEX NERVOUS DISTURBANCES.

The female reproductive organs are particularly prone to reflex disturbances due to rectal pain. The close anatomical and physiological relation of the bladder and rectum often give rise to disturbed function in either organ, probably by way of short circuit spinal impulses. The operation for hemorrhoids is frequently followed by retention of urine and again the congestion due to dysmenorrhea, or the tension of a prolapsed ovary or uterine inflammation, may cause proctitis, spasmodic anal sphincters, and cystitis. Ulceration of the rectum and even constipation may cause irregularities or a suppression of menstruation.

In many women diarrhea is often an annoyance during the menstrual period while in others obstipation is common. Some patients who suffer from chronic constipation between their periods have regular bowel evacuations or even diarrhea during menstruation. An obstinate diarrhea without colic or mucus discharge sometimes signals the beginning of the menopause. In other patients obstipation with a tendency to gas formation occurs at the climacteric and is resistant to the usual course of treatment. Wagner (2) in two such cases had good results with ovarian therapy.

An ulcer of the rectum, fissure in ano, stricture or cryptitis will often cause reflex spasm of the levator ani and sphincters of the anus and vagina, thus producing a local neuralgia, or in other instances widespread reflexes cause ovarian or uterine pains which closely simulate disease of these organs. Such patients are not relieved by treatment directed

to the generative organs but are promptly cured when the rectal disturbance is attended to. On the other hand rectal pain and tenesmus may be due to cystitis, vulvovaginitis, displacements and adhesions of the uterus or appendages. Parametritis may cause stricture of the perirectal tissue. Pain referred to the rectum may be due to strain of the iliosacral synchondrosis.

Parturition may be much protracted by a foreign body or fecal impaction of the pelvic bowel. Hypertrophy of the levator ani muscle and sphincteric tenesmus should be carefully watched for and relieved during the end of pregnancy, as these conditions prevent full relaxation of the perineum.

Autointoxication from colonic stasis may also give rise to mental and nervous disorders. These conditions so interfere with the peristalsis of the sigmoid and rectum, with its blood supply or nervous equilibrium as to cause constant suffering.

While any one of the above mentioned conditions may cause the patient's suffering the possibility of several factors combining in one patient must always be thought of. A cure of either one cause is not likely to relieve the pain and suffering due to the other disturbance.

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2. GRAVES: *Gynecology*, p. 73.

30 NORTH MICHIGAN AVENUE.

A CASE OF SIMPLE HYPERTROPHY OF THE PROSTATE.*

By JOHN F. X. JONES, M. D.,
Philadelphia.

CASE.—The patient, T. C., was seventy-one years of age. His family history had no bearing upon the condition for which he had been operated upon and, except for the fact that he had suffered from typhoid fever in youth, that he had had hemorrhoids removed thirty-five years ago, and that fifteen years ago his right arm was involved in a condition which he termed rheumatism, his past medical history was of no importance. During one year the patient had noticed a gradual diminution in the calibre of the stream of his urine, as well as dribbling immediately following the act of urination. On December 17, 1919, he was unable to void but was successfully catheterized by a physician at certain intervals during the four days following this date. On December 21st attempts to pass the catheter failed and he was admitted to the service of Dr. George P. Muller whom I succeeded as physician in charge of the men's surgical ward.

On admission, the patient's cheeks were flushed, his lips herpetic, his tongue brown, fissured, and dry. His temperature was slightly under 102°, his pulse was 104, and his respiration 24. He complained of severe pain over the region of the bladder and stated that this pain ran down along the penis. Examination of his chest revealed a few moist râles over the large bronchi but neither dullness nor impaired resonance. The heart action was

rapid and somewhat irregular but no murmurs were heard. His abdomen was distended and tympanitic, except for a painful swelling, dull to percussion, uniform in outline, and extending from the pubis to the umbilicus—presumably a distended bladder. The patient's scrotum was edematous and blood was oozing from the urinary meatus. A rectal examination revealed a prostate gland which was hard in consistency, round and regular in outline, insensitive, and which projected quite prominently into the rectum. One careful attempt to pass a soft rubber catheter having failed, a puncture of the bladder was made directly above the pubis and in this opening a very small rubber tube was fastened and twenty-five hundred c. c. of urine were permitted to drain off. Meanwhile urotropin and salines had been prescribed and a liquid diet ordered.

On January 1, 1920, when Dr. Muller turned the service over to me, the suprapubic rubber tube was in place and was draining satisfactorily, but early on the morning of January 4th, while the patient was coughing, this tube came out of the bladder and repeated efforts to reintroduce it failed. An attempt was then made to pass a soft catheter through the urethra but this also was unsuccessful and, with local-anesthesia, a suprapubic cystostomy was done about noon of the same day. A very large rubber tube, about the calibre of a stomach tube, was now fastened in the bladder.

Meanwhile, Dr. M. J. Ryan and Dr. H. J. King were making laboratory investigations of the urine, blood, and kidney functions. Repeated urinalyses showed a specific gravity ranging from 1,010 to 1,020 and always a cloud of albumin with granular casts. The phenolsulphonophthalein elimination on January 3rd, the one occasion on which it was possible to test it, was five per cent. for the first hour, and ten per cent. for the second hour—not very encouraging for a prostatectomy. On January 4th, examination of the blood revealed 24.9 mg. in 100 c. c. of urea. For obvious reasons either cystoscopic study or urethral instrumentation was impossible.

On January 6th after practically sixteen days of suprapubic drainage, the patient's prostate was removed suprapubically. It was large, hard, fibrous, and somewhat easy of enucleation. The bladder walls were sacculated, thick, and encrusted with urinary deposits and there was a strong ammoniacal odor—this in spite of the fact that the bladder had been drained for sixteen days. Two large suprapubic rubber drains were then fastened in the bladder and, because of the intense cystitis, no attempt was made to encourage rapid healing of the suprapubic wound. A small cigarette drain was placed in the space of Rezius for forty-eight hours. For the three days following the operation the bladder was irrigated suprapubically with a solution of boric acid four times daily. Thereafter, for four days, one of the tubes in the bladder was connected with a Murphy drip apparatus and a one per cent. solution of mercurochrome-220 was permitted to run into the bladder at the rate of thirty drops a minute. The suprapubic drainage tubes were removed on the tenth day. The patient began to void

*Reported at a meeting of the Clinical Society of the Misericordia Hospital of Philadelphia, February 3, 1920.

imperfectly on the eleventh day. The suprapubic opening in the bladder was now almost but not quite healed. A twenty-four English sound was passed daily and immediately after this procedure the patient voided. His urine is now clear.

Before the operation the patient's blood pressure was 190 systolic and 95 diastolic and after the operation it was 170 and 90; on January 27th, it was 110 and 64. The pathological report on the prostate, submitted to Dr. J. N. Paul for examination, was "no evidence of malignancy." In conclusion, I wish to thank Dr. A. E. Burke for his assistance in preparing this report.

1815 SPRUCE STREET.

THE RELATION OF FOCAL INFECTION TO MENTAL DISEASES.*

By HENRY A. COTTON, M. D., A. M.,

Trenton, N. J.,

Medical Director, New Jersey State Hospital at Trenton, N. J.
Lecturer in Psychopathology, Princeton University.

(Continued from page 677.)

THE BACTERIOLOGY OF FOCAL INFECTION.

In the early investigations of this subject the bacteriological work was somewhat crude and incomplete. We, like Hastings and others, were concerned with the streptococcus viridans group, or the nonhemolytic type of the streptococcus, and not until we were able to differentiate better the various strains did we find that other types of this organism were concerned in chronic infections. Our principal advance has been made in differentiating the various types of both hemolytic and nonhemolytic strains. We have found that it was not sufficient to isolate the streptococcus, but it is very important to determine to which group it belongs.

The work of W. L. Holman (1) has been of the utmost importance to us in differentiating this group. We have found his method of classification very satisfactory and workable. He divides the streptococci into first the hemolytic and nonhemolytic types and further differentiates these types by their fermentation reactions on the carbohydrates, lactose, mannite and salicin. By this method we soon found that we were dealing with a large group of various biological characteristics rather than a unit group such as the hemolytic and nonhemolytic types. We also found that various types of the hemolytic streptococcus were found in our patients, whereas formerly we were only concerned with the nonhemolytic types.

Below is given a table showing the strains classified according to Holman.

HEMOLYTIC STREPTOCOCCI.			
Type.	Mannite.	Lactose.	Salicin.
Infreq.	+	+	—
Hemolyt. I.	—	+	—
Pyogenes	—	+	—
Anginosus	—	+	—
Hemolyt. II.	+	—	+
Hemolyt. III.	+	—	—
Equi	—	—	+
Subacidus	—	—	—
NONHEMOLYTIC STREPTOCOCCI.			
Type.	Mannite.	Lactose.	Salicin.
Fecalis	—	+	—
Nonhemolyt.	+	+	—

*Read before the Northwestern Medical Society of New York City, February, 1920.

Type.	NONHEMOLYTIC STREPTOCOCCI.		
	Mannite.	Lactose.	Salicin.
Mitis	—	+	—
Salivarius	—	+	—
Nonhemolyt. II.	+	—	+
Nonhemolyt. III.	—	—	—
Equinus	—	—	+
Icnavus	—	—	—

These sixteen types represent the grouping of 1,122 strains of Holman and taken with strains from the literature the total number is 2,463, a sufficient number to come to some conclusion as to their biological types. While some types can be identified under the microscope, only by their cultural reactions can they be accurately differentiated.

We have so far been able to isolate six strains of the hemolytic group; i. e., the infrequenz, pyogenes, anginosus, equi and subacidus, and five strains from the nonhemolytic group; i. e., fecalis, mitis, salivarius, equinus and ignavus. We have found representatives of both these groups in various sources of culture. Occasionally the hemolytic strains are found in the teeth, but more frequently this type is found in the tonsils and gastrointestinal tract. Nine tenths of the tonsils harbor the hemolytic strains and often the nonhemolytic strains as well, and it is not unusual to find two or three strains in the culture from the stomach and duodenum, both hemolytic and nonhemolytic types.

It is useless to argue which types may or may not be pathogenic, or which types may be more virulent than others. We have not found that the hemolytic types were more virulent than the other group or that they produced more marked symptoms. In fact, any of these organisms may become so virulent at any time that they cause the death of the patient, although for a long time they may be latent and no marked evidence of their presence shown other than by the fixation tests.

We have a striking analogy in the behavior of these organisms in action to the spirochete of syphilis. In syphilis, after the initial lesion, all evidence of the presence of the spirochetes may be absent, but we know that ten or even twenty years later they may become active and paresis develop. But the important parallel is found in the action of the blood to the fixation tests. At any time during this period of quiescence, in a large majority of cases, the blood will give a positive Wassermann reaction showing that the organisms are still in the system. In the same way the fixation tests for the streptococcus group will in eighty per cent. of the cases show a positive reaction, though no evidence to casual examination is forthcoming.

We have been surprised to find that the action of the hemolytic group was very similar to that of the nonhemolytic group in regard to the part they both play in chronic inflammation. Both types apparently are capable of producing chronic inflammatory processes without pus, pain or swelling, or even a rise in temperature, whereas formerly we were of the opinion that these characteristics were limited to the nonhemolytic group. That any of these organisms may become virulent has been shown repeatedly and such a benign organism as the salivarius, in one of our cases, suddenly became active, formed large deep seated abscesses and contributed to the death of the patient.

Recently there has appeared a very important work concerning the biology of the streptococcus by Rochez, Avery and Lancefield (12) of the Rockefeller institute. It corroborates the work of Holman in that it shows that the hemolytic streptococcus is not a unit group, but is made up of at least four distinct strains. And what is more important for our work, they have shown experimentally that these strains do not protect against each other, but only protect individually. This is important knowledge in the treatment of these cases by eradicating these bacteria. It means that the treatment must be specific not only for the streptococcus group, but specific for the individual strains. This will probably explain the failures in some cases in eradicating the organisms by means of vaccines. If the vaccine is not made from the individual strain at fault it will not attack these organisms. And the same can be said for any antiserum made from streptococcus.

The *Staphylococcus aureus* has in some cases been the principal organism concerned in the infection, but these cases are rare and were not sufficiently studied to eliminate all other types, although pure cultures were obtained. The Connellan-King diplococcus confused the picture for a time, especially as its morphological characteristics were evidently different from the streptococci. But upon culturing these types we found that they fell into the groups outlined above and that they also assumed the chain formation after subculturing a number of times. It is not unusual to find in the tissues streptococci in the form of diplococci and this has also been shown by Rosenow in his elective activity of these organisms. In his description and plates they are frequently shown as diplococci.

Another very important organism with which we have to deal and whose elimination from the system is essential, if we are to restore the patient, is the colon bacillus. In most instances this organism is considered nonpathogenic and normally found in the colon, but there is abundant evidence that it frequently becomes migratory and virulent and can then cause very serious disturbances, not only acute inflammatory processes but chronic ones as well. The work of Reese Satterlee (11) with the colon bacillus is of extreme importance to us and we can corroborate his viewpoint both by clinical and laboratory experience. We have found in a majority of the cases which tend to become chronic and in our old chronic cases that the colon bacillus is always present in areas where it should not be, as in the stomach, duodenum, kidneys, gallbladder and the mesenteric glands. Occasionally it is found in the tonsils. It is very essential to recognize the importance of the colon bacillus in producing severe toxemias, or the work of eradicating chronic infection from our patients will only be half done.

There are several explanations regarding the cause of the virulence of the colon bacillus. It is always associated with various types of the streptococcus in the stomach, duodenum, kidneys and in the mesenteric glands, around infected areas of both the small and large intestinal tract. It might well be explained by the fact that the streptococcus damages the intestinal mucosa to such an extent that

these organisms find a ready means of exit and after leaving the colon by change of their environment become virulent. Or the toxemia of the streptococcus, circulating in the blood, may stimulate the colon bacillus to activity and virulence. Perhaps the best explanation will be found in the fact that the colon bacillus is not a unit type, but is made up of various strains with distinct biological differences, as is the case of the streptococcus group. But it is essential that the colon bacillus be eradicated and we are developing methods with this idea in view. The following case will illustrate the virulence of the colon bacillus:

Psychosis in a single girl, aged twenty-five, with an unusually good family history and except for one neurotic paternal uncle the family was far above the average in intelligence and accomplishment.

Personal history.—Rather delicate as a child, but nothing abnormal in early life. Unusual and intelligent hygienic upbringing. Normal school life, possibly envious of other school mates who were more successful than herself. Otherwise the personal history was uneventful.

Onset of the psychosis.—Rather sudden, April 30, 1918, although there had been noticed a rather decided change of disposition for at least three years. She had become engaged on April 27, 1918, and her fiancé had been commissioned in the army and was expected to be called away at once. It was noticed that the patient said queer things about portents and was afraid her fiancé would not come back. She soon began to talk at random about "God, Christ and immortality," and reacted to auditory hallucinations. Her conduct was peculiar in many ways. Her condition gradually became worse and on the first of June she had to be sent to a private hospital. Here she became much worse and could not be controlled so that it was necessary to send her to the Bloomingdale Hospital, White Plains, N. Y., where she was admitted June 27, 1918. The mental examination showed her to be somewhat pensive and preoccupied and at times depressed. She responded slowly to questions and when aroused was irrelevant. She showed suggestion of mischief and facetiousness in her mood. Her answers were often evasive and incomplete. She was quizzical and answered questions by asking others, often irrelevant.

Physical examination.—revealed nothing abnormal except habitual constipation. Her teeth were pronounced normal by the dentist in spite of the fact that she had two partially erupted and impacted molars. Her tonsils had been removed some months before admission. She showed very little improvement, although her conduct was at times more normal. She was very suspicious and perplexed, very untidy in her habits and in spite of occupation, hydrotherapy, and physical education, and every effort to stimulate her interest, her condition became worse. She showed steadily increasing apathy and lack of interest. She improved slightly in her physical condition, gained some weight, and at times her conduct was better.

The following is a summary of her case made at Bloomingdale. "Considering the family history, the

gradual onset and development of the symptoms culminating in a somewhat more acute dissociation of the patient's personality with marked distortion in thinking, peculiar behavior and disharmony between mood and thought content, the disorder seems more nearly related to the schizophrenic disorders than to the exhaustive or manic depressive disorders. It seems possible that the patient might continue to improve and make partial readjustment, but a recovery without defect symptoms seems improbable."

This summary very accurately describes the mental characteristics of the patient, with which we agree, but there is no hint as to the probable etiological factors. She was discharged March 29, 1919, from Bloomingdale and admitted the same day to the New Jersey State Hospital at Trenton. Her mental condition was the same as that described in the abstract above. She was reticent and very much confused and no complete mental status could be obtained because of lack of cooperation. It was also difficult to do any of the routine tests because she was too resistive.

The physical examination showed nothing abnormal in the neurological fields. Examination of the abdomen showed marked retention of fecal matter in the cecal colon with marked enlargement of the colon in this area. Because of her resistiveness x ray studies of the intestinal tract could not be made. The cervix was eroded, reddened and granular and culture gave pure colon bacillus. The rectum was inflamed and there was some cryptitis.

The clinical laboratory findings in this case were important and offer some facts as to the etiology. The fixation test for the streptococcus and colon bacillus was positive, and the Wassermann test was negative. The urine findings were negative and *Staphylococcus aureus* was found on culturing. The two partially erupted lower third molars were extracted under an anesthetic and cultures gave streptococcus, nonhemolytic, salivarius type. Examination of the stomach by the Rehfuess fractional method showed an irregular hydrochloric acid content, beginning rather high and after the fourth test dropping to a low figure and continuing to the end of the test. *Streptococcus salivarius* was found in the cultures. The blood count showed 6,200 leucocytes; differential count, polymorphonuclear seventy-two per cent., lymphocytes fifteen per cent., eosinophiles three per cent., transitionals three per cent., basophiles one per cent., large mononuclears six per cent.

In April she was given three doses of antistreptococcus serum and vaccine from the streptococcus isolated from her teeth and stomach. On August 15, 1919, the cervix was enucleated by Doctor Stone, a conical plastic enucleation after the Sturmdorf method, and colon bacilli were again isolated. In July an exploratory laparotomy was advised, based upon the physical examination and the fact of long continued constipation, but the family preferred to wait until other means such as vaccine and serum should be exhausted. So in September another course of antistreptococcus treatment was given.

The last of October a rise of temperature oc-

curred and some evidence of pleurisy was noted on the left side. As she was delirious at times a lumbar puncture was done but the findings were negative and no evidence of meningitis was found. Later a deep seated abscess developed over the ribs on the left side and in a week it was necessary to anesthetize the patient and open this abscess. A large amount of pus was found and evacuated. Cultures gave pure streptococcus, salivarius type (the same type found in the teeth and stomach). At this time there was evidence of pleurisy with effusion on the left side. The condition of the patient did not improve and her temperature continued to be high. She failed rapidly and died November 7, 1919.

Autopsy was performed five and a half hours after death. There was marked discoloration on back and sides of trunk, right ear and both arms. Left lung was collapsed and pleural cavity filled with a brownish yellow flaky fluid. Some fluid in the right pleura. The pericardium contained an excess of fluid similar to that in the pleura. The colon was enlarged and the hepatic flexure bound down with pericolic adhesions. Numerous enlarged glands found in the mesentery, especially in the region of the colon and more marked in the jejunal region. There was marked hypertrophy of the liver.

Bacterial studies.—Cultures from the pleural cavity and pericardial fluid gave pure culture of colon bacillus. From the gallbladder the streptococcus salivarius was isolated (the same type found in the stomach and unerupted wisdom teeth and in the deep seated abscess), and in other organs and mesenteric glands the cultures were negative.

This case, from the standpoint of treatment, is rightly considered a failure and will be frequently cited by our friends who are still skeptical, but from the viewpoint of pathology we cannot say that our work was in vain. The bacteriological work shows that we were dealing with a profound infection by the colon bacillus which finally caused the patient's death. The invasion of the pleural cavity and pericardium by this organism could hardly be called a postmortem phenomenon as the examination was five and a half hours after death and in other organs this organism was not found. It is to be noted that the colon bacillus was found in the infected cervix prior to operation and isolated from the tissue after operation. The other important fact is that the same type of streptococcus (nonhemolytic, salivarius strain) was found in the unerupted wisdom teeth, the stomach, the deep seated abscess and in the gallbladder, the latter at autopsy. This fact would substantiate our claim that the original source of infection in this case was in these unerupted wisdom teeth and from there the organisms migrated to other fields. The salivarius type of streptococcus is usually considered a benign organism, but in this, as in other cases, we have reason to believe that it may become virulent at any time and cause serious trouble.

Our failure in this case can be attributed to the fact that we had no adequate means of combating the colon bacillus, a defect in treatment that we are hoping to remedy in the near future. From the pathological evidence we believe that we are justified in assuming that the psychosis in this case was

the result of a combined infection of the streptococcus and colon bacillus. The question of heredity is of very doubtful influence in this case and there are no prominent psychogenic factors. The fear of losing her fiancé in the war may be cited, but it is difficult to assume that this factor was entirely responsible for the psychosis, especially as there had been a noted change of disposition for three years. The fact that she had a very intelligent upbringing and unusually hygienic advice is noteworthy, but when such factors as unerupted wisdom teeth are allowed to persist and habitual constipation allowed to go unchecked, it shows that the proper advice was wanting. A proper recognition of some of the factors in this case at least four years before the psychosis developed might have prevented the psychosis and later the death of the patient.

SECONDARY FOCI OF INFECTION.

That infected teeth alone could cause very serious systemic diseases has been demonstrated by Hastings in 1914 and later by Billings (13) and his coworkers in 1916, and this work has called the attention of both the medical and the dental profession to the importance of the teeth as a source of infection. Rosenow has also shown that these organisms tend to migrate and reach other organs and there set up a secondary focus. It can be seen that extracting the teeth alone will not correct a focus in the kidney, liver, or gastrointestinal tract and hence we have failures which tend to discredit the whole theory of focal infection, whereas the cause of our failures is to be found in our lack of attention to these secondary foci. How these organisms reach distant organs is not plain, but probably in a large majority of cases it is through the lymphatic system and seldom through the blood stream, although occasionally the latter system is involved. In culturing the blood in a large number of cases and also at the autopsy we have seldom isolated these bacteria. Hence, from our experience, we are inclined to think that the main channel of migration is through the lymphatics. There can also be direct transmission of the bacteria, through swallowing, to the gastrointestinal tract. But even here we are inclined to the opinion that the infection travels by way of the lymphatics for reasons which we will explain later.

While apparently we can see no relation between infected teeth and intestinal infections of a chronic type, clinically there is a very close relation and it is well for the dental profession to recognize all of the consequences and results of chronic root infection and end, once for all, this far-reaching and dangerous infection. We feel that we do not overstate the facts when we say that not only can insanity be prevented and cured by a conscientious practice of the principles discussed in this paper, but many other diseases, the majority of which have a fatal termination, can also be prevented and cured if the process has not gone too far.

Neither have we exhausted the foci of infection when we have considered the teeth, tonsils, and gastrointestinal tract. In many cases an infected cervix will furnish sufficient toxemia to prevent the recovery of the patient until this source is elimi-

nated. We have had patients who did not clear up mentally, even after all other sources were eradicated, until the cervix was enucleated. Cultures from the cervix in infected cases gave either a pure culture of streptococcus or colon bacillus, or both. There is undoubtedly a small number of cases in which the various sinuses are infected and these have to be attended to before results can be obtained. Here again the services of an expert are demanded if results in this field are to be obtained.

GENERAL CONSIDERATIONS.

If we can substantiate our contention that a certain proportion of nervous and mental diseases are the result of toxemia from chronic infection, the sources of which may be multiple and therefore difficult to locate, then the logical method of curing these diseases would be to eliminate such foci or infection wherever found. This may sound easy, but from three years' experience with these problems I can state that not only is the difficulty of locating the foci of infection a tremendous one but the question of eliminating them, when found, is almost stupendous. It takes persistency and patience and the ability to stick to the work of elimination which is difficult for one to realize who has not had the experience.

It should not be difficult for the alienist to accept the principles discussed in this paper for we have for years recognized the fact that infections and toxemias could cause mental disease and have so diagnosed a small group of such cases as toxic infectious psychoses. So we are not so far afield when we consider that infection plays an important rôle in the etiology of other mental conditions. In fact, we are merely extending and enlarging this group which formerly comprised a comparatively small proportion of our cases wherein the infection was of the acute type with fever and other symptoms and the diagnosis of infection was simple. Our principal duty is to establish the fact that a chronic infection exists in these cases, which infection, because of its chronic character, often produces no subjective nor objective symptoms and is therefore difficult to establish by the ordinary methods of examination.

In Kurt Thoma's admirable book, previously quoted, there are a number of cases of patients with insanity who recovered when infected teeth were extracted, but because he was not an alienist and therefore his diagnosis might be questioned no attention was paid to the importance of his work. Such is the fate of the pioneer and no one can calculate the amount of suffering which might have been saved and the financial burden which could have been avoided if the work of these unusual men had been given due credence.

We who have been dealing with the insane, or as we prefer to say, "those suffering from mental diseases," have for years isolated ourselves from general medicine and have considered the patient wholly from the viewpoint of the mental picture. And while we have made advances in the care of these patients, our recovery rate has not changed, except for the worse, in the last fifty years. In spite of the fact that many patients showed evidence of profound physical disturbances on admission to the

hospital, this fact was ignored and we neglected to even ascertain what physical condition the patient was suffering from. I plead guilty to this charge and will state only one extenuating fact; we treated these patients on admission as sick and kept them in bed until they had gained physically, and this treatment may account for the fact that our recovery rate has been between thirty and forty per cent. annually, based upon the admissions, while the average in the majority of state hospitals has been about fifteen per cent.

We have in former years made the mistake of considering the mental disease as the principal factor to be studied, but we have learned by experience in the last three years that the mental symptoms may be incidents in the general infection and toxemia. Some patients with severe infection do not present any mental or nervous symptoms and others with a mild infection may have very slight physical disturbances but the nervous system may be affected to a profound degree and may never return to normal. This condition is difficult to explain, but it offers no more inconsistencies than the varied effects of alcohol on different individuals, a fact so well known that it is useless for me to dwell upon it at present. We do know that the streptococcus group consists of and embraces many strains, with various characteristics and perhaps certain selective properties as claimed by Rosenow, which can account for the causation of articular rheumatism in one individual, neuritis in another, or a toxic myocarditis in still another, and one strain may be more toxic than another and therefore affect the nervous system. We have only been able to find in one case the organisms in the brain itself, hence we assume that the toxemia is the causative factor in producing mental disease.

Again, we must take into consideration the patient's constitutional reaction to these poisons as we do in the case of alcoholic patients and their susceptibility and lack of resistance to certain infections. These two factors, the type and characteristics of the organism, plus the individual's reaction, may determine the pathological process and variation in this process in different persons.

Formerly we considered heredity the most important factor in the causation of the psychoses, and the inherited constitution as a direct result of this heredity. While we do not deny that heredity has a very potent influence, at the same time we do not consider that it is an essential factor as it may be absent in a large number of cases. When it exists it may well cause a susceptibility to certain toxins, or better still a lack of resistance to these toxins just as we see in the effects of alcohol on different individuals. It is useless to argue either for or against heredity or constitution or other factors which cannot be changed in the individual. We are willing that these factors be given any place that will satisfy those who cannot give them up. But we would emphasize the fact that they are not modifiable, are fixed when the patient is received, so why argue about them.

Meyer (14) has stated the problem thus: "The study of the constitutional makeup turns very largely on the question of the extent to which vari-

ous features are determined by heredity and growth and immutable, or determined by heredity and growth and modifiable, and what inside and outside factors can be expected to have a functional and ultimately a structural effect." We would explain this in our way as follows. Heredity and growth are fixed factors and immutable, and may in some instances be the only causative factors apparent. The extrinsic factors which may have equal importance in determining a psychosis we believe to be a chronic infection, and here is a factor which can be considered modifiable, in fact can be eliminated from the patient's system and the patient recover from the psychosis, in spite of the presence of heredity and growth of an unfavorable character.

We do not eliminate the rôle of the psychogenetic factors in the etiological constellation. But here again we deviate from the traditional teachings of psychiatry and especially the psychoanalytical school who can see nothing but the psychogenetic facts real or assumed to exist in every case. We give these factors their due, but we do not think that they are necessary to the production of a psychosis in every cause. Our point is illustrated in case X which was examined thoroughly at Bloomingdale, but in which the psychogenetic as well as hereditary factors were apparently absent, at least no mention was made of them in the summary of the case. And many cases will come under the same category. So why assume that they must be present in order to cause the psychosis when other factors are present and could be demonstrated to the satisfaction of every one concerned.

We refuse to see things that do not exist and pick up coincidences in the early life of the patient and hang all the blame upon these facts. We see many cases in which the psychogenetic factors are present and have had a very definite rôle in producing the psychosis. On the other hand many cases come into the hospital in which these factors are entirely absent.

We do not deny that worry, grief, fright, mental overwork and other mental factors play an important rôle in the etiology of the psychoses. But the mechanism we think can be explained upon the basis of reducing the patients' vitality, of lowering their immunity and allowing thereby a latent infection to become active. It is possible that the emotional reactions have a profound effect upon the ductless glands and the internal secretions, and that through disturbances in this field the immunity is lowered sufficiently to allow the infection to become active. We will admit that we do not know the exact mechanism and we will leave to others the explanation of the relation of the emotions to the ductless glands and the infection. If one will admit that the infection is the factor which should be attacked, which can be successfully attacked, to the immense benefit to the patient, we are willing that any explanation that suits one's fancy will be acceptable to us. We would be the last to quarrel over explanations if the main fact is recognized, i. e., that the principal factor is the infection and that it should be attacked as vigorously as possible.

While psychiatrists in general have been slow to accept the views expressed in this paper, we find that one class has been diligently searching for some years for some such physical basis for the psychoses. We refer to the surgeons, and no one will accuse them of a lack of progressiveness for they have usually led the van in original work in medicine. Thus Robert T. Morris (15) in an article published in August, 1918, pays his respects to the Freudian conception of mental disease, discusses in a very logical manner the relation of physical conditions to the psychoses, and shows a surprising familiarity with the problem of the treatment of the psychoses. He says, "Surgery aimed directly at the cure of the psychoses and the psychoneuroses will be a failure because so many factors are involved, but surgery which removes peripheral irritations and focal infections among the insane and among the psychoneurotics will have many spectacular recoveries from the insanities to its credit." One can but admire the vision of this surgeon who persisted in spite of the prevailing opinion of the psychiatrists and neurologists. In the same manner the work of Draper and Lynch had about convinced them that every psychosis had as its basis some physical disorder and in a very short time both these men and Morris as well would have had enough evidence to have proved that they were right and the prevailing psychiatric opinions were entirely wrong. I want to express my thanks to these three men for the encouragement and assistance they have been to me in the last year. Although we were working independently of each other it is significant that our ideas should so nearly coincide. In fact Doctor Morris's words quoted above seem almost like a prophecy and if our results mean anything at all it would seem that his prophecy had come true.

All of our work of former years has been concerned with the mental symptoms, largely to the exclusion of the physical condition of the patient, and our efforts have been directed toward ameliorating these mental symptoms. Hence, any form of treatment which has for its basis mental therapy has found favor with all those who were seeking to do something for this unfortunate class. No one will deny that there has been a decided improvement in the care of this class, but no one would claim that much had been done from a therapeutic viewpoint, or that we had been able to restore patients who did not recover spontaneously. By treating patients newly admitted as sick we have undoubtedly assisted these patients toward recovery, when otherwise their condition may have become chronic. But we have all had the experience of seeing patients in whom we were especially interested fail to respond to any form of treatment and progress to absolute dementia. And even the most ardent disciples of Freud would hesitate to say that any appreciable effect had been noted in the recoveries of the insane by reason of psychoanalysis or any form of psychotherapy. We have no quarrel with those who have diligently pursued this practice, or those who have endeavored by any means to benefit the patients under their care. But we do maintain that because they have been con-

cerned with mental therapy to the exclusion of the possible somatic factors, they should not condemn those who have followed leads in the somatic field and have obtained results which have never been obtained by any previous methods.

While we have for years been concerned with mental disease, we are now convinced that there is enough evidence to warrant an assumption that we may have to change our viewpoint entirely, and instead of mental disease consider that we are dealing with brain disease. While this may be considered a distinction without a difference we are of the opinion that the mental symptoms do not necessarily mean a mental disease, but may well be considered as incidents to a severe infection and that the toxic poisoning from the infection acts upon the brain tissue just as does alcohol.

The alcoholic psychosis is a good example and there is much that is analogous to the infectious psychosis. We know that the amount of alcohol taken does not always determine the psychosis. One individual may take a much larger amount of alcohol than another and yet a psychosis will fail to develop, while the one who is especially susceptible may need only a very little alcohol to cause a psychosis.

So with the relation of chronic infections to the psychosis. It has been estimated that eighty per cent. of the population have infected teeth or tonsils or some focal infection. But all of these people do not develop a psychosis. A large majority may have sufficient immunity to prevent the infection from becoming active and the type of organism may be less virulent than some other types in another individual.

One is constrained to accept the view of Rosenow (16) regarding the electric localization of the streptococcus group. There is abundant evidence that such a property does exist and that the same type of organism may cause arthritis in one individual and by reason of its extreme toxicity cause a psychosis in another person. As a clinical proof of this we might cite the fact that in a population of 1,850 patients we have only one case of arthritis deformans and in an experience extending over eighteen years I have seen but one case in which the psychosis was associated with rheumatism. Rosenow has shown experimentally that the various strains of streptococci have a certain affinity for localizing in certain tissues and his work is certainly supported by our clinical experience. Again we must consider the constitutional reaction of the patient to the various toxins and poisons and their susceptibility and lack of resistance to these agents.

Thus we might state that two very important factors are concerned in the determination of the pathological process in various individuals; the type and severity of the infecting organisms, plus the individual's reaction to the infection.

TYPES OF PSYCHOSES.

In discussing this question we are referring to the so-called functional types, usually grouped under manic depressive insanity, dementia præcox and the paranoid states, in which no acceptable etiology has been found. If we are to consider definite disease

entities and place these groups in distinct classes, it will be difficult to harmonize their common etiology; i. e., chronic infections and the resulting toxemia. As a direct result of our work we must either change our diagnosis, when recovery takes place, from dementia præcox to manic depressive insanity or admit that dementia præcox is not the incurable malady we have believed it to be. We are inclined to agree with Meyer that we have taken Kraepelin's work too seriously and have followed his lead when facts do not justify his conclusions in regard to dementia præcox. After an experience of some years and also spending one year with Kraepelin and three years with Meyer, I feel that I can claim some familiarity with the diagnosis of this much discussed disease.

When in reviewing our work for the past ten years we find that we have over one hundred cases of manic depressive insanity in the hospital which should have recovered and that in a large number of cases we have had to change the diagnosis of dementia præcox to manic depressive insanity, in patients who had undoubtedly recovered, so as to at least retain our orthodox standing we feel that we should seriously revise our estimate of Kraepelin's work and our ideas of this disease. We are in thorough agreement with Meyer on this point and feel that as he has expressed it we are possibly trying to explain an imaginary entity. If this conception is going to interfere with our therapeutic measures in the treatment of dementia præcox, then we had better give up Kraepelin's viewpoint and go back to the old classification of chronic and acute mania and terminal dementia, as unscientific as these diagnoses may seem.

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(To be concluded.)

LONDON LETTER

(From Our Own Correspondent.)

The Hospital Situation in Great Britain.—Operative Treatment of Gastric Ulcer.—Tuberculous Children at Cinemas.—Disbandment of Medical Research Committee.

LONDON, March 31, 1920.

Perhaps the most burning question of the medical world in this country is that of the future of the hospitals. The voluntary system, which has been in force almost since time immemorial, if not exactly doomed, as some say, is gravely embarrassed. Hospitals in every part of the country are in financial straits of greater or less severity, and the funds necessary to relieve their needs do not appear to be forthcoming with that ready spontaneity which the urgency of the situation demands. The voluntary system has so many points in its favor that it will be hard to give it up without a struggle. In fact, this result is not likely to come about. The voluntary system has many doughty champions, among whom may be mentioned Sir Francis Burdett, the editor of the *Hospital*. As Mr. Allen Greene, writing on the subject in a recent number of *The Sunday at Home*, puts it, the voluntary hospital is "not a mere aggregate of beds and buildings. It is a spirit, an idea, an impulse, a gentle philosophy. There is something about it outside the ordinary actions and reactions of paid service. It is difficult to say why this would cease under a State system, but it would. It is bound up with the continuance of voluntarism. It is the flower of voluntarism itself. Under the official system the age of chivalry, so far as the hospitals are concerned, would be past. An economic and calculating age would succeed it." All this is doubtless very true, but one may question whether State control is the only way out of the difficulty. In the first place, it may be stated that the Ministry of Health, that is, the government, has already too much to do in the direction of preventive medicine to be in the position at the present time to attempt to deal with such a gigantic problem as the reform of the hospitals. Also, if State control will have the effects predicted by Mr. Greene, and it would undoubtedly have some of them, why fall back entirely on State control? May not some of the manifest advantages of the voluntary system be retained and yet the hospitals have adequate accommodation and be placed on a sound financial basis? Sir George Newman has pointed out, in his *Outlines of the Practice of Preventive Medicine*, that organization and co-ordination of existing institutions are badly needed and that if this were thoroughly done, many of the defects and deficiencies of the present system would be removed. Why should not the voluntary system be modified by the installation of paying wards and

the great hospitals placed, to some extent, upon a self supporting basis? The poor should not be excluded, but these might be paid for by the State under the health insurance scheme and the supervision of the Ministry of Health. The wards to which these people would be sent by medical men working under the Insurance Act, school clinics and so on, would be given over to such patients, and for them the State would pay the minimum fee consistent with the economic management of the hospital. In any event, insured patients sent to the hospitals should be paid for out of the insurance funds, because such patients place a great strain upon the accommodation and resources of hospitals and are partly responsible for the plight in which these institutions now find themselves. Voluntary contributions might be continued, insurance patients paid for, organization and coordination introduced, and pay wards installed. Hospitals were, of course, originally intended for the treatment and benefit of the poor, those who absolutely could not afford to pay; they were really and truly charitable institutions. They were not intended to be made use of by any but the indigent, and those who could afford to pay a doctor's fee were treated at their own homes or, during recent years, if large fees could be afforded, at private hospitals or nursing houses. The large middle class has not been provided for at all. Either its members had to be treated by the ordinary general practitioner for moderate fees, or if they were seriously ill or an operation was required they were compelled to pay the exorbitant prices of the nursing home or to pocket their pride and sue *in forma pauperis* for a bed in a general hospital. In present circumstances the great middle class is in a worse situation than ever before. The price of living has increased one hundred per cent. while their income remains the same. The members of this class are now the poor. The laboring and artisan class, whose wages have gone up about two hundred per cent., can obviously much better afford to pay for hospital treatment.

With regard to the new poor, Sir John Y. W. MacAlister, secretary of the Royal Society of Medicine, contributed to the *Pall Mall Gazette* on March 12th a discussion of the question of medical and surgical treatment for this class, which for lack of a more fitting name is termed in Great Britain the middle class. He points out that today, with the changes registered in the whole social and economic fabric, treatment cheaper than may be obtained in a nursing home and yet equally efficient should be available to people of the middle class with inferior financial resources. That is to say, treatment which costs from \$80 to \$120 a week in a nursing home ought to be obtainable in a hospital at \$26 a week or even less, and in the hospital the treatment should be better because there a house physician and a house surgeon are always on duty ready to attend any emergency. Sir John MacAlister thinks that what is really needed is a great extension of what has already been begun, the pay hospital and pay ward system. With the provision of adequate accommodation for paying patients those people who will not accept charity will be saved a great struggle. Having recourse to nursing homes, at the

present tariff, means a sordid struggle for the educated classes on a small income. The secretary of the Royal Society is of the opinion that the requirements of the day with respect to hospitals may be divided into two categories: 1, the establishment of large private hospitals for patients who can afford to pay; 2, the arrangement of accommodations in existing hospitals for the reception of a large number of paying patients.

Owing to the changed condition of affairs, it is difficult to understand the strong opposition manifested in many quarters to the institution of pay hospitals or paying wards in the present hospitals. The voluntary system, which is carried on as heretofore, can no longer stagger along under the load which it is bearing. State control, even if it were possible at the present time, does not appear to be popular, and lastly, accommodations are inadequate and a large class of self respecting citizens are bereft of skilled medical and surgical attendance because they cannot accept charity. Why not, therefore, compromise; organize and coordinate existing institutions, continue the voluntary system, but make the insurance fund pay for patients sent to a hospital by its officers, and establish pay hospitals and paying wards in present institutions. One of the arguments brought forward by Mr. Alan Greene and quoted in the editorial pages of the *Medical Press* for March 10th is that America, after some experience of State hospitals, is trying to get back to the voluntary system and has recently given to its Voluntary Hospitals Association what would be called in Great Britain a royal charter. The writer is under the impression that in the United States and in Canada, to a lesser extent, the pay ward system is, if not universal, at least widely practised, and that it gives good results and satisfaction. It appears to be a fair method of rendering hospitals self supporting and of retaining the self respect of their inmates.

* * *

The operative treatment of gastric ulcer has been the subject of much discussion recently. On March 3d, at a meeting of the surgical section of the Royal Society of Medicine, the remote effects of the surgical treatment of chronic ulcers of the stomach and duodenum were debated at considerable length. The operation around which the discussion took place was that of gastrojejunostomy. Mr. Herbert I. Paterson gave his experiences concerning the operation, of which he was one of the chief exponents. Mr. James Sherren also took part in the discussion but dealt with the matter at greater length by far in the Hunterian lecture which he delivered before the Royal College of Surgeons on February 11th. He is in favor, as a general rule, of gastrojejunostomy for gastric ulcer, provided that the cases for operation are properly selected and the technic of the operation is as it should be. Unabsorbable suture material is responsible for a large proportion of the ulceration that sometimes occurs after a gastrojejunostomy. His conclusions were as follows:

While gastrojejunostomy, combined with general abdominal exploration, and dealing with other diseased organs is curative in the majority of

cases of chronic duodenal ulcer each must be studied, and those eroding the pancreas or spread to the stomach removed. Gastric ulcers which have perforated and are adherent to neighboring organs, indurated ulcers on the lesser curvatures, and all in which there is any suspicion of malignancy must be treated by partial gastrectomy. He believes that gastrojejunostomy for chronic gastric ulcer will become the less frequent operation. Sir Berkeley Moynihan, of Leeds, and perhaps the Leeds surgeons generally do partial gastrectomy for gastric ulcer, one of the main reasons being that carcinoma may occur on the site of the operative wound. According to Moynihan there are only two ways of certainly diagnosing gastric ulcer, by an exploratory operation or by x rays. He is firmly of the opinion that the x ray employed by an expert is a very satisfactory method of diagnosing gastric ulcer. Correct diagnosis and partial gastrectomy, in the opinion of the great Leeds surgeon, are the most effective means of treating a chronic gastric ulcer. Gastrojejunostomy is the operation of choice for duodenal ulcer, but for gastric ulcer the opinions of surgeons here appear to be veering in the direction of partial gastrectomy.

* * *

According to a recent number of the *Municipal Journal*, the local branch of the Charity Organization Society in Lambeth, a part of London on the south bank of the Thames, has just been making an inquiry into the question of children's attendance at cinemas, and especially of tuberculous children excluded from school, and of those who have infectious diseases or have been brought into contact therewith at their homes. As a result of the inquiry the society says it feels that the existing regulations only provide for children being excluded from cinemas when an epidemic of any kind occurs, and not the children suffering from tuberculosis, who may be thereby a means of spreading infection, and who suffer no small amount of harm themselves, by attending these places of amusement. The society, moreover, urges that, in view of the danger of an epidemic of influenza, cinemas and music halls should be emptied every two or three hours, and treated and sprayed with disinfectants. The medical officer of health for Lambeth, who has reported to the borough council upon the suggestions, expressed the opinion that to carry them out with any prospect of advantage to the public health was officially impracticable.

* * *

The British Ministry of Health Act provided for the disbandment of the Medical Research Committee and the performance of its duties by a council committee appointed for the purpose. The disbandment would in the natural course occur on April 1st. The *London Gazette*, of March 23d, however, contains an order incorporating the present members of the Medical Research Committee in a new body to be called the Medical Research Council. The council will be under the direction of the minister of health, the Secretary for Scotland, and the Chief Secretary for Ireland, who will for the time being act as a committee of the council for the purpose.

PARIS LETTER.

Amputation Stumps—Demonstration of Adaptation to Environment Theory.

PARIS, February 1, 1920.

At a recent meeting of the *Académie de médecine*, Paris, Professor Tuffier showed that, according to clinical tests made by certain Italian surgeons, amputation stumps are by no means useless members, as has hitherto been assumed, but can be made highly serviceable with the aid of certain new operative procedures and prosthetic devices. Vanghetti demonstrated that the muscles and tendons of amputation stumps may readily be made to execute direct and purposeful motor acts. This method, frequently termed a "cinematization" of the injured part, after initial trial by Italian surgeons, was used in Switzerland during the war, and more recently has been availed of in America, England, and Belgium. In France, Lambert, of Lille, has applied it in a few cases. The operative procedures required are relatively simple and available to all surgeons, though the work must be done with some degree of precision to give good results. From the viewpoints of motility and power, stumps provided with tendon loops—the latter covered with skin—have proved highly effective. There is one drawback, however, which has not yet been overcome, viz., the imperfections in the prosthetic appliances, such as artificial hands, fingers, and forearms, whereby a large portion of the power that should be actually available for use is lost. No skilled mechanic has as yet undertaken to work out the problem of appropriate, efficient apparatus along these lines. Artificial hands and joints of rudimentary morphology and more or less primitive mechanism are still in vogue, with the result that the actual motor yield is practically nil. In view of the fact that there are now living at least 12,000 individuals with amputated upper extremities, including 7,200 cases of amputation of the hand and 4,600 cases of forearm amputation, the problem presented is one of considerable practical importance.

* * *

In a recent communication to the *Académie des Sciences*, Paris, Gaston Bonnier, a noted botanist, made known to his colleagues the fact that he had been able to demonstrate experimentally the accuracy of Lamarck's well known view of "adaptation to environment." Two plants of the same family and species were grown, respectively, at an ordinary, low altitude and on the Pic du Midi, at an elevation of three thousand metres. The plant grown at a high altitude showed remarkable adaptive changes compared with the one grown in its usual habitat. Carrying the investigation a step further, he planted the same seeds in a deep valley and at the summit of the Pyrenean peak already mentioned. The latter seeds gave rise to plants presenting from the very outset distinctly Alpine characteristics. The leaves bore a pronounced hairy growth calculated to protect them against sudden changes in temperature. The red, anthocyanic substance tinting the leaves was produced in larger amount. Even in their first season, all the plants became more or less dwarfed or flattened.

Editorial Notes and Comments

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NEW YORK, SATURDAY, APRIL 24, 1920.

THE DEATH OF DR. JAMES W. MARKOE.

At the close of a peaceful Sunday church service, a crazed assassin without warning turned a weapon of destruction against a person whom he did not know. He killed a man whose services to mankind had been unremitting, both as a physician and as the builder of an institution where women could be cared for during labor. This shocking murder raises a number of questions in the minds of medical men.

There are in our midst many paranoiacs who are potential murderers. To all outward appearances—in ordinary conversation and in their relations with other men—they seem rational. The mental disturbance with which they are afflicted is deep seated and they show no apparent evidence of the disorder which may cause a maniacal outburst at any moment. Any passing event may set in motion the mechanism of the disordered machine. The immediate circumstances are not the causative factors; these have their origin in the early childhood of the individual, and at times it is impossible to determine the real reason for the disorder. However, we may be sure it is an early childhood conflict. The mental makeup of these persons is weakened and cannot face the added strain of new problems. It is only to be wondered at that in the trying days of the war and the unrest following, which apparently is not yet finished, that there were not more manifestations of violence by men with disordered minds.

Society would benefit if more stress was placed upon the mental hygiene of childhood. We little understand the complex mechanism of the child mind, even though we have all been children, for the amnesia to which we all are subject as regards our early life carefully covers the unpleasant thoughts and unnatural cravings. Only by careful analysis of the unconscious mind are we able to retrace the steps and discover what really took place. This may seem unimportant until we consider the farreaching consequences of a neglected mental life in childhood.

Another important point is the apparent laxity with which this man was handled by institutions for the insane in this country. He was examined by the authorities of two States and his mental state was found to be unbalanced. He had been an inmate of two asylums, escaping repeatedly. He was an alien subject to deportation, but apparently nothing was done. He was not kept away from society; he was not cured of his ailment; he was not deported. The authorities performed their duties in a very slipshod way. But we must not lose sight of the prophylactic measures which could have been taken if more attention had been given to the mental hygiene of this man while he was still a child.

PARANOIA AND PERIODICAL PSYCHOSES.

There are instances of recurring psychoses, the attacks of which are manifested by ideas of persecution, occasionally systematized to such an extent as to simulate delirium of persecution with a systematic evolution. The ideas of persecution are varied, but the most frequent are those of jealousy, poisoning and theft and are based on delirious interpretations. The hallucinations—when not a confusional complication—are uncommon, episodic, and similar to those encountered in the delirium of interpretation. In these patients one may also observe paroxysms in which ideas of ambition predominate, those of persecution still existing but to a lesser degree. By a careful analysis of the case the basic symptoms of mania will be detected during these paroxysms, such as motor agitation, absence of ideation, or melancholia depression and cessation of thought. These symptoms may be discreet or, on the other hand, quite accentuated.

The paroxysms of delirium of persecution are recovered from but recur and are separated by a lucid interval during which the patients present delirious

ideas and recognize the deranged mental character of their previous preoccupations. It is, therefore, logical to admit that these subjects are affected with a periodical psychosis. But the paroxysms of their psychosis offer a special aspect—ideas of persecution and of ambition—from the nature of the soil upon which they undergo their evolution, because when correct data can be obtained it will be found that these patients have presented, besides their paroxysms, evidences of a paranoiac constitution. Masselon has pointed out that these subjects are paranoiacs with a periodical psychosis and that with each paroxysm, which exaggerates their habitual tendencies, they reveal themselves as persecuted or ambitious.

However, it may happen that during the evolution of the affection some of the paroxysms do not present paranoiac characters, assuming the form of purely maniacal or melancholic attacks. This goes to show the periodical nature of the paroxysms, but the loss of ideation, the psychic inhibition, the motor agitation, is too accentuated for the patient to be able to elaborate his delirium. This is what takes place in certain paroxysms which begin with delirium of persecution, then increasing agitation and incoherence, and depression reaching stupor. A period of calm takes place and then the delirium reappears only soon to disappear with a recovery from the paroxysm. This conception of the evolution of a periodical psychosis on a paranoiac basis—more precise than the notion of degeneration—leads to an understanding of the nature, mechanism and evolution of the curable, relapsing delirium of persecution and at the same time leads to both a diagnosis and a prognosis.

The diagnosis may be a matter of considerable difficulty if only one paroxysm is observed and the antecedents of the patient unknown. One of the most frequent mistakes is to consider the case as a delirium of interpretation with a progressive evolution. Among the best differential diagnostic signs is the suddenness of the onset, while a psychological analysis will reveal the maniacal or melancholic symptoms, sometimes overshadowed by the intensity of the delirious ideas. Esposito is probably correct in maintaining that when there is no morbid association, paranoiacs do not present autochthonous states of excitement or depression, so that in the circumstances the case is only maniacal or melancholic in appearance.

The differentiation of these states with the onset of hebephrenic or paranoid dementia præcox is extremely difficult and here again psychological analysis is essential in order to detect the symptoms of intellectual weakening, or should one prefer, the signs of mental dissociation or schizophrenia. When

the diagnosis has been made the prognosis is clear. It is simply that of periodical psychosis—the paroxysms pass but the disease remains—and relapses are certain to occur, the lucid intervals become shorter and the affection which at first was intermittent becomes remittent, so that the patient no longer has the time to rectify his delirious ideas. The closer recurrences of the paroxysms and their longer duration, with the aid of senility, caused the paranoiac tendency, which in the beginning only became exaggerated at the time of a paroxysm, to persist definitely in the most marked form, namely, delirium of interpretation. Intellectual weakening, when it does occur, is a consequence of senility, governed by the cerebral lesions, such as atheromasia.

THE HISTORY OF CIRCUMCISION.

There can be no question as to the antiquity of circumcision, and the dissemination of this practice over the entire globe is likewise a well known fact. What is less well established, however, is the exact origin of the operation and its progress over the world, and what was the idea that resulted in its so extensive use. Whether or not the origin of circumcision was a single one, or, stimulated by the same motives, the various peoples separately adopted an operation that they regarded as useful, is still a moot question, but three peoples lay claim to being the originators of the practice.

Among authorized writers who attribute the practice as being Jewish in origin, the biblical texts must first of all be consulted. According to chapter xvii of Genesis, circumcision dates back as far as the origin of God's chosen people, because it was at the time when Abraham was called to become the chief of this people that God ordered him to practice this rite as a sign of alliance with him. Beside the authority of the Bible, the Jewish origin of circumcision is endorsed by a large number of partisans whose writings deserve the greatest consideration, namely, St. Augustin, St. Gregory the Great, and St. Fulcrand. Eusebius, a celebrated bishop of Cæsarea in the third century, believed that circumcision was taught by Moses, but its origin he unhesitatingly attributed to Abraham. Now, according to Genesis, Abraham lived 1,900 years before Christ.

The great historian Herodotus, who lived about the year 484 B. C., says that "the Colchidians, Egyptians, and Ethiopians are the only peoples who have been circumcised from time immemorial. The Phenicians and Syrians of Pal-

estine themselves admit that they learned circumcision from the Egyptians, but the Syrians who live on the borders of the Thermodon and the Parthenias, and their neighbors the Macrons, confess that they derived it not long ago from the Colchidians. Now, these are the only people who practice circumcision, and yet it seems that in this matter they merely imitate the Egyptians."

Diadorus of Sicily, who lived about a hundred years before Christ, maintains the same opinion and regards circumcision of the Jews as being derived from the Egyptians. The Egyptian origin of circumcision is also defended by Strabo, the celebrated Greek geographer, who lived about fifty years before Christ. This sage traveled through all Asia Minor and Greece, likewise Italy and Egypt.

Other writings contain many precious historical documents. Josephus, a writer of the first century, collected much historical matter relating to the Jews, and in his work on Jewish antiquities he hardly refers to circumcision and does not mention its origin. It is only in his two books written against Apio that he agrees with Herodotus and in the second book he accepts without criticism that the practice originated with the Egyptians. Tacitus is a partisan of the Egyptian origin of this operation, and Celsus, who lived in the second century, refers to the testimony of the Egyptian priests, who affirmed to him that circumcision originated in their land. The Emperor Julian, 332 A. D., also believed in the Egyptian origin of circumcision, and Voltaire, who despised and detested the Jewish race, maintained the Egyptian origin of the operation and quotes the testimony of Clement of Alexandria, who says that Pythagorus, traveling in Egypt, was obliged to be circumcised in order that he might be admitted to the Egyptian priesthood. These priests existed when Joseph arrived in Egypt; the government was then very ancient and the antique ceremonies of the land were observed with the most scrupulous exactitude.

A Phœnician writer, Sanchoniaton, rejects both the Jewish and the Egyptian origin of circumcision and says that the operation was performed by Kronos, the first Phœnician king. In his theology, the same authority adds that Kronos, after the sacrifice of his son, performed circumcision on himself and obliged his companions to imitate him. According to the story, this Phœnician king would be the first to set an example in the practice of circumcision, and should such be the truth the operation is much older than Abraham and neither he nor his descendants could have

taught the practice to the Egyptians at any period. Dr. Messala Pogoresky, a rabbi at Kherson, states that it is unlikely that Abraham devised the operation, since the Bible says that the patriarch did not practice circumcision on himself or on his own until his return from his travels in Phenicia and Egypt, where he went to take Agar the Egyptian as his wife. He undoubtedly had both the time and opportunity of often witnessing the operation and, noting its good effects, he decided to introduce it upon his return to Judea. Whatever may be the real origin of circumcision, the custom is spread among the most diverse populations. Upon several occasions, the Jews have made foreigners accept this operation. Thus Dinah, daughter of Jacob, having been taken away by Sichem, the son of a neighboring prince, Dinah's brothers imposed circumcision on all the males of this prince's people.

The numerous Persians who became Jews after Haman's defeat by Ahasuerus also accepted circumcision, and at a much later date, after return from the first Babylonian exile, many of the Chaldeans became united with the Jews, who professed an entirely different religion from their own. Hyrcan, 129 years B. C., caused the Idumeans, a people living near Judea, to be circumcised. King Aristoboule did the same in regard to the Itureans. Circumcision was not only practiced in Ancient Arabia but also in Ethiopia, and by the primitive tribes of Africa and Australia. In the ninth century, the Chazars, who formed a powerful empire in the south of Russia and throughout Rumania and Hungary, all adopted Judaism and with it circumcision. At the present time there are more than two hundred million circumcised subjects scattered over the globe, and of this number twelve millions are Jews, one hundred and eighty millions are Mohammedans, three millions are Christians, while the remainder form a rather confused lot of pagans.

THE VILLAGE SETTLEMENT AND WORKSHOP TREATMENT OF TUBERCULOSIS.

Sanatorium treatment of the tuberculous has failed, to some extent at any rate. Such treatment seldom cures but rather arrests the disease sufficiently for the subject to go out into the world to fight the battle of life, more especially if he is a manual worker. One great object of sanatorium treatment used to be to accustom the patient to agricultural pursuits, gardening, and so on, the argument being that open air life was

the only one suited to the consumptive. Some obvious facts were overlooked when propounding and putting into practice this theory. In the first place, agricultural labor is a skilled form of labor, and a hard and trying form of work with long hours. The adult consumptive is never likely to learn the work sufficiently well to earn decent wages, and although the work is done in the open air the conditions, atmospheric and otherwise, under which it is performed are much too severe a tax on a constitution the vitality of which has been sapped by tuberculosis. The individual in such a position is not able to earn enough to feed himself as his condition requires, and if he has a wife and family the state of affairs is desperate. However, there is no need to elaborate this point, as it is now well understood that as a rule the consumptive is not fitted for agricultural labor or even for gardening. If he has been an industrial worker or an artisan, he had better go back to his old trade or craft unless it is manifestly contraindicated by the unhealthiness of the occupation. In any event, in nine cases out of ten the tuberculous person is more likely to retain a fair measure of health working indoors at a trade he knows than as an unskilled outdoor worker earning starvation wages and exposed to the vicissitudes of a changeable climate. In certain parts of this country an out of door life can perhaps be followed by the consumptive with benefit to his health and a fair living wage, but generally speaking, and certainly in Great Britain, out of doors agricultural labor has been tried for the consumptive and found wanting.

But another difficulty arises. How are those partially disabled by tuberculosis of the lungs to find employment in factories or workshops? They cannot do a man's work, cannot keep regular hours of work, and in addition the ordinary normal workman objects to working side by side with the consumptive. A scheme has been proposed and put into practice in this country and in Great Britain whereby colonies and industrial centres are established for those suffering from pulmonary tuberculosis, and the plan seems to have met with success. Of course all is not plain sailing for such institutions, but as adjuncts to the sanatorium they should help to solve the problem of the consumptive, possibly with a wife and family, who is able to work but only under suitable conditions. The colony is at the same time agricultural and industrial and should provide the means for rendering many consumptives self supporting and self respecting. It must be borne in mind that in the case of the

tuberculous the mind has a great influence over the health and that if the sufferer is fairly contented, this mental outlook will react favorably on the physical conditions. The colony system is now on trial and extension depends upon how it stands the test. The March issue of *Tubercle*, the new British monthly dealing with tuberculosis, points out that many men will not care to abandon their urban homes and plant themselves and their families in an unknown, even though a more salubrious environment. This sounds true, and means must be found to render the colonies attractive or they must be devised on another plan. For the sake of the community at large, some such scheme should be established, for it is not only a question of the consumptive himself but of the race.

DRINK AND DRUGS.

Sick of clamoring reformers, assailed by drink statistics which, even if overdrawn, were horribly alarming, the government took drastic measures and said, "You shall have no alcohol!" But hardly had indignation subsided a little when drug addiction arose to worry, perplex, and force on a rapid decision. "If," say the antinarcotics, "you can deprive men for their wellbeing of the admitted though temporary pleasure of drink, why hesitate to take away that which has, as the habitué admits, no pleasure save a short one at the beginning before the victim has become an addict?"

Above reiterated shouting from the philanthropists arise the voices of the majority declaring they are a free people with a right to be happy, regardless of the fact that their idea of individual liberty concerning drink and drugs may result in wrongdoing which endangers the happiness of all. Then, when selfish conduct has endangered a nation to an alarming degree, government solemnly says, "Thou shalt not," and terrorizes by its penal laws. But the difficulty lies in the incontrovertible fact that morality must be an inward principle, and until the "shalt not" is met by a cooperative "I will not," the instinct to revolt and disobey is still alive. The people show no splendid evidence of self abnegation, no co-operation in fighting the evil, in advancing an unselfish brotherhood ready to abjure that which they themselves like because it means misery and disease to weaker brothers.

"You cannot make men good by legislation," sneer the majority. No, but you can make them moral, that is, accustom them to an abstinence which, at first enforced, may become habitual.

Hundreds of instances might be adduced from recent years where rich and poor, sometimes by compulsion, more often through patriotism or love for those fighting, gave up much which was once deemed absolutely necessary, and, the war ended, found their views as to its essentiality gone and deprivation no longer a hardship. So sweeping laws would seem to be good in that, through total deprivation, habits of going without may be formed and may endure. But as the people are childishly ignorant—fools, if you will—it appears that “the expulsive power of a new affection” is the vital question just now.

Much has been taken away; what has superseded it? Does the life the man has to lead make withdrawal acceptable? Deducting the greedy egotist who disregards all laws made for public benefit in order to satisfy his own inclinations, it is found that the majority of drunkards and dope takers formed the habit through hereditary propensities, curiosity, pain, overwork, worry, or unhomelike homes. The outpatient ward of any hospital will confirm this. Patients will tell of pain long endured, and of the “little something” taken to endure it and so get the necessary stimulus to work or to drown care. Give such people decent homes, decent wages, recreation, gardens, a few of the pleasures which the only fairly prosperous consider essential, and they will not crave that which is harmful, but just now the pleasant alcoholic stimulant has been withdrawn and nothing has been done to supersede it. Platform speakers are often rich, teetotalers, nonsmokers, lovers of art. Their “teetotal” drink of delicious coffee, tea, or chocolate made with cream, is a stimulant; a cigar is easily foregone when a comfortable home to entertain is theirs; a blue law Sunday is often welcomed for the quietness it brings for reading or music or gardening. But if the reformer had to leave home at 6 a. m., his breakfast bread and butter and a cup of inferior coffee, tasting like dead autumn leaves; if he had to return to a chilly attic or a two roomed “house” with noisy children and a jaded wife sighing for her pleasant dinner beer, and had to sit in the stuffy room all evening or on the doorstep on sultry nights, he would be less eloquent concerning dope fiends and more reluctant to classify as beasts those who linger too long in a bright saloon.

It will take many years for the law to accomplish the task of thorough eradication, but if justice steps in and gives the people those rational things through the lack of which evil desires have flourished, new interests will be found to have a rapid and wonderful expulsive power.

News Items.

Overalls?—The El Paso County Medical Society, Texas, has joined the economy movement by agreeing to buy no new clothes until August 1st, according to press reports.

Montefiore Contributors' Meeting.—The annual meeting of the contributors of the Montefiore Home and Hospital will be held Sunday, May 2nd, at 11 a. m., at the institution, Gun Hill Road, East 210th street, near Jerome avenue. Ten directors will be elected.

Williamsburg Doctors Fix Fees.—At a meeting of the Williamsburg Medical Fraternity it was unanimously decided to adopt the following minimum schedule of fees beginning May 1st: office treatment, \$2; home call, \$3; night call, \$5; labor cases, primipara, \$50; multipara, \$40; anesthesia, \$10.

Prize for Thesis on Spermatozoa.—The German Medical Society for Sexual Science and Eugenics has offered a prize of 1,000 marks for the best thesis on the question of whether the human male produces two kinds of spermatozoa. The headquarters of the society are in Berlin, W. 30, Motzstrasse 34.

Bill to Aid Disabled Veterans.—A bill appropriating \$30,000,000 for the aid during the next three years of disabled service men and women who have been discharged and are unable to take care of themselves has been introduced into Congress by Representative Langley, of Kentucky. The Secretary of the Treasury would be authorized to obtain necessary hospitals.

New Ministerial Office in France.—Prime Minister-elect Alexander Millerand, of France, upon organizing his new cabinet has created a new ministerial office, that of *ministère de l'hygiène, de l'assurance, et de la prévoyances sociales* (minister of hygiene, social insurance, and social provisions). The ministry will have under it the administration of the law for the protection of public health and of the antituberculosis and venereal disease dispensaries. Jules-Louis Breton has been given the new portfolio.

Hospital Bequests.—Bequests to the following institutions are made in the will of the late Mrs. Anna M. Sandham, widow of Dr. George Augustus Sandham, of New York; College of the City of New York, \$7,500 for a medical preparatory fellowship; Woman's Hospital, \$5,000; hospital in India of the Dutch Reformed Church of New York, \$5,000; St. Luke's Hospital, for a bed for consumptives, \$5,000; Society of Widows and Orphans of Medical Men, \$1,000.

Personal.—Dr. Homer Gage, of Worcester, Mass., and Dr. Eugene H. Pool, of New York, are among those who have been nominated as Overseers of Harvard University.

Dr. Richard A. Bolt, formerly of Cleveland, a member of the American Red Cross Commission to Italy, has been appointed general director of the American Child Hygiene Association.

Dr. Birkhead Macgowan, of Albany, has been appointed superintendent of Sydenham Hospital for infectious diseases, Baltimore.

South American Scientists on Way Here.—South American medical and other scientific men to the number of 150 are reported to be on their way to the United States to study medical education and progress in this country.

Women Can Now Work at Night.—The women's welfare program in New York State has had another blow in the repeal of the law regulating the employment of women on elevators. Women can now operate elevators at night seven days a week.

Gas Delays Hospital.—Lack of gas is likely to delay the opening of the Brownsville and East New York Hospital, Rockaway avenue and East Ninety-eighth street, Brooklyn, which was to have been formally opened on May 31st. The hospital is situated in a sparsely settled location and it will be necessary to lay between 800 and 850 feet of gas main to reach it, which the gas company refuses to do. The hospital requires gas for cooking, lighting, and for medical purposes.

Bill Abolishing Death Penalty Killed.—The bill abolishing the death penalty has been killed by the New York State Legislature. During the debate it was pointed out that twelve States have done away with death punishment and that in twenty-four others the question of infliction of the death penalty has been left with the juries. It was also stated that the superintendent of prisons in New York State and many prison officials had indorsed the measure.

Plan Amendment of Insanity Laws.—As a result of the lamentable murder of Dr. James W. Markoe on April 18th in St. George's Church, New York, a movement is under way to secure an investigation of court procedure in insanity cases and to have the State Legislature amend the insanity laws. Both the Brooklyn Neurological Society and the Medical Society of the County of Kings have adopted resolutions urging such reform.

Polish-American Soldiers Being Disinfected.—The 25,000 Polish-American soldiers who are returning to America after having served in the Polish army are being disinfected before embarkation at Warsaw and at Danzig by American army medical units. The work is under the supervision of Colonel Harry L. Gilchrist, Medical Corps, U. S. Army. Disinfection was decided on to prevent the spread of typhus to the United States.

Medical Care Instead of Prison for Defective Women.—A series of bills whereby women defectives or criminals are placed under observation and kept out of prisons has been passed by the New York State Legislature. The State Farm for Women, known as the Lyon Farm, with its cottages, has been placed at the disposal of a new division which is to care for mentally defective women. In connection with this the laboratory of social hygiene has been given over for the sole use of this division for a period of two years. Inspectors of the Prison Commission are expected to visit regularly all institutions where delinquent women are detained and to recommend those reported as mentally defective for observation and treatment in the new division.

Post Graduate Faculty Aids Fund.—The members of the faculty of the New York Post Graduate Medical School and Hospital held on April 14th their first annual dinner since the war and pledged \$250,000 toward the \$2,000,000 endowment fund being raised for the institution.

Typhus Cases in New York.—Two cases of typhus were discovered on the transport *Pocahontas*, which reached New York April 21st with 1,626 Polish-American soldiers. The patients were sent to Swinburne Island for treatment and the other voyagers were taken to Hoffman Island for observation.

Death of Baron Takagi.—Word has been received from Tokio of the death of Baron Kenkwan Takagi, formerly Inspector General of the Japanese navy and lecturer in America and Europe on military hygiene. Baron Takagi was noted for eradicating beriberi from the Japanese navy. He studied medicine in England.

Illinois Medical Conference.—The annual meeting of the Illinois State Medical Society will be held May 18th to 20th at Rockford, under the presidency of Dr. J. W. Van Derslice, of Oak Park, Ill. Among the speakers will be Dr. Roland Hazen, Paris; Dr. Victor C. Vaughan, dean of the Medical School of the University of Michigan; Dr. W. S. Rankon, of Raleigh, N. C., president of the American Public Health Association, and Dr. C. C. Pierce, of the U. S. Public Health Service.

Resolution on Death of Doctor Campisi.—The following resolution has been passed by the visiting staff of St. Peter's Hospital, Brooklyn:

By the tragic and untimely death of Vincent Campisi, St. Peter's Hospital has sustained a serious misfortune in the loss of the services of one of its most useful, loyal, and promising junior attendants. During his internship, Doctor Campisi proved himself to be of unusual ability, enthusiasm, and fidelity; later on, when he had received his appointment to the visiting staff, the value of these qualities was steadily augmented by his growing experience. He had won the respect and regard of his colleagues by his sterling worth as well as by his obliging and lovable disposition.

The visiting staff of St. Peter's Hospital offers to his widow and family its deepest sympathy in their sad bereavement—in which the staff shares—and its warm appreciation of Doctor Campisi's character as a man and a physician.

Section Officers of New York State Medical Society.—Section officers of the Medical Society of the State of New York, elected at the annual meeting held on March 24th in New York, are as follows: medicine, chairman, Dr. Nelson G. Russell, Buffalo; secretary, Dr. Herman O. Mosenthal, New York; surgery, chairman, Dr. Ledra Heazlit, Auburn; secretary, Dr. George W. Cottis, Jamestown; obstetrics and gynecology, chairman, Dr. John O. Polak, Brooklyn; secretary, Dr. William T. Getman, Buffalo; neurology and psychiatry, chairman, Dr. Michael Osnato, New York; secretary, Dr. Philip Goodhart, New York; eye, ear, nose and throat, chairman, Dr. Albert C. Snell, Rochester; secretary, Dr. Irving W. Voorhees, New York; pediatrics, chairman, Dr. Godfrey R. Pisek, New York; secretary, Dr. Arthur W. Benson, Troy; public health, hygiene and sanitation, chairman, Dr. Paul B. Brooks, Albany; secretary, Dr. Arthur D. Jaques, Lynbrook.

Book Reviews

THE DISEASES OF INFANTS AND CHILDREN.

The Diseases of Infants and Children. By J. P. CROZER GRIFFITH, M.D., Ph.D., Professor of Pediatrics in the University of Pennsylvania. In Two Volumes. With 436 Illustrations, Including Twenty Plates in Colors. Philadelphia and London: W. B. Saunders Company, 1919. Pp. 1542.

In medicine the child seldom receives adequate attention: it is more profitable to care for adults, that is from a pecuniary point of view. We are now realizing that from the viewpoint of the health of the community we must care for the child and we shall then have less difficulty in adjusting the illnesses of the man. Not so many years since Jacobi called the attention of the medical profession to the importance of the science of pediatrics, insisting that it was an entity and required special study. The rule has been to consider the diseases of childhood as a small portion of general medicine, but many of the affections of adult life can be better understood if a careful study is made of the diseases of children.

Some of Doctor Griffith's excellent papers have appeared in the *NEW YORK MEDICAL JOURNAL*. He now presents a two volume work which should be of great assistance on the disease of children. Practically all of the diseases of childhood are described in a readable and extremely direct fashion. More emphasis is given to the functional, mental and nervous disturbances than is usually given in textbooks on this subject. In a measure medical men realize that the mind of the child is not the same as that of an adult. However, it seems as though more emphasis could be given to this subject. The criticism may be made that when a physician is called to see a child suffering from some acute infection he is interested in taking care of the important disease which is manifested at the time. This may all be very true, but the child can always handle his disease better when his mind is free, and a better understanding of the child's mental processes will enable the practitioner to get better results than when this factor is neglected. The family physician who has entrusted to his care the health and wellbeing of a child had this responsibility constantly before him. The schools are supposed to care for the child's mind, but they have always failed. The child's mental hygiene, which is much more essential than the hygiene of its body, is neglected. We trust that the time will come when the importance of this subject will be appreciated by pediatricists and medical men generally. As yet it is not a separate science; it never should be, for by making it so we will lose much efficiency in the handling of children and their diseases. If we could straighten out the kinks which are found in the minds of the majority of children we would prevent many of the diseases which Doctor Griffith has described so well.

It would also seem that more heed should be given to the various so-called minor endocrine disturbances. Many grave disorders could be prevented if some of the signs displayed by these disorders were noted

and closely watched during childhood. The science of endocrinology is still in its infancy, but the greatest benefits will come from observing these disorders in children.

We do not wish to criticize the work which Doctor Griffith has done, for these sins of omission are not on his part alone. The condition is general. On the whole it is an excellent and very complete work.

AFTERTREATMENT.

The Aftertreatment of Surgical Patients. By WILLARD BARTLETT, A.M., M.D., F.A.C.S., and Collaborators. In Two Volumes. Illustrated. St. Louis: C. V. Mosby Company, 1920. Pp. ix-1066.

The title Aftertreatment of Surgical Patients may be a bit confusing. It seems as though a more comprehensive title should be given to this work in view of the tremendous importance of the material which is presented. In the consideration of the so-called aftertreatment the entire picture of the patient's illness is considered, and frequently it is necessary to consider the handling of the patient prior to any surgical procedure. It has come to be conceded more and more that the two principal considerations in surgical conditions are the diagnosis and the aftertreatment of the patient.

The recovery of the patient in most instances, where severe surgical measures have been used depends on the treatment and instruction which the patient receives. Bartlett has realized the importance of this and he has considered all of the apparently minor discomforts of the patient as well as the apparently minor considerations which are of vital importance for his future wellbeing. He has divided his work into two principal parts, first, the general consideration, and second, the procedures which should be applied after operation. He has not taken up some of the operations which are infrequently encountered, as it is conceded that when an extremely rare operation is performed it will be done by a specialist who understands what steps should be taken for the welfare of the patient following operations.

William J. Mayo, Charles H. Mayo, George W. Crile, Stuart McGuire, and Joseph Bloodgood have contributed special chapters on certain procedures. The commonly met with distressing disturbances of sleeplessness, hiccough, headache, and backache, have been handled in a very efficient and pleasing manner by Dr. O. F. McKittrick. He has also contributed other sections to the work. The patient is taken from anesthesia through to complete recovery. Some useful hints are given for the handling of patients suffering from postoperative psychosis. These are often troublesome and tax the ingenuity of the physician. The object is to control the patient and yet not interfere with healing or cause any unnecessary trauma.

When it is considered by Da Costa that following laparotomies four patients out of 1,000 will become insane the importance of the mental status of the patient is seen. Minor mental disturbances follow more frequently. In view of these facts it is clear that the subject is too important to be dismissed

in a few words at the end of a chapter under the heading of possible complications. The space which this subject has been given is fully justified. It is emphasized that fear and worry are the two principal causes leading to a mental disturbance. It would be well for the surgeon or the physician to give more consideration to the mental attitude of the patient whenever it is possible or when anxiety or fear seems to be present. Useful suggestions for feeding and general body care are also given. The physician will find innumerable hints of practical importance throughout the entire two volumes of this well written work.

AN ICELANDIC TALE.

The Outlaw. By MAURICE HEWLETT, Author of *The Forest Lovers*, etc. New York: Dodd, Mead & Co., 1920. Pp. iii-254.

The slight fabric of modern narrative with which Maurice Hewlett has woven an old Icelandic tale into a story for today sacrifices but little of the robustness and simplicity which constitute the charm of the original. The directness, candor, and brevity of style have the same cleansing effect upon our overcluttered ways of thought and expression as would a sojourn in the bracing atmosphere and sternness of surrounding of Iceland itself. There one might also come very close to a humanity which bears an underlying grace of reality, a sincerity in its experience with birth, marriage, death, with love in its inmost essence, which would perhaps strike us more sensitively and deeply than much that passes for reality in our careless and yet over-cautious way of looking upon life.

Icelandic literature is not harsh nor does this story report it as such; it is too close to actual experience with the realities for that. True, it had to be wrested under stern conditions of environment. It had grown, too, in the atmosphere of a mythical religion which itself had arisen out of just such hardness but this was suffused by a warmth of color and imagery which belongs also to a genuine and fearless type of humanity that faced its experiences candidly. Just such a blending distinguishes the old literature and has been reproduced by Hewlett.

Here is an example of the action and the style of its telling of these men of old. Upon Gisli fell the task of saving his sister from dishonor. It was not justly his task but that of the father Thorbiorn the Sour, or his idle, vain elder son. Yet it was thrust upon Gisli, who raised no useless objection, unpleasant as was the commission, neither did he mean to kill. But the affair went thus: "Gisli then said, 'Do you undertake to keep away?' 'I do not,' said Kolbiorn. Gisli's blood boiled over. His hammer was in his hand. He whirled it about and struck Kolbiorn on the temple. He fell sideways, and lay with his head over the river bank. When they lifted him he was dead."

The characterization is as direct and straightforward. Indeed ancient Icelandic literature excels in this, the few incisive strokes with which a living character, man, woman, or child like Gudrid, Gisli's loyal and sagacious ward, stands vividly face to face with the reader. Gisli the Outlaw needs no

description, no labored explanation of his position as bearer of all the family's difficult burdens at whatever cost to himself. The reader is simply with him through page after page, understanding but neither condoning the injustice done him nor pitying him. The former feels, as the hero does, merely the inexorableness of reality which cannot spare even the industrious, sober man, genuinely in earnest with life. Fate, Gisli calls the inevitableness of the tasks thrust upon him and the evil results which he cannot escape. From the point of view of some centuries later we can watch the origin and building up of "fate" out of his own too patient masochistic type of character, out of the defensive irascibility of his father's disposition which fed itself in vanity and excuse of the older son, out of the extravagant narcissism of that older son who was always considered to be of great parts and abilities but whose deeds could never be discovered. It comes, too, from the hot temper of the sister who hated this brother because of his early interference in her behalf but whose hatred was only a cover for a deeper fixed love. Because of this, when she had accomplished his death she could only stand "very red" with "her blue eyes hot with tears . . . crisping and uncrisping her hands . . . in great distress." And for the hated brother she separates herself from her husband—the man who had done the deed at her instigation—from children and from home. And the quiet deeply loving wife of Gisli has the truest and firmest grasp of the complexities of life and is most ready to meet them all. It is she who realizes that too great a love for others without a first well balanced love for one's own self serves neither those others nor does it give security of opportunity to the service which one might otherwise more helpfully render.

Symbolism is by no means wanting though the story is told so directly. This furnishes convincing proof how indispensably ingrained symbolism is in thought and action, even where life is particularly clearcut and direct. The story is replete with a figurativeness which appears vividly in all the setting and all the details of persons and events but it develops chiefly with the history of a power symbol, more fundamentally still it might be said a phallic power symbol, in the form of a magic sword. This is of marvellous power and strength for its rightful owner but wrongfully kept, turns against its possessor. It passes on from father to son and from hand to hand revealing the mischief it can work because unfairly possessed and used amid all the bitterness, injustice, and misunderstandings which the drawings of the various characters reveal. Gisli the hero is no more exempt from these mistakes and their consequences than is a worthy member of any society who is bound by the misunderstandings and passions which here as elsewhere belong to unconscious contradictions. Then as now these are discovered to overthrow the appearances of character and circumstance as viewed on the conscious surface alone. So it is the power of this magic sword Grayflanks, become a spear, which at last works fell destruction upon the rocks to the Outlaw's enemies and leaves Gisli himself slain.

A LITERARY ORCHID.

The London Venture. By MICHAEL ARLEN. With Drawings by MICHEL SEVIER. New York: Dodd, Mead & Co., 1920. Pp. i-188.

Michael Arlen is a young man who is engaging, irrelevant, and discreet in his indiscretions and who has, in addition, been fortunate enough to find an appreciative illustrator and an impeccable publisher. The venture is a beautiful piece of bookmaking, though it happens not to be, as the publisher's reviewer supposes, "a highly amusing skit of London society as seen by a foreigner who has almost become an Englishman." It is instead the attempt of an Armenian weighty with the heritage of the East "to strike the literary mean" between his Eastern mind and Western understanding, to infuse the faded wisdom of the Orient with the vitality of Western youth. The result is a series of loosely strung essays recreating moments, persons, places—a spring morning, a walk in the country after a summer shower, the arresting personality of Nicolay, who "six hundred years ago . . . might have been an alchemist living in a three storied house in Prague, exiled from his native land of Russia for criticizing too openly the size of the Czarina's ears," and permeating the entire book the spirit of that "gracefully licentious" woman, Shelderdene. Gracefulness is indeed the keynote of the volume, the gracefulness of a young man who is too selfconscious to be bizarre and to inbred to be realistic. But the East and the West are far apart and never farther than in this instance. There is a great deal that is lovely in Mr. Arlen's writing, but on the whole it is distinctly a hothouse product, a literary orchid.

BARBUSSE AFTER THE WAR.

Light. By HENRI BARBUSSE. New York: E. P. Dutton & Co., 1919. Pp. v-309.

Light, like Barbusse's great book *Under Fire*, is a novel of the war. Simon Paullin is a clerk in a factory, living the monotonous life of a French provincial town. In a brief burst of emotional splendor he falls in love and marries, but soon the romance fades and the gray curtains of the commonplace fold him in again. "We are a pitiful lot," Barbusse says for his hero, "and everywhere about us—in our movements, within our walls and from hour to hour, there is a stifling mediocrity. Fate's face is gray." When the war breaks out Simon is drafted, along with others of his fellow townsmen, and then follow long descriptions of the days of horror in the trenches. Simon is finally wounded and invalidated home, and now he begins to understand the conditions of economic injustice and the factors which make for war. He has lost "the illusion which distorts and conceals, that fervor, that sort of blind and unreasoning bravery which tosses you from one hour to the next, and from day to day." With the idea of giving extra good measure, Barbusse has his hero at the same time realize that he cares for his wife in spite of her faded beauty, and his theories of social revolt are capped with his discovery of a different sort of love.

The ending of the war robbed more than one writer of his theme and more than one, protestator of the urgency of his message. Barbusse's message,

of course, is as vital as ever now that we are back at the old game of building a bigger navy, and there is talk about the next war. Yet in the world of art there is danger attached to too much insistence; repetition is its own penalty, and *Light* does not sustain the exalted level of *Under Fire*. Its theme embraces all right and justice, and perhaps that is just where the trouble lies. For Barbusse, like H. G. Wells, is so carried away by his ideas that he forgets his novel. In its early chapters *Light* moves smoothly enough, and the little town and its characters are pictured with that stark sympathy of which Barbusse is a master. But using Simon Paullin as his mouthpiece is an unnecessary bit of indirection, and the latter portion of the book is a wilderness of words. *Under Fire* was written under the urge of a great inner compulsion, and its sketchbook quality, its immediacy, and its overwhelming sincerity, along with the rush of tense and poignant narrative, were what raised it above the level of other war books. *Light* is suggestive less of the battlefield than of the library, and its very finish is selfconscious. Let us hope that Barbusse, whose message is so much needed by the world today, will not continue repeating in shriller and shriller accents what he once said so well. The war should not be the only theme for one who has such a penetrating understanding of the inarticulate multitude. Barbusse may well turn his face forward. For him there is—the future.

New Publications Received.

Quatre Leçons sur les Sécrétions Internes. Par E. GLEY, professeur au Collège de France; membre de l'Académie de Médecine. Paris: Librairie J. B. Baillière et Fils, 1920. Pp. ix-145.

The Physiology of Muscular Exercise. By F. A. BAINBRIDGE, M. A., M. D., Cantab, D. Sc., F. R. C. P., F. R. S. Professor of Physiology, University of London. 22 Diagrams. New York: Longmans, Green & Co., 1919. Pp. i-215.

Principles and Practice of Infant Feeding. By JULIUS H. HESS, M. D. Professor and Head of the Department of Pediatrics, University of Illinois College of Medicine. Illustrated. Second Revised Edition. Philadelphia: F. A. Davis Company, 1919. Pp. i-343.

Unhappy Far Off Things. By LORD DUNSANY. Boston: Little, Brown & Co., 1919. Pp. iii-104.

Regional Anesthesia. (Victor Pauchet's Technique.) By B. SHERWOOD-DUNN, M. D. Physician to the Cochon Hospital, Paris. With 224 Figures in the Text. Philadelphia: F. A. Davis Co., 1920. Pp. i-294.

The Three Mulla-Mulgars. By WALTER DE LA MARE. Author of *Peacock Pie*, etc. Illustrated by Dorothy P. Lathrop. New York: Alfred A. Knopf, 1919. Pp. xi-275.

Thirty-Seventh Annual Report of the Provincial Board of Health of Ontario, Canada. By order of the Legislative Assembly of Ontario. Toronto: A. T. Wilgress, 1919. Illustrated. Pp. i-210.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

RECENT GLEANINGS IN DIPHTHERIA PROPHYLAXIS.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

(Continued from page 651.)

In performing this new test for virulent diphtheria organisms, horse serum is used instead of other serums because it is readily obtained in an aseptic manner from the living animal. It is not essential, however, to use fresh serum; old serum and even therapeutic serums may be substituted without prejudice to the results obtained.

The special culture test for true diphtheria bacilli which was devised recently by Costa, Troisier and Dauvergne has been described, and reference made to their finding that with this test, based upon the varying reactions of different, though morphologically similar, germs upon glucose, two groups of organisms may be distinguished, viz., a group virulent in guinea pigs in ninety-two per cent. of cases, and a group devoid of all pathogenic properties both in these animals and in birds.

By substituting for glucose, in the constitution of their culture medium, various other sugars, these observers were able to establish detailed biochemical formulas for the two groups of organisms separated by the original glucose test. The bacilli of the first group, forming red colonies on the special medium, are capable, in addition to glucose, of fermenting also maltose and levulose, though devoid of action on saccharose, lactose, and mannite. The bacilli of the second group are, on the other hand, incapable of fermenting any of these sugars. Again, whereas the germs of the first group were found to have the property of causing hemolysis in bouillon-blood preparations within three to seventy-two hours, those of the second group proved to be devoid of all hemolytic power.

Thus it is asserted that the culture test will separate definitely two bacterial forms which are actually distinct except for a certain degree of morphological similarity, viz., the diphtheria bacillus and the false diphtheria organism of the pharynx. As regards cases of suspected diphtheria bacillus infection of the nasal fossæ, conjunctivæ, or skin, the observers above mentioned lay stress on possible confusion of the true diphtheria organism with the *Bacillus cutis commune* of Nicolle. This germ resembles the diphtheria bacillus morphologically much more closely than does the bacillus of Hoffmann. It is polymorphic, often short, but sometimes of medium length or long, with one or both extremities clubbed. It reacts to the gram method like the diphtheria bacillus, often presents a beaded appearance, and may yield an anaerobic growth in Veillon tubes. Its colonies exhibit the same rounded outline as those of the diphtheria bacillus and also show secondary umbilication. From the practical viewpoint, however, it is very different from the

diphtheria germ, being nonvirulent and having little or no hemolytic power. On the author's sugar litmus media it exhibits at least one important difference, viz., although fermenting glucose and levulose, and sometimes also maltose, and being inactive in respect to lactose and mannite, it strongly ferments saccharose, which is not influenced by the diphtheria bacillus.

In the pharynx, Costa, Troisier and Dauvergne found this *Bacillus cutis* only occasionally—in 0.13 per cent. of the persons examined. Its rôle in this situation as a confusing factor in relation to the diphtheria bacillus may therefore be held practically negligible. On the skin and in the conjunctivæ and nasal cavities, on the other hand, it is present so often that careful differentiation from the diphtheria germ is imperative. Such differentiation is readily carried out by means of the author's culture test. Two Petri dishes are used, one containing the usual glucose litmus medium, described in a previous issue, and the other a modified medium in which saccharose has been substituted for the glucose. Both dishes having been inoculated, the comparative bacterial growth in the two is observed.

Colonies which ferment solely the first of the sugars—glucose—are made up of the diphtheria bacillus. If, on the other hand, both sugars are fermented, the germ present is, instead, the *Bacillus cutis commune*. The authors referred to note that when this bacillus is isolated from the conjunctivæ it frequently exhibits the characteristics commonly attributed to the so-called *Bacillus xerosis*, including, in particular, a relative paucity and dry appearance of the bacterial colonies. It seems not unlikely that the striking frequency with which cultures of suspicious nasal discharges elicit a positive laboratory report arises from the fact that this *Bacillus cutis commune* of Nicolle, morphologically in many respects similar to the diphtheria bacillus, is confused with the latter upon microscopic examination.

Applying their culture test in actual clinical diagnosis, Costa, Troisier and Dauvergne have reached the conclusion, from experience in over three thousand cases, that the test may be definitely relied upon for the differentiation of virulent from nonvirulent germs. The bacteriologist, they assert, is thus relieved of the uncertainty and anxiety he may otherwise experience in making the decision, in the case of doubtful looking organisms, as to whether these are actually pathogenic or not. The physician, on the other hand, may now feel quite confident of the accuracy of the laboratory report and use or withhold antitoxin treatment and prophylaxis according to the indications supplied. Due isolation of the carriers of virulent germs, and not of any other persons, is also held to be thus facilitated.

(To be continued.)

Diet Reduction with Retention of Protein to Relieve Glycosuria in Diabetes Mellitus.—R. L. Fenlon (*Boston Medical and Surgical Journal*, February 12, 1920) reports fifteen cases with no deaths and all the patients discharged free from sugar and ketone. The theories underlying the diet reduction method are as follows:

1. By keeping the protein intake of the diet at a necessary level, the tendency to a development of acidosis is decreased as the patient does not have to burn his own body fats.
2. Protein is needed to replace that lost by the wear and tear on the tissues during the metabolic changes of the body. Chittenden's standard is 0.12 grams of nitrogen for each kilogram of body weight. We conclude that this amount of protein, averaging forty to fifty grams daily, is necessary to the body during a diet reduction. The amount of protein is increased because of the altered metabolic changes in diabetes.
3. With the protein intake maintained at a definite level the percentage of carbohydrate in the diet would be relatively decreased. Under treatment preparatory to fasting the protein and fat are both reduced, leaving the carbohydrates relatively high. This is a modified sugar tolerance test on a patient who cannot metabolize sugar properly. By keeping the percentage of sugar low in the food intake the system might be more quickly drained of the excess sugar present in the blood stream.
4. The tolerance of the patient is more easily and quickly determined.
5. There is less complaint of hunger on the part of the patient by this method of reducing diet.
6. The protein in the diet, by maintaining the serum protein in the blood, possibly aids in the nutrition and functioning of the kidney during the diet reduction.

In diet reduction, the first step is the elimination of the fats for one or two days, at the same time maintaining the proteins and carbohydrates each at sixty to 100 grams. Second step: Leaving the proteins as before, halve the carbohydrates each day until the glycosuria is relieved. If the glycosuria still persists when ten grams of carbohydrate are reached continue at ten grams for three days unless sugar free before. If glycosuria is still present at end of three days on ten grams use step three. Third step: If glycosuria is still present add fifty to 100 grams of oatmeal to the diet for two days. Fourth step: If glycosuria persists, repeat the diet used just preceding the oatmeal days, lowering the proteins one third. Keep the patient two days on this diet if necessary. Fifth step: If not aglycosuric starve, giving only fat free broths and water for a two day period. Sixth step: If necessary, revert to the oatmeal diet for two days and again starve. When building up the diet, if starvation has been used, build up the protein first to fifty or sixty grams. Then gradually increase the carbohydrates to the danger point. Lastly add fats, five to ten grams a day in severe cases and twenty-five grams a day in mild cases. If starvation was not used, the protein is already in the diet. In this case increase the carbohydrates five to ten grams daily to danger point. Then add in the severe cases five grams every second or third day. In mild cases increase ten to fifteen or more grams daily. When the carbohydrates reach fifty grams increase fats as stated above.

The following suggestions are made: Avoid discharging a patient with a fat content in the diet over fifteen grams higher than the next highest constituent of the diet. Try to avoid the appearance of sugar in the urine after the patient becomes sugar free, as breaks of this kind seem to sensitize the system to sugar and to decrease the final carbohydrate tolerance. Discharge the patient following the first course of hospital treatment with a diet just sufficient to meet the caloric requirements.

Painless Operations.—P. Lockhart-Mummery (*Practitioner*, February, 1920) advocates local anesthesia strongly and also discusses how to prevent pain and discomfort after an operation. The latter depends greatly on how the operation is performed. Tissues should be separated only by clean cutting with a sharp knife, crushing and tearing must be avoided. The wound must not be stretched open with retractors; large pieces of tissue must not be caught up in artery forceps, the vessel only should be caught if possible; blunt dissection should not be done; everything must be handled lightly, including swabs. He always regards the wound as if it were made of the thinnest and most brittle glass, of which it is a crime to break any part. It should not be washed out, even with water, the stitches should be as few as possible and not tied tighter than is necessary, just approximating the edges. Vessels should be twisted and not ligatured. The least roughness will be paid for by the patient in pain after the anesthetic has passed off. Unless one can operate on these lines, other precautions will be useless or will only partly achieve their object. The anesthetic is extremely important. Postoperative vomiting must be done away with, either by using local anesthesia only, or by giving a general narcotic so that it will not cause sickness. The patient should lie in a comfortable position on a well padded operating table; otherwise he will have pain in his back and legs. The writer claims remarkable results. Since the digestion is not upset there is no need to purge or starve the patient. After an abdominal operation his patients, as a rule, do not miss a meal or have their diet modified. Healing is more rapid. Secondary hemorrhage is less likely to occur, other complications likewise. Old people can be operated upon with greater impunity.

Nasal Drill in the Treatment of Adenoids.—G. H. Hickling (*British Medical Journal*, January 31, 1920) has found that the use of a nasal drill by children suffering from adenoids is of distinct advantage in suitable cases as a means of relieving the symptoms. The drill was carried out weekly by a class of twenty children for a period of six months and the children were encouraged to go through the drill at home under the supervision of their parents. The drill is as follows:

1. In a room with the windows wide open, the children are placed as far apart as possible, standing, and are given each a piece of soft paper as a handkerchief. Then at the command: One, all stand erect—chest out, shoulders erect, etc.; two, hold paper ready spread out in the left hand beneath the nostrils; three, grasp the nose between the eyes leaving the nostrils open, with the elbow at the level of the shoulder; four, blow down the nose,

bowing the head forward and down and at the same time depressing the elbow to the waist line, the top of the nose still being held; five, breathe in. Repeat three, four, and five, rhythmically about ten times and then burn and replace the soiled paper. Next the nose is irrigated by inducing sneezing with a mild nonirritating snuff of menthol and soap which is flicked on the septum just within the nostril. After sneezing, the nose pumping is resumed and then the sneezing and pumping are repeated until there is little or no discharge. Lastly breathing exercises are performed through first one and then the other nostril and finally through both. The importance of nose breathing is emphasized, also the importance of the daily nose toilet.

The local results are chiefly diminution in the discharge and in some instances a decrease in the adenoid growth, though this result is by no means marked. There is, however, a marked improvement in the general condition of the child. The carriage is better, there is less mouth breathing and snoring, the child is less subject to colds, the sleep and appetite improve markedly so that there is an increase in weight, and the speech and hearing are much improved. It is concluded that in cases where operation is inadvisable or where the actual hypertrophy of tissue is small, this procedure is of advantage. Also the suggestion is made that the drill would be of distinct use in postoperative cases, and as a means of preventing the development of the condition in nursery schools and infant schools.

A New Operation for Pyothorax: The Trephine Operation.—A. C. Strachauer (*Minnesota Medicine*, March, 1920) describes the operation of trephining a rib for empyema which was first performed six years ago at the University Hospital in Minneapolis. This operation has the following advantages: 1. Trephining a rib is much more simple than resection. 2. Mutilation, deformity, and spur formation with fixation to the adjoining ribs are avoided. 3. Continuous, even, negative pressure may be maintained preventing pneumothorax and its attendant evils. 4. The negative pressure aids in the expansion of compressed lungs and cavity obliteration. 5. The function of all nonconsolidated lung is conserved. 6. All discharges are collected in the receiving bottle, obviating the necessity of repeated dressings. 7. The suction prevents the accumulation and retention of pus in the pleural sac and the absorption of the contained toxins. 8. The likelihood of introducing secondary infections is less than in open drainage. 9. Provision is made for the antiseptic and solvent action of the Carrel-Dakin irrigations. 10. When the infection has subsided and the pleural sac has been sterilized, a functioning lung capable of filling the thoracic cavity has been preserved.

Treatment of Spasmophilia.—J. Warren Van Derslice (*Illinois Medical Journal*, February, 1920) gives the prophylactic treatment as consisting of maternal nursing, sunlight, and fresh air. The dietetic treatment consists mainly of human milk, or failing this, the early use of eggs and meat juices with cereals, bread, butter and vegetables. Medically, calcium lactate and calcium chloride are the

drugs most frequently used in doses of twenty to thirty grains three times a day; codliver oil with phosphorus and parathyroid extract are also recommended. For the attack it is advised that the alimentary canal be well cleared by a full dose of castor oil followed by bromides and chloral. All food should be stopped and only water given for twenty-four hours. The giving of water, two ounces every two hours by the nasal route, with or without the addition of sodium citrate to each feeding, has given considerable success.

Treatment of Pertussis.—Juan Bacigalupo (*Revista del Instituto Bacteriologico*, Buenos Aires, October, 1919) reports four hundred and ninety-five cases of whooping cough treated by a preparation of sputum heated to 95° C. This was put up in ampules and proved to be sterile and inactive, and given by injection in the usual way. Of these patients 57.47 per cent. were cured, 26.95 per cent. were improved and 12.67 per cent. were unimproved. These figures compare favorably with those obtained by the use of Kraus's antitoxine which is prepared by treating pertussis sputum with ether.

Nonsurgical Treatment of Chronic Otitis Media.—Harrison L. Brehmn (*Southwestern Medicine*, February, 1920) advises hot douches of 1-5000 bichloride of mercury and the avoidance of oils, pastes and powders. Autogenous vaccines, instillations, removal of tonsils and adenoids and straightening nasal deformities are also recommended. Those cases in which the bacillus pyocyaneus was found to be present were most tractable to treatment, while those in which an unclassified slow growing diplococcus was present were the least likely of cure.

Radium Treatment of Occupational Epitheliomatous Lesions in Röntgenologists.—Degrais (*Presse médicale*, January 14, 1920) reports the case of an x ray specialist who contracted dermatitis in two fingers, with complicating hyperkeratosis and epitheliomatous change. Amputation of the fingers had been counselled by two x ray men on account of the epitheliomatous condition and the sharp pain experienced. Under radium treatment, however, the pain disappeared and the skin returned to normal. Such treatment is, therefore, to be recommended in x ray epithelioma. Carbon dioxide snow has also given good results in some instances.

Treatment of Influenza by an Apparently Specific Method.—Francis E. Park (*Medical Record*, January 10, 1920) gives histories and temperature charts in thirty consecutive cases treated by his method with uniform success. He prepares a solution as follows: Dissolve in sixty c.c. of physiological saline solution 1.3 grams each of sodium salicylate and soluble iron phosphate. Filter and sterilize by heat, then add one c.c. of a saturated solution of beechwood creosote in lime water. The dose of this solution is from three to five c.c. repeated in twelve hours if needed. Never more than four injections were needed. The injection is made into a vein with a 26 gauge needle which is preferably attached to an all glass syringe which has the nipple on the side rather than on the middle of the end of the barrel.

Miscellany from Home and Foreign Journals

Varying Symptomatology of Lethargic Encephalitis.—Achard (*Bulletin de l'Académie de médecine*, February 3, 1920) points out that even the fundamental symptoms of this disease, somnolence, is subject to variation. Some patients cannot be awakened by external stimuli. Others wake up when spoken to loudly, answer questions, and go to sleep again. Somnolence may be intermittent. Thus, one patient rose each morning, walked about, made his bed, then slept again for a long period. This condition persisted for some time in spite of return of the temperature to normal and descent of the originally high spinal lymphocytosis to an even standard of ten cells per cubic millimetre. In some cases there is no true sleep but merely a "dazed" condition. The patients partly sit up in bed, with their eyes open, and without the head resting on the pillow. They remain motionless and their limbs, if moved, frequently show a catatonic condition. The open eyes do not appear to see, and fail to move when some object is passed in front of them. The lids close only at long intervals. These patients do not answer questions, do not appear to hear or understand, and seem to be afraid of moving. Two young patients showed this condition temporarily before regaining consciousness. Another patient, a young girl, remained thus for several days, and when finally gotten out of bed, showed a tendency to fall backward. Mental depression is in some instances replaced by a low delirium, even during somnolence. One patient, though asleep, spoke of various episodes in his previous professional career, and at times became restless, moving his arms about and taking his legs out from under the covers. Spoken to loudly, he usually answered, in a weak, poorly articulated, and monotonous voice. Ocular paralyses are frequently lacking, or may be very transitory, slight, and of limited extent. Other cranial nerves may be affected, typically, in the discrete, partial manner emphasized by Widál. The limbs may be involved. One young patient, admitted with a temperature of 40° C. and unable to answer questions, showed a flaccid monoplegia of the left upper limb; his cerebrospinal fluid showed only about ten lymphocytes per cubic millimetre. On the next day his mind was restored, fever had dropped, and the paralysis had disappeared. Spasmodic manifestations may be added to or replace the motor disturbances. Some of the reflexes may be exaggerated and circumscribed myoclonia occur. One patient, in a deep sleep on the day of admission, with myosis, loss of knee jerks, normal cerebrospinal fluid and high temperature, woke up the next morning, but showed myoclonic movements in the shoulder and the left side of the thorax. Sub-sultus tendinum was witnessed in four patients, in a more marked form than is generally seen in typhoid fever, and with extension to the lower extremities. In general, the motor disturbances are varied, disseminated, fragmentary, and mobile. Constitutional manifestations are likewise inconstant. Some patients show a very high temperature,

others no fever. Constitutional symptoms may precede somnolence by a considerable interval. One patient had had high fever—up to 40.5° C.—for ten days, with headache, slight nocturnal delirium, no paralysis, very slight anisocoria, no facial motor involvement, and no somnolence. Two days later, he developed the characteristic somnolence; lumbar puncture yielded normal fluid. At other times, fever may continue after cessation of somnolence. Again, in two patients who had shown a pronounced meningeal reaction, intermittent somnolence was still present two weeks after defervescence. This polymorphic and acyclic character of the symptoms in lethargic encephalitis may be regarded as of some diagnostic importance.

Chemical Composition of the Cerebrospinal Fluid in Lethargic Encephalitis.—Pierre Marie and Mestrezat (*Bulletin de l'Académie de médecine*, February 3, 1920) comment on the diagnostic importance of the question of meningeal reactions in lethargic encephalitis. Although Achard, Netter, and Widál have reported instances of unexpectedly marked evidences of such a reaction in the cerebrospinal fluid, the fact should not be lost sight of that the disease is *not* a meningitis, and that frequently it entails no pronounced meningeal reaction. In six cases Marie found, with the Nageotte counting chamber, thirteen, eight, 10.5, twelve, twenty-six, and twenty-four lymphocytes, respectively, in the cerebrospinal fluid; these figures manifestly imply only a very moderate lymphocytosis. The albumin, measured in two instances with the Sicard tube, was 0.25 and 0.55 gram, and estimated in four instances by the opacity index, was 0.25, 0.55, and 0.65, and 0.14. These figures, although denoting increased albumin, do not approach those obtained in meningitis, and it is well known that an albumin increase may occur independently of any meningitis. In the sixth case detailed chemical studies were made, showing but little change from normal cerebrospinal fluid. Conditions as regards albumin, fibrinogen, chlorides, dry extract, and ash were practically normal, while urea and sugar were definitely increased and acetone present in small amount. Comparison of these results with those obtained in tuberculous meningitis, or different forms of acute meningitis, shows marked discrepancies which are of diagnostic import. In the sixth case of encephalitis the fluid was clear, sugar somewhat increased, and the albumin, chlorides, extract, and ash normal; in meningitis cases, on the other hand, the fluid is usually more or less turbid, albumin greatly increased, chlorides greatly diminished, sugar absent or greatly diminished, extract increased in nontuberculous forms of meningitis, and ash diminished in tuberculous meningitis. On the whole, a moderate meningeal reaction in a patient with encephalomeningeal symptoms does not exclude lethargic encephalitis; if a marked reaction does occur, the clinician should be on his guard not to mistake a true meningitis for lethargic encephalitis—a diagnostic error now being frequently committed.

Histopathology of the Brain and Spinal Cord in Lethargic Encephalitis.—Henrietta A. Calhoun (*Archives of Neurology and Psychiatry*, January, 1920) has come to the conclusion that necropsy findings in cases of epidemic encephalitis are congestion and edema of the brain and meninges. Microscopically, there is an infiltration of the adventitious and perivascular spaces with lymphocytes and plasma cells. These perivascular rings, occurring especially in the nuclei of the brain stem, have been considered almost pathognomonic. In the basal ganglia and the cranial nerve nuclei, the vessels stand out sharply differentiated from the surrounding tissue by the ring of nuclei about a distended vessel lumen. The nuclei in the vessel walls show division forms and an increase in numbers, but there is no evidence of new vessel formation, and epithelioid cells either of glial or vascular origin are rarely seen. The neuroglial nuclei are moderately increased, but in no case is there a record of a double perivascular ring of which the inner circle represents the infiltrating cells and the outer the neuroglial nuclei gathering about the margin of the perivascular spaces.

In the spinal cord there are two forms of homogeneous bodies, one consisting of small, round, deeply staining masses found along the glial septa, in the posterior root zones, and diffusely scattered in the white substance. They have been reported as corpora amylacea or amyloid bodies. The other homogeneous bodies are found in the widened spaces in the ground substance, chiefly of the lateral columns. No organisms were demonstrated in this homogeneous substance. The nerve cell changes are more or less uniform in the brain and spinal cord. There is chromatolysis and an axonal reaction found in the ganglion cells. The early axonal reactions shown by certain cells in the cortex are of special interest in connection with myelitic changes. The cytoplasm may be reticulated, and there are slight variations in the nuclear staining reactions. The small, deeply staining cells scattered throughout the cortex bear no relationship to the nerve cells. In both the brain and spinal cord the ganglion cells show a satellite gliosis about the base of the cell, but in some instances cells are seen either penetrating the nerve cell or within the nerve cell body. The picture is that sometimes seen in fatigue or shock.

Spinal cord involvement was indicated by the loss of the knee jerk and incontinence of urine and feces, other symptoms being masked by the coma. The diffuse nature of the process is shown by the dirty grey color of the cord with indefinite rusty discolorations in the white substance, which were present throughout the entire cord; microscopically the thickening of the neuroglia septa along which there were infiltrations of lymphocytes, plasma cells, and red blood corpuscles, the presence of an exudate in the spaces of the ground substance, congestion and perivascular infiltration, and the presence of areolar plaques and swollen myelin sheaths make a picture typical of an acute diffuse infiltrative myelitis. The ventricular system, including the central canal, showed alterations. The ependymal lining of the fourth ventricle was broken and irregular,

with proliferation of the ependymal glia. The conclusions were as follows:

1. The term lethargic encephalitis is the name of a clinical syndrome caused by lesions of varying types localized in the basal ganglia and the nuclei of the pons and medulla. It is not a disease entity.
2. Included in this syndrome there are cases of epidemic encephalitis, a disease new to this country, whose etiology is unknown, but whose pathology bears a close resemblance to that of African sleeping sickness.
3. The case reported belongs to the new epidemic encephalitis group. The pathology is an acute infiltrative encephalomyelitis, the most marked changes occurring about the blood vessels of the thalamus, the cranial nerve nuclei, the floor of the fourth ventricle and in the white substance of the spinal cord.

Bacteriology and Pathology in Six Cases of Encephalitis Lethargica.—P. F. Morse and E. S. Crump (*Journal of Laboratory and Clinical Medicine*, February, 1920) isolated in pure culture a staphylococcuslike organism from six consecutive cases of encephalitis lethargica. Subdural injections of this organism, and injections of a filtered culture, produced a fatal lethargic state in rabbits. The organism was recovered in pure culture from the brain of the animal receiving the subdural injection. A control animal injected with the bouillon showed no symptoms. The authors state that the effect of the injection of the filtered culture is probably due to a poison (toxin?) which is generated by the growth of the organism, rather than by a filterable virus. The chief pathological findings were a low grade leptomeningitis with edema and moderate round celled infiltration, and a perivascular infiltration of the vessels of the white matter, especially of the caudate and lenticulate nuclei, optic thalamus, pons, medulla, and posterior horns of the cord with resulting edema and miliary hemorrhages of surrounding parts.

The Winnipeg Epidemic of Encephalitis Lethargica.—William Boyd (*Canadian Medical Association Journal*, February, 1920) discusses at some length the symptoms of this disease and the current hypotheses concerning its nature. The Winnipeg epidemic of sixty cases with twenty-three deaths corresponded closely with previous epidemics which have been described. The mortality of thirty-eight per cent. was unduly high. The characteristic case, presenting fever, drowsiness, strabismus, ptosis, diplopia, tinnitus, some degree of facial weakness, constipation, and perhaps some urinary and spinal fluid changes, is readily recognized. The fleeting nature of the disturbances is typical. Sensory disturbances were present in a number of cases. Some of the cases were atypical, suggesting tumor, apoplexy, and other brain lesions. The brain was examined in eighteen cases, and showed marked congestion, perivascular infiltration with lymphocytes and plasma cells, and occasionally hemorrhages. Degeneration of the nerve cells was variable. The changes were most marked in the midbrain. Marked lesions were also found in the kidneys. The writer calls attention to the fact that a remarkable epidemic of hiccough occurred in the city at the same time as the outbreak of encephalitis.

Meningeal Reaction in Lethargic Encephalitis.

—C. Achard (*Bulletin de l'Académie de médecine*, January 20, 1920) notes that although the fundamental symptomatic triad of this affection is considered to include somnolence, paralysis of the cranial nerves, especially the oculomotors, and a more or less marked rise in temperature, the cranial nerve manifestations have not infrequently been lacking in the recent epidemic in the Paris district. In only two out of four cases recently seen by the author were these manifestations present. One case was that of a woman aged fifty years, with temperature exceeding 40° C., in whom incipient facial paralysis and lagophthalmos developed one day before death. The other instance was in a man aged twenty-two, likewise presenting slight facial paresis of a peripheral type. Although absence of evidences of meningeal reaction in the cerebrospinal fluid has been emphasized as a diagnostic indication of the disease, two of the author's patients showed a marked lymphocytosis in the cerebrospinal fluid. The number of lymphocytes was particularly large soon after the onset of the disease, and then gradually diminished in the course of the succeeding week or two. The absence of any considerable rise of the albumin in the cerebrospinal fluid in these patients contrasted sharply with the marked increase in cells. A lymphocytic meningeal reaction thus neither excludes lethargic encephalitis nor definitely points to tuberculous meningitis. The presence of the lymphocytosis shows that encephalitis may, in these cases, be supplemented by a non-suppurative meningeal reaction similar to that frequently taking place in mumps and sometimes in typhoid fever and other acute infections. The prognosis, from the meningeal view, is, of course, far better than in acute forms of meningitis associated with a polynuclear cell reaction. Achard believes in some relationship of lethargic encephalitis to influenza: whether the same virus or two different viruses are responsible is, however, an obscure problem.

Epidemic Lethargic Encephalitis in Lille.—

Combemale and E. Dubot (*Bulletin de l'Académie de médecine*, January 20, 1920) report five rather recent cases of lethargic encephalitis from their hospital services in Lille. In one case, that of a man aged thirty-five, the onset was marked by speech disturbance, followed by transitory left sided monoparesis, general torpor, a temperature of 38° to 38.8° C., and bulbar symptoms consisting of persistent vomiting and hiccup, salivation, bradycardia, followed in a few days by tachyarrhythmia, with a return to the normal rate later and right sided ocular symptoms suggesting disorder of the bulbar sympathetic centre—viz.: enophthalmos, narrowing of the palpebral fissure, and myosis. In a woman aged thirty-four there occurred vomiting, sore throat, dysphagia, herpes, and later progressive apathy, pain in the neck, and diplopia. Two weeks after the onset she was somnolent, and exhibited right sided facial paralysis and a temperature of 37.8° C. In one of the author's cases there was obstinate constipation, with loss of weight, low blood pressure, anemia, and polynuclear leucocytosis. In two cases retention of

urine was followed by hematuria persisting for one week. There was slight exaggeration of the tendon reflexes, but no true contracture nor Kernig sign. Lumbar puncture usually showed slight hypertension; in one instance pronounced hypertension at the first puncture. There was moderate cerebrospinal lymphocytosis in two cases. In a sixth case reported to the authors by Breton and Ruysen, that of a man aged thirty years, the disorder began with vomiting, which continued for thirty-six hours. Lethargy appeared three days later; there was paresis of the right oculomotor, and later a general tremor suggesting paralysis agitans. The temperature remained about 38° C. The cerebrospinal fluid was negative. Two weeks later the patient showed slight improvement; somnolence persisted, with slight mental confusion. No contact relationship between the several cases could be made out, nor any etiological factor discerned.

Cell Content of the Cerebrospinal Fluid in Lethargic Encephalitis.—

Netter (*Bulletin de l'Académie de médecine*, February 3, 1920) holds that in the later stages of lethargic encephalitis the number of lymphocytes in the cerebrospinal fluid is low or nil. This point permits of excluding tuberculous meningitis, with which the disease is most apt to be confounded. Cases recently studied showed that at the beginning of the disease the number of lymphocytes may be rather high. In the succeeding few days it may, after starting low, reach a high figure, e. g., 118.4 per cubic millimetre in one instance, five days after the beginning of somnolence. Reductions in the number after an initial rise are not final; the number may rise again later. The usual early diminution from an initial lymphocytosis is of service in differentiating the condition from meningitis. Regarding the question whether lymphocytosis in lethargic encephalitis is due to a meningeal reaction, Netter believes that this lymphocytosis is an expression of an inflammatory reaction which might well spare the cortex but involve changes in the gray matter surrounding the ventricles. In one case distinct lesions of the ependyma were found in cross sections. The point chiefly to be emphasized, however, is that a rather marked lymphocytosis does not exclude lethargic encephalitis.

Lethargic Encephalitis in Tangiers.—P. Remlinger (*Bulletin de l'Académie de médecine*, February 3, 1920) reports two cases from Tangiers. The first was that of a Spanish girl aged twenty-four, whose illness began with vague malaise, lassitude, and loss of appetite. Soon after there appeared a paralysis of the right facial nerve and a few days later, oculomotor paralysis on the same side. Constitutional symptoms followed, with vomiting and diarrhea, suggesting a typhoid infection. Suddenly, one morning, deep sleep supervened. The facial paralysis persisted but the oculomotor paralysis had already disappeared. The pupils reacted poorly to light and accommodation. The limbs showed no paralysis, but the forearm was rather strongly contracted against the arm, and the leg was in slight contracture in flexion toward the thigh. These contractures could readily be overcome. Sensitiveness to pinpricks was preserved and the tendon reflexes were slightly exaggerated; Babinski negative. Con-

stipation followed the diarrhea. Urine was generally passed involuntarily. Lumbar puncture yielded normal fluid. Ultimately, somnolence was partly relieved, but hypoglossal paralysis appeared. The second case was that of a lady aged fifty-two years who, shortly after nursing several cases of influenza, developed slight cough and lassitude. Next morning she was found unconscious at the foot of the bed, surrounded by vomitus. On the following day she was in a somnolent state, but could talk fairly clearly when awakened. The pupils reacted poorly. The temperature was 38.5° C. No paralysis, contracture, tremor, Kernig, nor Babinski. Cutaneous and tendon reflexes completely abolished. The initial vomiting did not recur. Involuntary micturition occasionally took place. Both cases occurred in conjunction with an epidemic of mild influenza of rather nervous type in Tangiers, during relatively cold weather. No such cases had, however, been seen in this locality in conjunction with the major influenza epidemic of 1918-19.

A Psychological Theory of the Cause of Epilepsy.—Chester A. Marsh (*American Journal of the Medical Sciences*, March, 1920) concludes that we must look upon epilepsy as an abnormal muscular reaction to strong emotional states. It is an abnormal expression because such muscular activity does not gain the end for which the emotional state was generated. It is unnatural since its effort is undirected. The epileptic, because of his peculiar makeup, cannot avoid the dangers of too great stress as the normal man meets it, but, by an emotional drive that cannot be readily checked, labors on to mental exhaustion in unconsciousness. This is not deep enough to involve the motor or life centres of the brain, so a convulsion takes place. Viewing epilepsy in this light, the author thinks that we are now able to institute more rational methods of treatment than have been found in surgical procedure and in empirical therapy.

Primary Hydatid Disease of the Brain.—N. B. B. Fleming and G. W. Bury (*Lancet*, December 27, 1919) report a case in a young British soldier who first presented such indefinite symptoms that he was considered a neurasthenic. Later he showed a weakness in right arm and leg, loss of memory and inability to read and write, occipital headache, and finally vomiting. The eye grounds eventually showed a papilledema and congestion of the veins with hemorrhages. There was a right complete homonymous hemianopia, the pupils were unequal, the left being smaller than the right, and there was a fine lateral nystagmus which later was replaced by a left vestibular nystagmus. Tinnitus was present in the left ear. The palate moved with a slight drop on the right and there was a slight weakness of the right side of the tongue. The abnormal reflexes were on the right side only. Abdominals and cremasters were absent, deep reflexes exaggerated, ankle clonus present.

There was no abnormality connected with the lumbar puncture but as the choking of the disc became more pronounced and the vomiting became serious, the diagnosis of cerebral tumor was considered certain and a left subtemporal decompression was done. Very early the breathing ceased

but the operation was continued with artificial respiration. Aspiration of the left ventricle revealed fluid under great pressure. Many methods to restore spontaneous respiration were now tried without success though the general condition of the man remained excellent. Finally a second operation over some shadows in the right frontal region, revealed by x ray, was performed but at the end of this operation the heart failed, after continuing for four and a half hours from the time that normal respiration had ceased. Postmortem showed a large unilocular cyst the size of a large orange apparently free in the left ventricle. The fluid contained hooklets and solices, proving it to be due to *tænia echinococcus*.

Methodical Examination of the Pupils.—Marc Landolt (*American Journal of Ophthalmology*, February, 1920) presents a method for making exact observations of the pupil under definite conditions in its routine examination, the results to be noted in the form of curves. Any improvement in our methods of examination may be of value. The more precise the procedure, the more trustworthy will be the results obtained and the greater their value in clinical work. In a dark room three lights of known intensity and fixed distance are thrown, one after another, into the eyes. In each of these illuminations three different measurements of the pupil could be obtained, according to whether one eye was covered or not, and when the eyes converged. In practice the third, and often the first, reading was ignored for minimum light, the three taken for medium light, and the only measurement in intense light was when the eyes were open and parallel. Beside the physiological reactions, the reactions to different collyria can be studied by this method.

The Effects of Gunshot Wounds of the Head.—Charles H. Frazier and Samuel D. Ingham (*Archives of Neurology and Psychiatry*, January, 1920) present a report based on observations in a series of 200 head wounds, in which they found the following factors operative in causing the late general symptoms: 1. Loss of cerebral tissue, 2, injury to the brain without destruction of tissue; 3, cranial defects; 4, cicatrices, and 5, psychoneuroses. As to the desirability of repairing cranial defects, the following conditions were considered as contraindications for the operation: 1, for the repair of small defects; 2, for the repair of defects in which the brain is adequately protected by a dense cicatrix and there is no protrusion when the patient stoops; 3, for the treatment of cerebral hernia; 4, for the relief of epilepsy except under special conditions noted; 5, when there are any grounds for suspecting an abscess or when there are foreign bodies which may require removal. The operation is indicated under the following conditions: 1, For cosmetic reasons, especially when the cranial lesion is below the hair line; 2, in certain selected cases of epilepsy; 3, in the presence of a large defect when the brain is exposed to trauma; 4, when the patient is apprehensive because of the defect and dreads the possibility of a direct blow upon the uncovered cortex; 5, in a few cases, where the symptoms are wholly subjective, operation combined with the influence of suggestion, may relieve the neurosis.

Proceedings of National and Local Societies

AMERICAN LARYNGOLOGICAL SOCIETY.

Forty-first Annual Meeting Held in Atlantic City, N. J., June 16, 17 and 18, 1919.

The President, Dr. CORNELIUS G. COAKLEY, of New York, in the Chair.

(Continued from page 659)

Nausea as a Nasal Reflex.—Dr. GREENFIELD SLUDER, of St. Louis, said that his interest in this phenomenon began ten years ago, when he injected the nasal (sphenopalatine) Meckel's ganglion with plain ninety-five per cent. alcohol. It was not uncommon then to produce nausea by that injection. He had seen a case in which the patient was nauseated instantly by the injection and vomited for six days, intermittently. He had seen this phenomenon also follow the postethmoidal-sphenoidal operation. Since carbolic acid had been added to the alcohol injection, nausea had been much less frequent, but still sometimes occurred. Frequently, in the severe pain produced by any cause, nausea and vomiting occurred. Anything which would stop the pain under these conditions would stop the nausea. So on many occasions a severe nasal ganglion neuralgia had been accompanied by nausea which ceased with the cessation of the pain by anesthetizing the ganglion. Such cases had been quite infrequent in Doctor Sluder's experience; but within the past year he had had a number where there was no pain, although the nausea was severe. In one case of severe nasal neuralgia, many times pain was absent, although a purposeless vomiting had continued for twelve hours, and was stopped in five minutes by the application of one drop of ninety per cent. cocaine to the nasal ganglion district. This had been repeated many times in the patient. In another case, one of hyperplastic nonsuppurative sphenoidal headache, marked nausea without headache was sometimes manifest. Application of one drop of ninety per cent. cocaine solution to the floor of the sphenoidal cell, stopped it.

These observations indicated that the power of making nausea reflex from the nasal ganglion or the Vidian trunk was independent of any pain complement. They suggested, however, that in whatever way the reflex was made it was probably not unrelated to that which made the pain, inasmuch as it was relieved by cocaine locally applied, just as the pain reflex was stopped. Overdosing with cocaine made nausea return in these cases.

Discussion.—Dr. HARMON SMITH, of New York, reported a case of nausea as a nasal reflex similar to the one reported by Doctor Sluder which came under his observation three years ago.

Dr. EMIL MAYER, of New York, said that in association with dysmenorrhea which he had relieved frequently by intranasal treatment, there was also this question of vomiting, which he had put into the category, as Doctor Sluder had said, of being associated with the pain, but nevertheless, the relief from the nausea was just as permanent and just as quick as the relief from the pain.

Colonel CHARLES W. RICHARDSON, of Washington, presented some of the remarkable results that had been attained under his direction in the hospital at Cape May, in the reconstruction work of soldiers who had become deaf as a result of war injuries. Three young soldiers were presented who had been taught lip reading under the auspices of the government. These young men were totally deaf, and their ability to converse and understand by means of lip reading was of extraordinary interest. Colonel Richardson said that the treatment had been through the individual instructive method, intensive in its character, the patients having from one to three or four half hour periods each day as long as they could accomplish results without fatigue. They had practised among themselves, and with the use of the mirror. In other words, the object had been to keep these patients in a complete and continuous atmosphere of speech reading, so that the new line of transmission of visual conception of sound waves might be conveyed by the visual track to the auditory center instead of by the old method through sound waves conveyed through the auditory track. In order to create and maintain this at its highest degree of perfection it was necessary to have intensive work.

Streptococcus Hemolyticus Carriers.—Lieutenant Colonel JOSEPH H. BRYAN, M. C., of Washington, D. C., in presenting the subject in its clinical aspects, said that the rôle the tonsil played in harboring infectious organisms had long been known, but its importance as a disseminator of disease had only been recognized recently or at least appreciated. As a carrier of the diphtheritic bacilli it had been demonstrated that it had a very decided influence on the individual's social and economic value, as far as the public health was concerned. But by its recognition as a carrier of the streptococcus as a secondary invader, its dangerous rôle had been greatly increased. It needed only a large assembling of men from all walks of life in the camps all over the country when the new army was being mobilized in 1917, for various acute infectious diseases to develop, especially scarlet fever and measles. It was the latter which more extensively prevailed, and very frequently the sequelæ, laryngitis, bronchitis and pneumonia with empyema, followed. The results were so serious as to cause great concern to the medical officers of the army, and alarm as far as the general public was concerned.

The streptococcus that was the greatest factor in producing these serious complications, was that known as the hemolyticus, an organism producing a lysis of the red blood corpuscles. The infection was secondary in character, and was ascending or descending; in the former, sinusitis, otitis media and mastoiditis; and in the latter, laryngitis, bronchitis, pneumonia, and frequently empyema resulting. No doubt, many of these men entered the army from civil life as carriers. Levy and Alexander, in an examination of 489 new recruits from

various sections of the country, found 14.8 per cent. carriers of the streptococcus hemolyticus.

These findings are interesting and very instructive when compared with their further investigation made on troops after six months' service, all being apparently healthy men. Of ninety-five men from one company examined, seventy-nine, or 83.2 per cent., were carriers of streptococcus hemolyticus, 64.3 per cent. being heavily infected. The inference is that this increase in the disease was acquired in hospital from the original carriers. To determine the evidence of streptococcus carriers in all patients immediately on their admission to the hospital would have been interesting, but this was not possible. The probabilities were that many of these men entering the hospital for other than throat and nose conditions were carriers and were only discovered after an indefinite stay. The isolation of all carriers was strictly carried out, no one from outside was permitted to enter this ward save the medical officers, nurses and corps men assigned to the care of these cases. Clinically these patients presented the usual variety of throat and nose disorders found in the average clinic. The tonsils were either hypertrophied with follicular degeneration, small and degenerated, or submerged.

The patients were divided into five groups for treatment and observation. Group I received no treatment, Group II received a hot alcohol gargle every four hours during the day, Group III received a hot Dobell's solution gargle every four hours during the day, Group IV received an application of a five per cent. solution of dichloramine-T in chlorocane to the face of the tonsil every four hours daily, Group V received an application of a twenty-five per cent. solution of nitrate of silver every four hours. These patients were all discharged after two successive negative cultures were obtained on separate days. That obtained from a twenty-five per cent. solution of silver nitrate gave the best results in that the stay in the ward before the two successive negative cultures were obtained was 8.8 days.

Postoperative findings in a series of twenty cases showed pure streptococcus hemolyticus from the crypts of the excised tonsils in eighteen cases, or ninety per cent., negative in two cases, or ten per cent. Adenoids were found in three of these cases and were positive in one case, or thirty-three and one third per cent., and negative in sixty-six and two thirds per cent. Of these twenty cases, six, or thirty per cent., did not give positive culture after operation. The remaining fourteen showed positive culture from the fossæ, and they were treated daily with a local application of a ten per cent. solution of silver nitrate. These throats became negative in 10.7 days after operation.

The utility of local treatment in attempting to eradicate the streptococcus hemolyticus from the tonsils was demonstrated by the foregoing statements. While it might be possible to sterilize the surface of the tonsil and some of the crypts, there would nevertheless remain a number of these crypts that were inaccessible to any chemical means of disinfection. Granting that all the crypts were accessible there still remained the possibility of still further disease in the deeper and more inaccessible

parts of the gland. It was probable within the experience of all who had enucleated many tonsils to find on sectioning large or even multiple abscesses which gave no evidence of their presence.

The Bacteriology of Throat Carriers of Streptococcus Hemolyticus.—Lieutenant Colonel HENRY J. NICHOLS, M. C., said that in hemolytic streptococcus infections, the carrier problem was difficult. No virulence test or differentiation of groups was available, and the number of apparent carriers might be very large. In a recent survey of attendants and patients at the Walter Reed Hospital, Simmons found the weekly carrier rate in March and April to be between fifty and ninety per cent., with no cases of streptococcus pneumonia. By analogy and experience we were forced to believe that some of these organisms found in carriers were pathogenic and that others were practically saprophytes, but until we were able to differentiate we were forced to consider them all as potentially dangerous.

The term streptococcus hemolyticus had been recently coined and in itself did not stand for a definite biological species. It meant simply hemolyzing streptococci, of which there were at least two kinds, human and bovine. For clinical purposes, however, it was synonymous with the older term *Streptococcus pyogenes*, which culturally forms a single species. In a series of ten cases of severe streptococcus infection compared with ten cases of severe pneumococcus infection, at the Walter Reed Hospital, no difference could be seen in the hemoglobin estimations; both series showed a secondary anemia averaging about seventy per cent. Like pigment formation in certain bacteria, the property of hemolysis in streptococci seemed to be a metabolic activity that had no clinical equivalent. The detection of carriers of streptococcus hemolyticus was fairly simple and resolved itself into a question of obtaining suitable material from the patient and of making a suitable examination in the laboratory. The crypts of the tonsils were the most frequent habitat of hemolytic streptococci.

The evidence for his conception was as follows: 1. Cultures from the surfaces of the tonsils were positive more frequently and more strongly than cultures from any other area of the nasopharynx. 2. Crypt cultures *in vivo* were positive in a higher percentage of cases than surface cultures. 3. Crypt cultures of excised tonsils were positive in a high percentage. 4. Excision of the tonsil was the surest way of curing carriers. Under these circumstances it was evident that cultures of the tonsils were the most reliable source of material. In a series of fifty normal cases examined at the Walter Reed Hospital, twenty-eight per cent. were positive with the ordinary throat cultures, while fifty per cent. were positive by crypt cultures, an error of twenty-two per cent. in the ordinary examination. A proper tonsil culture could be taken only with due care as to exposure and instruments, and was preferably made with the help of a laryngologist, although a light massage of the tonsil with the end of the swab sufficed to bring out crypt contents in most cases. Streptococci in such material were not very delicate and withstood some drying and

change of temperature, but of course should be cultured with reasonable promptness. The standard culture media for the first inoculation was blood agar.

Milk could, of course, spread hemolytic streptococci, but the bovine types were of no clinical significance, and milk was dangerous only if it had been contaminated by human strains. This differentiation might rule out a few cases of bovine strain carriers. By analogy, with the pneumococci the most promising field was that of differentiation by agglutination. As was well known in the case of the pneumococci, the separation of type had been of great value in diagnosis, prognosis, prevention and treatment by focusing attention on certain groups which were more important than the ordinary pneumococci found in the mouth.

Recurring Calculus of the Tonsil.—Dr. HENRY L. SWAIN, of New Haven, Conn., presented a brief report of an interesting instance of recurrence of calculus formation in the same tonsil. Four times masses similar in size and shape had been removed from the right tonsil. Doctor Swain found the stones on two occasions and exhibited the specimens, the latest example having been removed in July of last year, the patient at that time being seventy-one years of age. Her first known performance took place in 1890 or thereabouts; the second in 1904, which was the first time Doctor Swain had seen her; the third in 1910, while in a hospital to have gallstones removed, and the last time, again by Doctor Swain, in July, 1918. The first specimen was one inch long by twelve sixteenth inch broad at its largest measurements, irregularly ovoid and made up of three separate portions, tightly fitting together, with smooth facets, as in the case of gallstones. The last mass was slightly smaller all round. An attempt to establish a definitely peculiar lining to the pocket in the long, thin, attenuated tonsil mass which lines the tonsil fossa failed because the patient on each occasion failed to report further.

(To be continued.)

Letters to the Editors.

UNIVERSITY OF CAMBRIDGE DIPLOMA IN RADIOLOGY AND ELECTROLOGY.

MEDICAL SCHOOLS, CAMBRIDGE, ENGLAND,
March 20, 1920.

To the Editors:

I should be grateful if you could find space for the following announcement in an early issue of your journal:

In connection with the courses now running in London at University College and at the Royal Society of Medicine, the committee for the diploma propose to announce to the senate the following dates for the next examination, which will be held at Cambridge. Part I (a and b), Tuesday, July 27, 1920, with practical works and *viva voce* examination on July 28th; Part II (a and b), Thursday, July 29th, with practical work on July 30th. Candidates desiring to take the diploma by thesis next term under regulation 13, should apply to the secre-

tary, Dr. Shillington Scales, Medical Schools, Cambridge, without delay, for the necessary certificate forms.

The committee propose to hold courses of lectures and practical work in physics and in electrolgy during the ensuing long vacation in Cambridge, beginning June 22nd and finishing about the middle of August, and in radiology in the next Michaelmas term, beginning October 12th and finishing in time for the examination at Christmas. The necessary clinical work can be carried out at Addenbrooke's Hospital, Cambridge. The physics course will be given by Doctor Crowther, by arrangement with Professor Sir Ernest Rutherford; the courses in radiology and electrolgy by approximately the same lecturers, all leading workers in these subjects, who have given the courses now running in London. The holding of these courses in Cambridge will, however, be dependent on a sufficient number of students entering for them, and for this reason early application should be made to the secretary, Dr. Shillington Scales. It is hoped in future to hold courses and examination twice a year, the courses in Cambridge alternating with those in London, so that candidates from overseas may have an opportunity of taking the diploma.

F. SHILLINGTON SCALES, M. D., Secretary.

Births, Marriages, and Deaths.

Died.

CARPENTER.—In Linesville, Pa., on Friday, April 9th. Dr. Mead C. Carpenter, aged fifty-six years.

CLARKE.—In Lyndhurst, N. J., on Monday, April 12th. Dr. John William Clarke, aged fifty-three years.

CONNELL.—In New York, N. Y., on Sunday, April 11th. Dr. Edward J. Connell, aged forty-four years.

COOLEY.—In New Britain, Conn., on Friday, April 2nd. Dr. George Pitkin Cooley, aged ninety-one years.

CORNING.—In Londonderry, N. H., on Monday, April 12th. Dr. Peter Winslar Franklin Corning, aged forty-eight years.

CROWE.—In Chicago, Ill., on Monday, April 5th. Dr. Thomas Stanley Crowe, aged fifty-four years.

FULTON.—In Bluffton, Ind., on Friday, April 2nd. Dr. George E. Fulton, aged sixty-five years.

GOLDSTEIN.—In New York, N. Y., on Wednesday, April 14th. Dr. Julius Jerome Goldstein, aged thirty-four years.

HORR.—In Waterford Me., on Thursday, April 8th. Dr. Elizabeth S. Horr, aged eighty-seven years.

KILBY.—In North Attleboro, Mass., on Saturday, April 10th. Dr. Henry Sherman Kilby, aged sixty-eight years.

MARKOE.—In New York, N. Y., on Sunday, April 18th. Dr. James Wright Markoe, aged fifty-eight years.

PARKER.—In Waltham, Mass., on Thursday, April 8th. Dr. Mary Parker, aged forty-eight years.

SAWYER.—In La Jolla, Cal., on Wednesday, March 3rd. Dr. Herbert Carleton Sawyer, of San Francisco, aged sixty-three years.

RUDDICK.—In Boston, Mass., on Friday, April 9th. Dr. William Henderson Ruddick, aged seventy-five years.

SIMMS.—In New York, N. Y., on Sunday, April 11th. Dr. Joseph Simms, aged eighty-six years.

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Original Communications

THE OBLIGATIONS OF MEDICINE IN RELATION TO GENERAL EDUCATION.*

By WILLIAM C. BRAISTED, M. D.,

Washington, D. C.,

Surgeon General, U. S. Navy.

In the old navy a midshipman was defined as a person with no rights and few privileges. Many societies and associations have a feeling akin to this about their president and regard him as a sort of lay figure on which to drape honors but from whom no serious participation in affairs is expected. It is no empty honor and no small privilege to be permitted to address the American Medical Association. I hope no one will think that I am exceeding my rights or straining my privileges in taking for discussion a subject which has been largely entrusted, during the association's long campaign for the education of the public and the improvement of our medical schools, to members having special knowledge and special ability. It is my good fortune to be granted the floor here this evening, and I firmly believe that, while leadership belongs to the few who enjoy peculiar qualifications, intelligent cooperation is the obligation of all; that if the measures concerted in committees are to succeed they must have behind them the force of general approval and of a lively interest in proportion to their importance. I therefore conceive that it is my part to foster by every means in my power a general participation in the educational program which has characterized this association since its incipency.

It is glorious to think that the practical, material benefit which we anticipate from this meeting is only secondarily for ourselves. We want to be more capable in the service we render to our patients rather than to increase either fame or fortune. This is very well as far as it goes, but it is not enough. We must realize afresh at each annual convocation that before being members of the association we are physicians, before physicians citizens, before citizens men. In so far as we neglect the functions of the citizen or forget the obligations created by man's social environment and repudiate every duty not directly connected with private practice, we are recreant to a high trust.

In the recent war the medical men of America

laid aside their practices at no small sacrifice and with no small risk to their future prospects to play the patriot, and so did lawyers, business men, teachers in colleges, scientific investigators, and so on. It was a noble stand to take, but the glory of this spontaneous uncalculating action will be considerably dimmed if, now that the threat of invasion, the foreign menace to our institutions has passed, we relapse into that narrow life pursued by so many who tacitly maintain that because they sustain important private relations to the sick they are absolved from participation in the struggle for the betterment of town, city, county, state, and country, and of the world itself.

In this matter of responsibility outside of mere professional life we all need education, and what more fitting opportunity than this to solicit from you all a holier dedication to your patients' interests by thinking what they need to be told, how they should be guided and how helped when they are not actually suffering from bodily ailments. When we do this we are at the threshold of social and preventive medicine—a medicine of education as well as of prescription and operation.

EDUCATION OF THE PUBLIC IN HEALTH MATTERS.

The education of the general public in matters relating to health has not been entirely overlooked in the United States. A good deal has been done, especially in the last few years, but the sum total is small indeed when considered, on the one hand, in relation to the importance of the subject, and, on the other, to our great territory, huge population, vast resources, multiplied and highly productive forms of energy, and our general advance along all lines. Certainly in many details of health regulation and health promotion we are behind the older nations of Europe, relatively if not absolutely. True, we have an infinity of things to enrich and brighten life which they lack, but these have resulted from a desire for comfort and the reduction of manual labor, and have not grown out of the pursuit of health, which, as a matter of fact, is not always enhanced but may be seriously jeopardized by ease and luxury.

After the dissipation of life incident to all great wars, men invariably turn to the importance of saving life and prolonging it, and health giving measures excite at least a temporary interest. We shall therefore miss a great opportunity if we do not at this time use every endeavor to press home

*President's address before the American Medical Association at the Seventy-first Annual Session, New Orleans, April, 1920.

the great selfevident truths about health and long life as they affect national prosperity and race permanence.

Is there any one who doubts for a moment that the physical integrity of its citizens and their ability to deploy all the energy which unvitiated, untainted nature can generate are of the first importance for the onward and upward progress of this republic? Is the health of the nation a national concern? If so, then the nation as such should go into the matter with the same business acumen, on the same scale, and with the same continuity of effort manifested in any other vital public concern. There is certainly no occasion to advance arguments on this score. No educated and thoughtful man can deny that physical stamina plays an enormous part in the prowess and permanence of peoples. We see families, tribes, and races spring up from a mysterious, nebulous origin that baffles alike the research of philologist and ethnologist, reach a climax of development and power, and then decline. These fluctuations of fortune are genetically connected with physical conditions such as geographical location and its corollaries, climate, food supply, parasitic infections, local foci of disease, and perhaps the necessity for more or less consanguineous marriages. As a result of local conditions unfavorable to the propagation and perpetuation of a race, religious and social usages are evolved which form a sort of counterpart to those protective physical processes seen everywhere in nature.

One of the most remarkable and anomalous incidents of history is the way the Hebrews have preserved their race entity and characteristics though deprived for two thousand years of a local habitation and though prior to their final dispersion they had been for centuries the objects of foreign domination—enslaved, driven out, carried into captivity. While today the Jews may enjoy the benefits of other civilizations than their own, it is generally recognized that in the earlier periods of their history their cohesion and their national achievements were largely the result of a unique and remarkably extensive hygienic and sanitary system far beyond anything employed by any other race. Their peculiar observances were not due to the influence of physicians, to whom there is scant and none too favorable reference in the Old Testament, but embodied the wisdom of Egypt and Mesopotamia and had behind them the force of civic and religious obligation and were administered by the priestly caste. Carl Sudhoff, of Leipzig, the modern authority on medical history, has characterized the Hebrew Sabbath day of rest and the direct prophylaxis of disease as the two greatest hygienic thoughts of mankind.

THE STATE'S NEED OF STURDY MEN.

Can we pretend for a moment that the stability of Rome through twelve centuries of existence under kingly, republican, and imperial rule, vexed by enemies within and without, was not dependent in a large degree on the extensive municipal provisions for health, which included an ample and excellent water supply, adequate drainage, extramural sepulture, and on the universal respect for personal prowess and physical hardihood inculcated by kings

and consuls and not by the physicians, who to their lasting shame cared little for these things? We know how much the national life of Sparta owed to its rigid discipline and the paramount emphasis laid on bodily vigor, and how Athens all through its glorious period of intellectual development continued to cultivate physical perfection, not only because the artistic sense of the Greeks was gratified by beauty of form and symmetry of proportion, but also because the old Homeric and pre-Homeric belief still survived that the deformed or depraved physique was to some extent an index of mental abnormality and moral blemish. In all this we are not up to the level of the Greeks of 500 years before Christ, for while science has gone far toward demonstrating the extent to which conduct and happiness depend on conformation and structure we do practically nothing about it.

To my mind the most paradoxical feature of our modern civilization is the indifference of a comparatively educated and well informed world to the human body, which is the most marvelous of nature's products and has been styled by Sir James Paget "the most complex mass of matter in the known world."

We are astonished when we reflect that man inhabited the earth and examined himself and his surroundings for thousands of years without discovering what seems to us so evident a thing as the circulation of the blood. But is it not extremely likely that future ages will comment with astonishment and scorn on our stupidity in not carrying on as a nation a systematic effort to improve physical development and to further physical conservation; in allowing our children to grow up in utter ignorance of their bodies and, if ignorant, necessarily neglectful of them?

I submit that the nation's health is a national concern; that it underlies all industrial and business effort; that it is the fundamental element in successful competition with rival nations, whether under the slow and prolonged strain of commercial contests or the sudden and imperious demands of armed conflict; that if we look ahead, as true love of country compels us to do, and estimate the trend of future events, we must acknowledge that physical vigor will, in a large measure, decide our complete development and permanent possession of the land which our forefathers won for us not only on the fields of battle but in strenuous struggles against the elements; in the mighty labor of felling forests, tilling the soil, and developing the resources hidden in the heart of the earth.

I am very far from undervaluing the work of the many agencies already engaged in indoctrinating the people in the fundamentals of health; but it is undeniable that so far their efforts have been inadequate to the magnitude of the task as I conceive it. The campaign must be one of concerted measures, nationwide in extent and unflinchingly prosecuted.

TEACHING OF HYGIENE IN PRIMARY SCHOOLS.

I think that up to the present we have been guilty of a cardinal error in seeking wholly to proselyte the adult. Our preaching has been to people enslaved by the chains of lifelong habits. We have

advised men with damaged hearts and kidneys and blood vessels to eat and drink and smoke less; to take moderate exercise; to learn to relax and play; to avoid undue excitement so that they might spin out the thread of life by a few years. We have appealed to high school, college, and university students to abjure tobacco and alcohol; have held up personal purity as something of supreme importance; given instruction about venereal diseases, instituted courses in personal hygiene that perhaps conveyed to them for the first time in their lives some rudimentary knowledge of their own bodies. In all this we have overlooked two things. The man in middle life cannot make his depraved body over and replace worn out organs. If he stops work he dies for lack of occupation. If he gives up some habit that has become an integral part of his being he may suffer devitalizing mental and bodily reactions not unlike those of the opium eater deprived of his drug. The best he can do, and what he is most likely to do under the influence of this health propaganda, is to plan to bring up his children on the lines suggested. This would seem at first blush to be a very definite and valuable result, but whoever has attempted in his own family to reform modes of living, whether in the matter of food, dress, ornaments, study, or pastime, knows how difficult, how nearly impossible it is to accomplish any radical change which differentiates wife and children from the bulk of their associates and makes them the object of comment. Young people are more gregarious than adults, and far more bound by the ethics and standards and practice of their kind.

In the second place we forget the pitiless logic of youth. The lad or maiden who has for five, ten, or fifteen years been goaded to study grammar, mathematics, languages; on whom there has been exerted insistent pressure to acquire mental attainments, cannot easily be persuaded later on that a subject kept in the background or displaced in favor of something else is the one of paramount importance. We cannot expect the young to believe that hygiene, physiology, and health are matters of prime importance; that their parents and teachers really esteem them such, when everything else has come ahead of these subjects. The children are right, because we do put first what we esteem to be first. They infallibly consider that health teachers are mere faddists and reformers, and that it is more vital to the gratification of their ambitions and their success in life to know the length of the Amazon and to be able to give the order in which the different statesmen have occupied the White House than to understand the oxygenation of the blood or the nature of a reflex movement.

I propose that we abandon at once all half measures, get away from routine, conventional methods and embark on something new, radical, revolutionary, but something at the same time perfectly feasible, if undertaken on a scale fully commensurate with the colossal results desired. We recognize that the nation must be composed of individuals having a maximum of physical strength, and we believe that these individuals must be carefully

educated, that is to say, mentally and morally developed, if we are to be something more than the world's bully, and if America has a destiny and a mission related to the world's ultimate amelioration. But just as our race as a whole must have physical integrity for survival in the struggle with its rivals, so the individual must have health and strength as a groundwork for all mental development.

SOUND HEALTH THE FIRST REQUISITE OF A LIBERAL EDUCATION.

Let us throw out as irrelevant and misleading the occasional benefits conferred on humanity by the prodigious accomplishments of some individual whose genius bordered on insanity; let us forget that here and there an invalid, a neurasthenic, a neurotic has enriched the intellectual life of the world or done some epoch making thing. Such facts do not invalidate the general proposition that sound health is the first prerequisite of a liberal and rounded education, and let us as a nation proceed henceforth not simply to give intellectual adherence to that proposition but to act on it. In other words, let us begin the child's education by teaching him health before everything else, first in point of time, first in importance.

Our primary schools have received not a little attention lately. They are better built and have better lighting and ventilation than in the past. We examine the pupils for enlarged tonsils, bad teeth and granulated lids. We are instituting various commendable reforms which should be continued and expanded, but they all belong to what might be called an extrinsic method of procedure. We must have something intrinsic. We must get possession of the child himself, affect his inner consciousness, modify his personality and give his life a definite bent, so that he will progressively and increasingly contribute by his own efforts to secure and preserve the health indispensable for the fullest use of the opportunities of high school, college, and university. One of the most valid arguments against the higher education of women is the well recognized fact that the intense mental application of the really serious student is often accompanied by suppression or irregularity in certain important bodily functions. Therefore, an accumulated reserve fund of health and habits of health are as essential to her success at college as the girl's ability to pass the entrance examinations. It is too late to acquire health habits when the need for them begins to be felt, nor can we impart a proper sense of the importance of our health message to the high school girl if we wait until she is sixteen to deliver it.

The primary school is universally recognized as the place to acquire certain things indispensable to future mental development and ultimate success. There is world unanimity about these essentials, but how common it is to have to take children out of school for reasons of health before they have got well into the three r's—reading, writing and arithmetic. What I propose is to go back of the three r's and begin all education by instilling into the child before he can read or write some knowledge of the human machine and the laws that regu-

late its upkeep; to elaborate and intensify this teaching step by step with other instruction, showing by practical illustration how to obtain the maximum yield from this machine.

Childhood is the habit forming and the impressionable age. Churches wisely recognize this, and by means of the catechism, the Sunday school, and numerous other direct and indirect influences, seek to fashion the plastic mind and heart of the young into harmony with their worthy purposes.

In our plans to develop citizens with a proper sense of their public duties and privileges we take advantage of many of the instincts of childhood. We exhibit the flag, we have the children sing patriotic songs; later we give them outlines of community interests and civic economics. Occasions of national importance, military parades, the presence in the locality of some great public character are seized on to arouse and develop the patriotic spirit. But so far we have not gone to the root of the matter or seriously attempted to make health and the health cult the foundation of the child's education, which I conceive to be the only way by which later we may have lawmakers and law-abiding people who will put healthy living ahead of every other kind of living. The beginning should be made in the kindergarten where already something is accomplished toward teaching appreciation of form and color, but the wonderful opportunities of this golden period are otherwise almost wholly thrown away. In kindergartens and primary schools singing might with propriety be insisted on. Children love to sing and every harmless natural impulse should be fully utilized. There is an enormous moral value for young people in everything that illustrates the power of cooperation. A few good voices will carry along with them the feeble, inaccurate ones. The total volume is inspiring. Each feels that he has contributed something toward the pleasurable result. Furthermore, singing has great value as a health measure because it requires expansion of the lungs. Children love to romp and play, but some of them need to be taught to play right, to breathe through their noses. When they do not do this there is an obstruction. It should be corrected before the consequences to cranium and ear become serious. Defects of bony and muscular structures should be discovered in kindergarten and primary school, because when found early many of them can be corrected.

The teaching of physiology and hygiene to the youngest pupils requires no books, but it does require a trained teacher. Unfortunately, however, there are teachers who do not care for that feature of the work even though they are competent. The reason for their indifference to the subject is that they did not grow up in that atmosphere of health culture which I would like to see created for the next generation. Some teachers prefer telling and reading fairy stories, and a little of that is good, but we have too much of it. The young pupil grows to demand entertainment and then to resent any call on him for serious work. Pleasure in work is an undoubted aid to concentration, and hence, if, in the instruction of a child, we can in some measure coincide with natural bent and in-

clination for certain studies, there is great gain, but this is essentially different from attempting to conduct education as a holiday excursion up the steep slopes of Parnassus, a journey which still has to be made on foot and involves for rich and poor in worldly goods or mental attributes no small privation and effort. Pleasure in work should be the aid, not the object.

The really clever teacher makes his subject entertaining and interesting, but does not wander far afield in search of mere diversion. The teaching of health and the first anatomy and physiology lessons will be by the Socratic method of question and answer, and by the still older case method first known as the parable. There will be no fear of lack of interest when the day's session begins with a tale like this: "John ran away from his mother. He was so little and he ran so fast that he fell down. There was a piece of glass just where he fell and he struck the sharp edge of it with his hand. What happened? What made the blood come? What is blood? Do animals have blood? What is it for? How was the bleeding stopped?" Such lessons can be varied and multiplied indefinitely and made practical by reference to or, when possible, by actual demonstration with natural objects and natural phenomena.

They are very much mistaken who tell you that children cannot think and would have early instruction rely in the main on memory. Even very young children do far more thinking and think far more accurately than the average adult realizes. They are not capable of abstract thought, but in relation to the things of everyday life they are constantly observing and trying to deduce conclusions.

The child is forever discovering new and surprising aspects of his terrestrial environment and is eager to investigate them. He gets into many a scrape through ceaseless experiment with cause and effect. He is eternally asking, "Why?" What a field is this young mind for the sowing of seed, and how much needless suffering and disappointment he can be spared if we will only teach him the important things first.

In the kindergarten and in the lower grades of the primary school which are to be devoted, in the proposed scheme, to health and hygiene, clean hands, clean finger nails, clean faces, proper carriage, proper breathing; sound, well brushed teeth, and all the little details of physical deportment that are matters both of social convention and of health (like the use of a handkerchief for a moist nostril, holding up the hand to cover the sneeze or cough) will receive reward and make for class standing exactly as does the correct solution of an algebra problem or a good recitation in the higher grades. As the pupil grows and advances the health instruction will be increased and extended, and will, I am sure, serve to make chemistry, physics, and natural history more interesting in themselves, while conversely, these topics will render more intelligible the hygienic lessons.

PUBLIC SCHOOLS AS NATURAL HEALTH CENTRES.

Our public schools, then, must become the health centres of their respective communities. Every

measure carried out in them should be fully explained, so that the wisdom of preventive measures shall be fully appreciated by the pupil and he may become an advocate of them for the rest of his life. Will not the children who have been cured of hookworm and its attendant anemia, and come to feel the joy of physical and mental vigor for play and for work, be lifelong converts to health propaganda, and will they not be deeply interested when the cause of their previous disability and its cure is explained?

In connection with the bowl of hot broth furnished daily there may be lessons in diet. Temperance in all details of food and drink may be inculcated at the same time that the evils of alcohol, tobacco, and narcotic drugs are set forth. Then the necessity for scalding knives, forks, and spoons must be emphasized and the menace of the mouth secretions fully explained. The child must acquire, on the grounds of health, the same horror of the mouth secretions that refined people have for the spitting habit.

Such a program may commend itself to you, but the difficulties attending its execution are rather staggering. In the first place, we must have better teachers, and that means teachers who have had special training and will therefore expect better pay. There will be need for special textbooks, and this is one of the most critical features of the whole business, for good books of any kind for children's use, and especially textbooks, are among the hardest things in the world to produce. A mere rehashing and boiling down of an advanced treatise will not meet the requirements at all. We must captivate the imagination. We must arouse and hold interest in the topic discussed; we must stimulate thought, avoid overtaxing the memory, and teach only facts which are scientifically sound, however simple the presentation. Now we have men and women perfectly capable of handling hygiene, physiology, and physics in the proper way, but publishers are slow to take up new lines until they are convinced that there is a demand justifying the expense of an edition, and so long as such a movement as this is begun in a small tentative way and as a local experiment publishers will hesitate.

While on the subject of schoolbooks, and having in mind the examinations conducted under the draft law which revealed a high percentage of refractive errors in our adult population, I cannot refrain from making something more than a passing comment on the type used in the schoolbooks supplied to young children. Some thought has been given to schoolroom illumination and to proper posture in reading, but nine children out of ten, if left to themselves, get their noses on the paper when they write, hold the book too close when they read, and will do both without regard to the quantity or source of direction of the light. Dr. G. I. Hogue, in an address before the school teachers of Milwaukee, estimated that thirty per cent. of the school children of this country had some visual defect. In Milwaukee, twenty-seven and twenty-four one hundredths per cent. of the school children had visual defects. In New York city, out of six hundred

and fifty thousand children in the public schools, thirty per cent. at least were two grades behind what they should have attained. Ninety per cent. of these backward pupils are suffering from some defect in eye, ear, nose, or throat. He estimates that out of twenty-two million school children in the United States some six million suffer from ocular trouble. Good food, ample exercise in the fresh air, and hygienic surroundings will counterbalance a host of objectionable practices, but the evergrowing strain imposed on the human eye by modern life calls for special consideration. I profess no special knowledge of the pathology of the eye, and I have consulted no specialist preliminary to making these remarks, but I do not hesitate to declare that the time is ripe for a reform in the construction of children's schoolbooks.

CAUSES OF EYE STRAIN IN CHILDREN.

When you get home from this meeting take your child's geography, history, or arithmetic—if not blessed with a child of your own, a nephew, a niece, a neighbor's or a patient's child can supply you—and observe what a large proportion of the text is in fine print. The paper is good; the illustrations are attractive, and the binding is childproof, but the questions for review, the footnotes, and much of the explanatory matter are set up in six point. I think I am very conservative in the opinion that no child of ten or under should have to study a book printed in anything smaller than twelve point lower case or eight point capitals, and older children should not have to con by the hour a type finer than ten point. If fine print could be officially stigmatized as a menace to eyesight; if the Federal government were to forbid the transmission through the mails of children's textbooks improperly printed, we would have a ready solution of the problem. Left to the example of the individual school or to the individual state, the correction of an evil of this kind will not be achieved for many, many years.

This thought and a consideration of the difficulty of securing the services of properly trained teachers and sanitary inspectors and physicians, not merely for local experiment, for the collection of data, as a demonstration of some useful doctrine, but as part of a continuous and permanent health campaign, lead naturally to a consideration of government responsibility for the public health fostered and encouraged in the children but affecting also the adult in relation to trade and commerce, preparation for war, and so on.

I wish that the public had a fuller appreciation of the really great educational work of our distinctly military services. Through the work of the medical officers of the army and navy, our government may be said to have been carrying on for years a health propaganda within the sphere of the activities presided over by two cabinet officers, affecting directly some two hundred thousand men in time of peace, and, to a much more limited extent of course, in the past three years acting on a force of several million men. But if we continued to maintain an army of from two to three hundred thousand men and a navy of a hundred thou-

sand the matters of health which are made prominent in military service would still not directly touch half of one per cent. of our population, and we have these men under our influence for relatively short periods—not more than from four to eight years out of a life of three score. This humanitarian, educational work is an incident and not the chief purpose of the departments referred to.

We have to admit, then, that vital as it is for us to maintain a high standard of physical development for the eventualities of war, neither the Secretary of War nor the Secretary of the Navy has any way of concerting measures which will assure for the military needs of the country the necessary number of men of sound bodies with unimpaired special senses. We reject every year thousands of applicants for enlistment who are ineligible for service by reason of conditions which might be regarded as preventable but which are not prevented. We reject men with serious defects of the teeth, with inferior vision or color perception, insufficient development of muscle, bone and tendon, poor heart action, and a defective innervation. Furthermore, the conditions of life in this hurried age; the social environment of the tenement; insufficient training in the home or the lack of a home, and the ravages of alcohol and syphilis in parents, are making for the development of neurotic and unstable types unavailable for service training in peace and of worse than no value for war. All these men are debarred at the recruiting office, but what becomes of them? The Secretary of War and the Secretary of the Navy have no cognizance of them, but they remain a part of the nation, an element of weakness, a burden, a disgrace, and transmit their defects and weakness to their children. The bad teeth; the weak, strained eyes; the overworked, injudiciously used hearts, and the distorted and depraved nervous systems are all preventable. Whose care is it to concert far-reaching plans to fend off from the younger generation ills that are not by any means an inevitable concomitant of birth?

NEED OF A FEDERAL DEPARTMENT OF HEALTH.

Beside those specifically charged with the defense of the country, we have eight other presidential advisers or cabinet officers, each at the head of an extensive establishment; together, they are supposed to have a supervisory action in regard to the great fundamental needs of the nation, and yet no one of them is specifically charged with the care of the nation's health. Neither the Department of the Interior nor the Department of Commerce and Labor takes health into account on any considerable scale. It is by what might be called an accident of birth that our very efficient but small Public Health Service is conducted by the Treasury Department.

The U. S. Public Health Service, originally called the U. S. Marine Hospital Service, dates from 1798, when Congress made provision for the medical care of sailors in our merchant marine by generously mulcting each sailor twenty cents of his monthly pay for the support of hospitals ashore

and for the pay of the physicians who worked in them. The money was to be collected by the several collectors of customs, who were of course officials of the Treasury Department. It was not until nearly a hundred years later that this body of physicians had any but a curative function.

In 1878 Congress directed the supervising surgeon to prepare and forward to state and municipal health authorities weekly abstracts of consular reports and other information relating to contagious and epidemic diseases; but it is interesting to note that even in 1786 Congress had recognized some measure of responsibility for public health by passing an act requiring all revenue officers to cooperate in the execution of state health laws.

In 1879 Congress appropriated fifty thousand dollars for a National Board of Health whose existence was limited to a period of four years. This board owed its creation to the terrible epidemic of yellow fever raging in the Mississippi Valley. It was after this that the Marine Hospital Service was financed by funds voted by Congress for the specific purpose of preventing the spread of epidemic disease, more particularly smallpox and yellow fever.

In 1892 the marine hospital service achieved notable results in preventing the introduction into this country of the cholera so extensively prevalent in Europe. Then came the passage of an interstate quarantine law and later a national quarantine act in virtue of which a systematic examination of all immigrants has since been maintained. Gradually this service has assumed a distinctly educational function. Its research laboratory was one of the first agencies of the kind. Its work in connection with malaria, pellagra, hookworm, infantile paralysis, leprosy, rabies, typhoid and Rocky Mountain fever, school hygiene, the pollution of water, trachoma, the problems of rural life, and railroad and industrial sanitation, has been of a high order.

I give this outline of the history of the United States Public Health Service because I think too little is known of what it has accomplished; because its growth in importance shows very plainly that, as the value of this kind of work became more and more apparent, ways and means were found to make it possible. The work has been economically done by trained experts often opposed by local prejudice but far more seriously hampered by general indifference and by the fact that they could act only in an advisory capacity, and were only a side issue in the Treasury Department, whose main concern was with other and very unrelated affairs. This history of the Public Health Service illustrates how the government has been able to play a rôle of considerable importance in promoting public health though acting in an ancillary capacity, and we see how from purely medical practice its members have assumed more and more an educational function. Then, too, in recent years the government's obligations have been recognized by the passage of pure food and child labor laws; by enactments regarding the sale of narcotic drugs; by assigning to the Public Health Service supervision of the manufacture and sale of serums and vaccines. But today the public health is, so far as the

Federal government is concerned, a matter of secondary importance, whereas it should be first.

WASTAGE OF LIFE AND NATURAL RESOURCES.

As a people we are of all civilized nations the most wasteful of human life as well as of food, natural resources and public funds. France and Italy have a minister of public education and England has a minister of health. During the year 1917 our railroads, which under government administration cost us a million dollars a day, were responsible for one hundred and ninety-four thousand injuries, six thousand three hundred of which resulted in more or less serious crippling, and for ten thousand deaths. In the same year the funds assigned for the maintenance of the U. S. Public Health Service, including its laboratory, its department of zoology, its field work, the salaries of two hundred medical officers and one thousand eight hundred other employees, totalled three million two hundred and fifty thousand dollars. That is to say, the national government's expenditure for its only accredited and official agency for the care of the national health was at the rate of a little over three cents a head for the total population. As regards vital statistics, birth registration and morbidity reports, we are far behind Europe.

Doubtless the size of the land in which we dwell and the large population account somewhat for our laxness in these things, and of course the nature of our political organization does not make for a uniform and general plan of endeavor to increase the physical endurance and physical capacity for output. Absorption in local needs and exaggerated or misconceived ideas of local rights bring a forgetfulness of the interdependence of these States and of the universality of public health interests. How often it happens that the least salubrious section of a State becomes the least populous though its forests or mines or water power entitle it to be the most thickly settled. If sparsely inhabited, it of course has scant funds for ditching and draining, wholesale eradication of mosquitoes, adequate water supply, or whatever the remedy may be. Under Federal administration the greatest need would constitute the greatest justification for reclamation, and help would be more generally and systematically extended to counties and States which could not afford to remedy expensive local defects.

A department of health in Washington would be purely civilian in composition, and would call to its aid or give its assistance to all private or corporate forms of endeavor, very much as the army and navy call on the Carnegie Foundation, the Rockefeller Institute, or the American Red Cross. Then we would coordinate effort for improved public health of every kind, and make it continuous and progressive instead of desultory and sporadic, and many problems would be diligently attacked which now, in spite of their importance, must wait until some great calamity excites public attention or arouses the sympathy of a philanthropist.

FACTS REVEALED BY THE OPERATION OF THE DRAFT LAW.

We have learned and the general public has learned a good deal about our national weakness

from the facts revealed by the operations of the draft law. Massachusetts, stimulated by the knowledge of the number and character of the rejections for military service, and other sections of the country alive to the declining birth rate of the white race are proposing enactments to remedy crying evils in the physical development of our people, but years may pass before other sections awake to the importance of these efforts. Meanwhile the whole nation is concerned, and the nation as a whole should be at work to remedy what is wrong.

If Massachusetts or Louisiana were to conclude that fine print and footnotes in children's textbooks were producing eye strain in the pupils of the primary classes in its public schools and to pass laws forbidding the use of a book in any of their public schools unless the type was of ordained and specified size, this would be fine for the children of those two States. If, again, these sections of the country took steps to improve the general physical development of the young, this would be commendable and useful, but to what extent could Massachusetts or Louisiana supply the needs of the country in time of war? There is much to be learned from war, hard and cruel lesson though it be. As a nation shows itself in war, so it is in peace. There is in war a test of the nation's capacity for the tasks of peace. War disrobes us of the figments of conceit and fancy, of self satisfaction and egotism, and leaves us naked before the mirror of truth. The world war has been a liberal education to some of us. It should be used as a means of enlightenment to everybody.

DIVERGENCE OF THE REPORTS OF THE PROVOST MARSHAL IN VARIOUS STATES.

How are we to explain the fact that the older sections such as New England, New York, Virginia, North Carolina, and Louisiana lead in nervous and mental disorders; that in defects of the eye New York, Boston, and New England generally and the cities of Ohio, Michigan and Illinois were the most conspicuous; that Rhode Island led in defect rate and Vermont came next, while Kansas had the lowest defect rate of all the states; that the extreme northeast, including New York, and New Jersey, made the poorest showing in regard to the teeth? Are these fortuitous facts or are they susceptible of explanation and correction? It is clear that when we have as physicians informed ourselves on these topics there must be education of the public to prepare it to cooperate with, and there must be legislation to enforce, the necessary corrective measures.

There is a mystery in the report of the Provost Marshal General that Oklahoma and Arkansas for the number of men examined gave the highest percentage of men going into Class A and Arizona and Rhode Island the lowest—men in Class A being fully qualified, able to see and hear well, able to transport themselves by walking, having a circulatory apparatus able to stand the stress of physical exertion, the intelligence to understand and execute military maneuvers, obey commands and protect themselves.

NATIONWIDE VERSUS STATE CONTROL OF HEALTH MATTERS.

How impractical to expect that any one state alone, or even two or three, should go into the study of these things at considerable expense, or that just and reliable conclusions could be arrived at from such a partial study! These are national matters most easily, most economically, and most satisfactorily studied as national questions by national rather than local agencies. Not for a moment do I undervalue the investigations carried on by benevolent and scientific societies or corporations. One would have to be profoundly ignorant, deeply prejudiced, singularly ungrateful, to do so. Such enterprises excite discussion and help to create public opinion, but how slow is the general advance, how lacking in uniformity and concentration are the efforts of individuals and societies working in the interests of a hundred million people! In America we are too prone to leave general measures for general betterment to professed philanthropists and here as elsewhere what is everybody's business is nobody's business. There is a supineness, an inertia, a criminal neglect in the nation which surrenders to private agencies matters which are of vital concern to the development and expansion of the race and to its triumph in peace or war. Shall we be content to rely on the public spirit of liberal and enlightened millionaires, of a Carnegie or Rockefeller, to do for us, with all our boasted wealth and civilization, things which smaller and less rich nations regard as essential obligations of the governments they maintain and support, and is it not a devitalizing, corrupting, enervating, in every way demoralizing influence in our national life to trust for essentials of national happiness and success to what we must admit are accidental agencies?

I can perfectly understand a strong disinclination to any step that might appear to open the way for government control or restriction of the practice of medicine or that tended to paternalism, especially in view of the agitation developing here and there for all sorts of medical, dispensary and hospital privileges. On the other hand, history teaches that when in the complexities of modern life radical tendencies assume such force as to result in insistent demands for unusual and excessive privileges, it is easier to anticipate and circumvent than to overthrow them in open conflict. History teaches also that greed and violence are usually the result of previous injustice or neglect. There are no fortuitous happenings in nature. The geologists have long since ceased to talk of catastrophism; the physicists and chemists no longer recognize spontaneous combustion, nor do the biologists admit spontaneous generation. In the same way the convulsions of society always have a definite cause though it may be deeply hidden. Whenever the superior intelligence and education of a given time or locality are threatened with overthrow by the force of an unreasoning mass, we may be sure that there has been neglect on the part of the superior or better favored to discharge its obligations to the inferior or less favored element. If as a nation we are lacking in all the

proper provisions for promoting health and longevity; if the physicians who know about these things ignore their obligation to agitate in the matter and obtain results on legitimate lines; if everything that we consider needful to health in connection with industries, public carriers, charities, and the like is not done according to the means and the light we possess, we may be sure that sooner or later a wave of protest and clamor will sweep over the nation and that we physicians, along with other members of the educated classes, will have to pay an excessive price for previous passivity and indifference.

As a general proposition, I am firmly opposed to the disposition to saddle every public and semi-public enterprise on the government, a tendency arising from a profound misconception of government and its legitimate function, and often associated with a disinclination on the part of those displaying it to perform their own individual duty. But I am unqualifiedly in favor of a national department of health with a cabinet officer at its head which shall by its very creation give a great object lesson to our people and shall correlate and vastly expand all the efforts now put forth for the improvement of the race, the prolonging of life and the full development of physical capacity for work and production. By reason of what it has accomplished in the past and because of the incalculable volume of influence which its individual members can exert in the various communities where they labor, I believe that this association can effect this legitimate enlargement of government effort as soon as it sets to work wholeheartedly to do so.

I have drawn your attention to the vast latent possibilities for health propaganda in the public schools. I have tried to show that the nation's health, being a vital national concern, should be the particular care of a department of government on a par with the importance, dignity and power of existing departments which affect commerce, labor, revenue, agriculture, the mails, and military preparedness; that popular government cannot ignore the human element, the physical element in the people. Permit me now to advert briefly to the practice of medicine as bearing on general scholastic training.

In the main, the medical curriculum of our leading colleges seems satisfactory, judged by the results. There are two points, however, which I do wish to mention briefly. In a recent able and discriminating paper, Dr. Hobart A. Hare, of Philadelphia, has brought out the well recognized fact that all recent graduates and many old practitioners are profoundly ignorant of drugs and how to prescribe them so as to get the desired results, and he has made an extremely important distinction between the invaluable researches of the scientific pharmacologist on the one hand and the teaching of practical therapeutics on the other. The medical student has no need, as an undergraduate, to engage in experimental work, but he should be taught what and how to prescribe, and to this end should have a short simple course in practical pharmacy and a very thorough course in applied therapeutics.

In the second place I beg to submit that hygiene and sanitation are not given sufficient prominence in our medical courses. This is amply proved by the poor showing made in these subjects by the candidates appearing before the National Board of Examiners. These topics should receive special emphasis, and the candidate for a diploma must be made to realize that competency in surgery, obstetrics, or bacteriology will not atone for deficiency in a branch which, while not by any means fully setting forth the modern conception of medicine as a profession dealing with people collectively, socially, and industrially, at least paves the way for a grasp of that conception.

For the medical school to provide a few lectures on hygiene is not enough. The school which does no more than this is not alive to the call of the twentieth century which demands through the voice of rich and poor, of high and low, better living conditions for the world. We are tempted sometimes to berate the public for its indifference to health and its callousness to the wise injunctions of medical writers and speakers concerned with prolonging life by care of the body; but is not the public bound in such a matter to be behind the professed master and are we not as a whole rather sunk in crass indifference? How many capable practitioners are really in a position to give sound, scientific advice on the thousand and one details bearing on the preservation of health derived from a knowledge of hygiene in any way comparable to the knowledge they are bound to possess in a score of other things if they are really the kind of physicians they ought to be? Is not our profession constantly brought into discredit by the ignorance of the family physician and of the eminent specialist about matters of real and vital interest to the general public?

PRACTICAL KNOWLEDGE OF HYGIENE NEEDED BY PHYSICIANS.

Our semiscientific and popular current literature, and even the daily papers, are constantly giving out bits of information about the flea, the louse, the bedbug, and the mosquito in their relation to the transmission of disease. A layman does not quiz the physician about anatomy or pathology, but he does turn to him for enlightenment about these and kindred matters bearing on health and disease which he can understand and on which he would like to be informed. When the physician cannot fully satisfy the questioner about the rôle of these insects; about the potability of water; the danger of damp, newly constructed buildings; the proper trap to a water closet; the infections that may be acquired from intimate contact with domestic animals, he loses enormously in prestige and, what is more important, he loses the chance to thrust home some valuable lesson in public health and public duty.

We are beginning to develop here and there schools offering special courses and special degrees in hygiene, and I think this is a forward step, for we must have men of special training prepared to do advanced research work in this field, but can any one reasonably pretend that the medical profession can wisely permit this branch to become one

for specialists only, and that, while pathology belongs to the physician, hygiene and sanitation are not his sphere? On the contrary, will not the exhaustive teaching of hygiene and of public health medicine in our medical schools immeasurably enlarge the scope and improve the character of the practice of medicine itself?

Let us institute a thorough course in hygiene and sanitation, making a real knowledge of the subject indispensable for graduation. We could include in this course whatever features of the specialties bear directly on the public health.

RESTRICTIONS AS APPLIED TO CANDIDATES FOR ADMISSION TO MEDICAL SCHOOLS.

Far more important than determining what particular subjects are to be emphasized and how the medical student's time is to be apportioned in classroom and laboratory is the standard of fitness to which a young man must conform before he can be permitted to study medicine. Admission to a medical school contains the implied promise that diligent application for a given period will qualify him for a diploma as a doctor of medicine. In justice to the public, to the profession, and to the candidate we must endeavor to establish three things before the medical school opens its doors to him. The prospective physician must be sound in body; he must have sufficient mental training and acquirements to enable him to pursue the course with profit; he must give evidence of those personal, temperamental, and moral qualities which promise reasonable adaptation to the highest aims and purposes and to the best practice of the American profession.

The first step in establishing the standard for admission to a profession is of course to define the scope of that profession. The distinction between medicine as an unlimited science and medicine as an art, more limited in scope and confined to a comparatively narrow field, was alluded to in these words by Huxley: "It is so difficult to think of medicine otherwise than as something which is necessarily connected with curative treatment that we are likely to forget that there must be and is such a thing as pure science of medicine." I have this distinction in mind when I urge that we shall not so arrange our scheme of medical instruction as to make it lean unduly to fitting men only for the practical curative art biased by the American inclination to demand immediate and practical results in a business and financial way. Some of our graduates will infallibly prove by temperament ill adapted to private practice, and if they have had during their student days no vision of medicine, no introduction to it as a science, they will drift out of medicine entirely. If our schools are wholly planned with the idea of turning out only men who can at once become practical bedside clinicians, do we not to some extent limit the chances of our country's taking a prominent part in the further development of the science of medicine? It is this fear which makes me feel that there is a place in our medical faculties for teachers of certain scientific branches, even though they are not themselves practitioners. It behooves us to have close affiliations with the pioneers, and as Maeterlinck

has well said: "We must beware of abandoning ourselves unreservedly to the prevailing truths of our time."

The distinction between the science and the art of medicine is a vital one. In the program of our medical instruction we must recognize that these two aspects of medicine exist, and we should provide instruction that will make it possible for graduates to be scientific and practical healers of disease or to develop as purely scientific investigators.

People have been inclined in the past to consider the clergyman and the churchman dogmatic; but dogmatism is also the besetting sin of medical centres, medical schools, and practising physicians. We may not be able to prevent individual practitioners from being narrow and prejudiced in their old age, but we can at least start our young men off in their professional career with a strong impulse toward liberality of judgment and breadth of view.

There is, I am convinced, a real danger in the modern trend to practical instruction, so called. The danger of neglecting the necessary fundamental and more or less abstract teaching for the distinctly enjoyable clinical and bedside work is increased by the realization that the latter has stronger attractions for the student, and that it greatly facilitates the acquisition and retention of information furnished in the classroom. Students and even teachers speak of schools as theoretical and practical, having in mind apparently the distinction between didactic lectures and laboratory exercises, but it is very easy for an unconscious transposition of ideas to lead one to think of theoretical instruction as removed from the domain of usefulness to the sick because the word theoretical is connected with the idea of speculation and hypothesis. Now, as a matter of fact, by theoretical instruction in medicine we mean the abstract handling and presentation of scientific truth as compared with its application as a practical means of healing. With this clarification of terms it becomes manifest at once that the school must be primarily the place for medicine as a science, for if the young physician have not scientific knowledge, what is he to apply when he comes to the bedside?

(To be concluded)

ENCEPHALITIS LETHARGICA.

By JOHN H. W. RHEIN, M. D.,
Philadelphia,

Professor of Diseases of the Mind and Nervous System, Graduate School of Medicine, University of Pennsylvania; Consulting Neurologist to the Philadelphia Home for Incurables, etc.

Encephalitis lethargica, the name suggested by Economo (1) in 1917, *encephalite lethargique epidémique*, described by Netter (2), or epidemic encephalitis, as proposed by Kinier Wilson (3), applies to a group of cases, attention to which has recently been directed, which presented a fairly constant group of symptoms of which a state of lethargy seemed to stand out most prominently. Indeed, so prominent has been this symptom that it has been described by some authors as the sleeping

sickness. Besides lethargy, there are symptoms which indicate an invasion of the cerebral tissue in the nature of an encephalitis or polioencephalitis, involving mainly the regions of the aqueduct of Sylvius.

In three cases which I have seen recently in consultation, lethargy was pronounced in every instance, though in two of the cases there was associated with the lethargy at certain times a mild delirious state, preceded in both instances by a persistent lethargic state which lasted until death.

CASE I.—The first case was that of a child aged three months who, after a day or two of illness consisting of restlessness and refusal to feed at the breast, lapsed into a state of lethargy which persisted for a week. During this time the baby lay quietly with its eyes closed, without making any outcry. She refused to feed, occasionally partially opening her eyes without apparently seeing or noticing anything. The child was afebrile. Examination of the heart and lungs revealed nothing abnormal.

The child lay with its eyes closed, paying little attention to the examiner, and attempts to rouse her only resulted in a partial opening of the eyelids. It was noted that the eyeballs were practically immobile. The pupils were dilated but responded to light. The condition suggested a double ptosis and paralysis of the extraocular muscles. There was no rigidity of the neck; no Kernig sign; no *tâche cérébrale*. The knee jerks were prompt and equal and the Babinski sign was present bilaterally. There were no convulsions or rigidity. At the end of a week or ten days, the patient began to take nourishment and made a satisfactory recovery at the end of two weeks with no evidence of residual paralysis. This attack occurred during the recent epidemic of influenza and I look upon the case as one of encephalitis lethargica.

CASE II.—The second case was that of a boy aged seventeen, whose previous history was negative, who was seized with a mild attack of what was diagnosed as influenza, consisting of headache, general pains and chills. The symptoms subsided at the end of three or four days. Six days later he began to complain again of headache, pains in the nape of the neck and right ear, dimness of vision, and difficulty in raising the upper eyelids. An examination of the ear proved to be negative. There was no evidence of involvement of the mastoid process, but pus appeared in the nasal cavities. Then there developed insomnia, restlessness and some incoherence of speech. At the end of twenty-four hours, he complained of double vision and in ten hours lapsed into a state of lethargy. When I examined him a day after the onset of the lethargy, he presented the following symptoms:

He lay in bed with his eyes closed, in a lethargic state. He protruded his tongue and made an effort to open the eyes only after repeated requests. It seemed impossible for him to open his eyes unassisted. When the eyes were opened by the examiner, an external divergence of the left eye was observed. He evidently had a double ptosis. The lethargic state prevented any careful study of the

extraocular movements. His responses to inquiries were at times perfectly lucid, after which he quickly lapsed into his somnolent state. The pupils were equal and responded to light and accommodation. There was no evidence of paralysis of the facial muscles. There did not appear to be any paralysis of the arms or legs. The knee jerks were slightly increased; there was no ankle clonus and no Babinski phenomenon. The cremasteric and abdominal reflexes were present. An examination of the heart and lungs revealed no abnormality. The temperature ranged between 102° and 104° . At the end of twenty-four hours the condition of the patient rapidly grew worse, he lapsed into a state of active delirium, the temperature rose to 108° , and he died three days after the onset of the lethargy.

This case, I believe, was one of encephalitis lethargica, following a mild attack of influenza. It is to be noted that preceding the lethargy there was a state of confusion and mild delirium, with marked disorientation.

CASE III.—The third case was that of a man aged thirty, whose previous history was entirely negative. He had had two children, one of whom in a convulsion died when a year old. Following a railroad trip from New York in an unheated car, there developed symptoms of cold, general aching, and some fever. At the end of the third day, he began to sleep, in fact he slept most of the time for three days. He was not under the care of a physician during this time, but it was probable that he had some rise of temperature. There then developed severe pain in the nape of the neck radiating down the right arm, which prevented sleep and was associated with considerable restlessness and irritability. At the end of two days the pain subsided and he became confused, getting up in the middle of the night and dressing to go out for a walk, apparently lapsing into a state of disorientation and was somewhat resistive.

At the end of thirty-six hours he had double vision, staggered in walking, could not open his eyes fully, and could not read. He became lethargic. This persisted for twenty-four hours, when I was called into consultation. When I examined him the symptoms were as follows:

He was profoundly lethargic and it was only possible to rouse him after persistent effort, when the replies were intelligent and clear. There was a more or less constant twitching of the arms and legs. On the previous day there had also been some clonic contraction of the abdominal muscles. The patient lay with his eyes closed and could not or would not open them fully. There was some weakness of internal rotation of the left eye. The pupils were small, the right one being larger than the left. They both responded to light and accommodation. There was no rigidity of the neck muscles, the Kernig sign was positive, the grasp of his right hand was weaker than the left and the muscles of the right leg were weaker than the left; the knee jerk on the right side was slightly larger than on the left; and a positive Babinski and pseudo ankle clonus were observed on the right

side. *Tâche cérébrale* was absent and he apparently felt the pin prick equally well everywhere.

At the time of the examination, the temperature was 102° . It had ranged from 100° to 101° for about two days previously. A lumbar puncture was done and a specimen of the blood was taken for examination. The spinal fluid showed a positive Wassermann reaction, but this was negative in the blood. There were 11,000 leucocytes to the c. mm. The patient failed rapidly and at the end of twenty-four hours died. This, I believe, was a case of encephalitis lethargica following a cold or a mild attack of influenza.

The point of interest in two of these three cases is the relation that the symptoms may bear to the previous mild infection of what was diagnosed as influenza. It seems to me that there was a direct relation between the two; in fact, all three of the cases occurred during the epidemic of influenza.

The second point of special interest, which may be emphasized, is the fact that lethargy was a prominent symptom in all three cases, and there was associated with the lethargy at one time a period of restlessness, delirium or excitement in two of the cases.

The third point of interest is the association with the lethargy of a disturbance of the extraocular movements seen in all three cases and what appeared to be a double ptosis.

The fourth point of interest is that the responses that the patient gave to questions while lethargic, when aroused, seemed to be perfectly lucid.

The fifth point is that the temperature changes were insignificant until shortly before death.

The first appearance in epidemic form of encephalitis lethargica was in France, in January, 1918, at which time also a small epidemic was reported in England. Similar cases were reported in various countries after the epidemic of influenza in 1890 on the Continent as well as in the United States. The symptoms presented in the epidemic of 1918 resembled the cases reported by Economo in 1916 and 1917. He reported seven cases in which the chief symptoms were somnolence, oculomotor disturbances with normal cerebrospinal fluid. Netter stated that there was evidence that the disease occurred at the end of the seventeenth and the beginning of the eighteenth centuries in Germany. The epidemic in 1890, to which the name of *nona* was given, bears a strong resemblance to that of encephalitis lethargica.

There is found, in a fairly large number of cases, a history of influenza, though only in exceptional cases has the specific bacillus been found. It must be noted, however, that symptoms have followed shortly after or during the convalescence of attacks of influenza, while on the other hand a history of an influenza attack has been frequently absent [House (4), Schnorr (5) and Thistle (6)]. In fifteen cases reported by Hershfield (7), the history of influenza was positive only in three cases and in fifty per cent. of the cases described by Tilney and Riley (8) there was no history of influenza. Alexander's five cases (9) occurred during an epidemic of influenza in France in 1918. He calls attention to the fact that during this epidemic,

many cases of influenza exhibiting cerebral symptoms were reported in which there was drowsiness, delirium, melancholia and sometimes mania without paralysis of muscle groups.

The only reason for thinking that it is a sequel to influenza is that it has occurred during epidemics of influenza. In influenzal encephalitis, the Pfeiffer bacillus has been found in the brain, cerebrospinal fluid and meninges. This microorganism has not, to my knowledge, been isolated in any case of encephalitis lethargica, but the records fail to show that studies have always been made to isolate the organism in these cases. While the symptoms of influenza have preceded the onset of the manifestations on the part of the nervous system, there is no good reason for not ascribing the catarrhal symptoms to the latter disease itself. Assuming, though, that the diagnosis of influenza has been a correct one in cases with a positive history of influenza, the lowered resistance of the individual thus occasioned could very well prepare the soil for the invasion of the virus or organism causing encephalitis lethargica; or there still remains the possibility, as has been suggested, that the disease is due to a toxin produced by the organism of influenza elsewhere in the body.

In this connection, the studies of Crookshank (10) are interesting. He called attention to the epidemiological relation between poliomyelitis, polioencephalitis, cerebrospinal meningitis on the one hand and influenza on the other. Records for such a relation have existed for 450 years and it was known to Hippocrates. He believed that epidemic encephalomyelomeningitis represented an intensive and specialized reaction that had the same relation to pandemic influenza as did the prevalence and epidemics of septic pneumonia and other diseases. The relation which epidemic influenza bears to the disease under discussion, I believe, is still an open question.

SYMPTOMS.

The disease is usually ushered in by the appearance of catarrhal manifestations of the mucous membrane of the eyes, throat, and bronchial tubes. Rarely, the onset may be sudden, by the occurrence of a convulsion or a fainting spell, but as a rule the symptoms develop gradually. Headache is common and diplopia is an early symptom. Fever is almost always present, ranging from 101° to 102° , less frequently rising to 103° and 104° . In a small number of cases fever is absent or it may not appear until several days after the onset.

Somnolence, lethargy, stupor, and coma appear in about eighty per cent. of the cases, and in about a quarter of them it is associated with excitement and delirium. In eighty-seven cases reported and analyzed by Netter, lethargy was absent only in three cases. It is peculiar to the lethargy that the patient can be aroused to perfect lucidity, to lapse soon again into the lethargic state.

Paralysis affects the oculomotor nerve mainly and then next in frequency the facial nerve. Ptosis is the most common symptom and is usually bilateral. Ophthalmoplegia, diplopia, strabismus, and paralysis of accommodation, have all been observed

[(Climenko (11), Ulrich (12) and Arana (13)]. More rarely there is paralysis of the tongue and disturbance of speech. In some cases there are simply pyrexia and lethargy without localizing symptoms.

Several types of the disease have been described. MacNalty (14) recognized six distinct types: 1, those cases showing involvement of the third nerve; 2, cases which implicate the brain stem and bulb; 3, the ataxic type; 4, the type in which the cerebral cortex is involved; 5, the type with spinal cord involvement and, 6, the polyneuritic type. Tilney and Riley describe eight types, namely: the lethargic type, cataleptic type, paralysis agitans type, the polioencephalitis type, anterior poliomyelitis type, the posterior poliomyelitis type, epileptomaniacal type, and the acute psychotic type.

It is worthy of note that in studying the symptomatology of this disease as it occurs in the literature, we find in a small number of cases the presence of tremors and choreiform movements, due probably to the implication of the basal ganglia being in the nature of extrapyramidal motor disturbances.

Another group of cases rather small in number present symptoms suggestive of paralysis agitans, namely, the mask face, muscular rigidity, and tremor [Buzzard (15), Tilney and Sachs (16)]. Choreo-athetotic movements were described by Howe (17) as representing the thalamic syndrome in encephalitis lethargica in which also there were ataxia, bilateral ptosis, weakness of the lower side of the face on the right side and probably a left homonymous hemianopsia. Ophthalmoplegia is positive in seventy-five per cent. of the cases. Rigidity, suggestive of meningitis, has occurred in some cases.

The disease occurs at all ages. It has been described in infants of four weeks [Bassoe and Hassin (18)] and has been frequently observed in children from four to twelve years of age [Findlay (19), Tucker (20), Belin (21), Batten and Still (22), Tilney and Riley]. It occurs more frequently after the age of forty.

Spinal fluid examinations were made in a large number of cases and the Wassermann reaction was found negative in all instances [Tacconi (23), Lortat, Jacob and Halliez (24), Claude and Schaeffer (25), Tucker, O'Carroll and Nesbitt (26), Robinson (27), Hershfield and Howe]. In the cases of Tacconi, Lortat, and Jacob and Halliez there was a slight lymphocytosis. Lymphocytosis was absent in the cases reported by Claude and Schaeffer, Olmer (28), Climenko, Schnorr, Foster Kennedy (29); Ward (30), Battin, Sainton (31) and others. In two cases reported by Cruchet (32) the spinal fluid showed the presence of albumin and sugar. In one of the cases, the fluid was slightly cloudy and showed numerous lymphocytes. The fluid was under increased tension in the cases reported by Tucker, O'Carroll and Nesbitt, Robinson, Oddo and Boulaki (33), and Arana.

In a case reported by Sachs there were twenty cells; in two others, twelve; in another eighty; in another the fluid was negative. In House's six cases, the cell count was six, twenty-six, twenty-seven, forty-six, fifty and 105. In Gordon's (34)

cases the cell count in one case was fifteen; in one, eight; in a third case it was negative. In Hershfield's ten cases the fluid was clear in all; there was slight, if any pressure; bacteriologically it was negative; and the cell count, five to 120, mostly mononuclear lymphocytes.

The blood examination showed 10,000 white blood cells to the c.mm. in MacDonald's (35) cases. In Tucker's cases, the count was 17,600 and 12,400. In Kennedy's case, 10,000; in Robinson's, 16,000; in Hershfield's eleven cases the average was 14,000, the lowest being 8,000, the highest, 20,000.

PATHOLOGY.

The gross changes are insignificant. Punctiform hemorrhages have been seen in the gray matter in the region of the third and fourth ventricle, aqueduct of Sylvius and in the pons and peduncles by Marinesco (36) and others. In Netter's experience the site of the hemorrhages was preferably in the neighborhood of the third, fourth and lateral ventricles. Some dilatation of the ventricles has been observed. Crucher has described distention of the lateral ventricles and in one case reported by Tucker there was marked distention of the third, fourth and lateral ventricles.

The microscopical findings consist of perivascular cellular infiltration, the cells being mononuclear round cells for the most part. Bassoe and Hassin described in their cases the presence of lymphocytes, plasma cells, polyblasts, fibroblasts and rod cells, in the adventitious spaces, the perivascular spaces and surrounding parenchyma.

Marinesco found a perivascular hemorrhagic infiltration, the site of choice being the peduncle and the gray matter around the aqueduct of Sylvius. Sometimes there was present some polynuclear cells, but for the most part the cells consisted of lymphocytes, plasma cells and fibroblasts. The process was characterized by infiltration of the veins and capillary walls. The nerve cells themselves showed very little change even in the vicinity of the foci of inflammation and neuronophagia was not seen.

The pia in some cases has shown cellular infiltration with polymorphonuclear lymphocytes (Tucker). The ganglion cells rarely showed any destruction, although it is seen occasionally as in the case described by Lowe (46). Sachs described minute hemorrhages of the brain axis, ganglia, pons and medulla, the process being a perivascular mononuclear cellular infiltration with slight, if any, destruction of the tissue.

Tucker reported the presence of swelling and congestion of the pituitary body and infiltration of blood cells into the tissue and some cloudy swelling of the cells of the pituitary body. He attributes the somnolence in these cases to inflammation and pressure in the pituitary gland.

A study of the histology of the process reported by Henrietta Calhoun (37) may be summed up as follows: The meninges were congested, there was perivascular infiltration, more marked in the basal ganglia and the nuclei of the pons and medulla. There was a perivascular infiltration of the pia and blood vessels, the cellular infiltration consisted of lymphocytes and plasma cells, and the nuclei of the

neuroglia were moderately increased. The nerve cells showed some chromatolysis such as is found in toxic states.

The histological picture corresponds to that described in African sleeping sickness, except that the infiltration in the pia and cortex is more pronounced in sleeping sickness. It can be differentiated from dementia paralytica, in which the meningeal changes are more pronounced, there is a new capillary formation, the changes are more intense in the cortex, and the mast cell is present.

Poliomyelitis differs from encephalitis lethargica in these particulars: In poliomyelitis, the meningeal symptoms are more frequent, the onset is rapid, the symptoms are largely confined to the spinal cord, it is more common in summer, there is marked pleocytosis, globulin is increased in the spinal fluid, and histologically, hemorrhages are common, polymorphonuclear cells predominate, plasma cells are less frequent, the nerve cells show pronounced degeneration, and neuronophagia is present. In encephalitis lethargica, the onset is gradual, the cranial nerves are especially affected, microscopically, the plasma cells are more common, the polymorphonuclear cells rarer, the nerve cells are very little injured and neuronophagia is infrequent; the spinal cord is rarely affected, residual paralysis does not occur, there is no marked pleocytosis, it occurs mostly in winter, and it does not occur in more than one member of the same family.

The spinal fluid in poliomyelitis shows several hundred to thousands per c.mm., while in epidemic encephalitis the deviation from the normal is slight.

It has been asserted by some that the toxin causing encephalitis lethargica is produced by the *Bacillus botulinus*, but this bacillus has never been found; moreover, somnolence is absent in botulism and the latter disease is likely to occur in several members of a household who have eaten the same food. For two or more members of a family to have lethargic encephalitis is not known. The lesions in botulism and sleeping sickness are similar, but the cause is different.

EXPERIMENTS.

Experiments were made by Wiesner (38) who introduced an emulsion of the brain beneath the dura mater of a monkey. The animal, after a few days, became somnolent, and died after forty-eight hours. An autopsy revealed the presence of acute hemorrhagic encephalitis. A second monkey injected with the emulsion that had been passed through a porcelain filter remained immune. A culture of the brain from the monkey yielded a gram positive coccus which appeared in the first monkey inoculated.

Inoculation of the spinal fluid into a rabbit, a guineapig and a monkey gave negative results, as did also the introduction of an emulsion of the brain substance into a monkey by Lereboullet and Hutimel (39). Inoculation of the cord in a monkey gave negative results in the cases of Wegforth-Ayer (40).

On the other hand, Strauss, Hirshfeld and Loewe, (41), in a preliminary report of animal experiments, concluded that the inoculation of emulsion of the

human brain in cases of epidemic encephalitis produced a lesion in the monkey characteristic of the lesion found in epidemic encephalitis. Inoculation of the filtrate of the mucous membrane of the nasopharynx of a patient not suffering from epidemic encephalitis showed negative results. On the contrary, inoculation of washings of the nasopharynx in a case of epidemic encephalitis produced paralysis in the monkey, accompanied by pleocytosis in the spinal fluid.

The filterable virus obtained from the mucous membrane of the nasopharynx in a fatal case of epidemic encephalitis produced hemorrhagic encephalitis in a monkey and the virus has been carried through a second generation. They conclude that further studies are necessary to determine the nature of the virus and the relation it has to influenza.

Loewe, Hirshfeld and Strauss (42) experimented further with monkeys and also rabbits and were able to obtain a filterable virus from the nasopharyngeal mucous membrane in cases of encephalitis lethargica which produced in monkeys and rabbits lesions similar to those found in the human brain. They carried this virus through four generations of rabbits and were able to transmit it to a monkey in the fifth generation and back again to rabbits. Cultures were negative. They (43) had previously isolated an organism from the virus which they reported on October 4th. McIntosh (44) found in two cases an anaerobic bacillus. Injections of the emulsion of the brain and spinal cord into monkeys, however, produced negative results.

PROGNOSIS.

The mortality is rather high. For example, in the cases Economo reported, the mortality was fifty-four per cent. On the other hand, Hall (45) described sixteen cases without a single death. Of 168 cases reported by MacNalty, there were thirty-seven deaths. In Netter's cases the mortality was fifty-six per cent., in Wilson's cases, fifteen per cent. and in the cases reported by Tilney and Riley twenty-five per cent.

The lethargy persists from two to three days to two to five weeks. In one case this symptom lasted three months. Residual disturbances consist of spastic gait, paresis of the limbs, speech troubles, and mental and emotional disturbances. In a case reported by Findlay, a child of five months after recovery still had ptosis, the character and disposition was changed, and the memory had deteriorated.

TREATMENT.

There is no known specific treatment for this disease. The therapeutic indications are to relieve symptoms. The use of morphine and hypnotics has been condemned by some observers. The salicylates and urotropin have been used. Arana in one of his cases introduced a grain of pepton intravenously for six doses every other day. This was followed by a severe reaction and he asserted that improvement began on the second day with complete recovery in five or six weeks. Withdrawal of the spinal fluid may give relief if there is increased pressure.

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DEMONSTRATION OF RECONSTRUCTION SECTION OF DEFECTS OF HEARING AND SPEECH.*

By CHARLES W. RICHARDSON, M. D.,
Washington, D. C.

The section of defects in hearing and speech in the division of reconstruction of the Surgeon General's Office was given a definite form on March 1, 1918. At the same time I was officially notified that I was to be designated as director of this section. Shortly thereafter I was relieved from duty and assigned to the division of reconstruction as director of the section. Before entering upon my duties I had made a careful study of the problems connected with this activity and therefore was partially prepared for the organization of the section.

The reconstruction division at this time was just struggling to its feet after the numerous intense attacks made upon it for the purpose of abridging and curtailing its activities by individuals representing other agencies in interallied departments and independent groups of government forces. Although seeking to gain more power by the hedging in and curtailment of the duties of this division, two of these agencies already had more work set out for them than they could possibly accomplish even had their administrators and projectors possessed superhuman wisdom and administrative ability.

At this time the inauguration of a new chief took place. After the usual ups and downs incident to establishing a new procedure had been gone through, we found that on July 23, 1918, we were actually a working section with a full active unit, consisting of a superintendent, a principal, and teachers with seventeen patients for treatment. During our period of organization, that is, until we started the practical side of our work, we so perfected our plans that we found at the close of the service on December 15, 1919, it was totally unnecessary to alter them in any way whatever. In fact, theoretically we made preparations for many contingencies that never arose.

One of our greatest difficulties was the attempt to obtain statistics as to the probable number of patients requiring this form of treatment. The reluctance with which information of a trustworthy nature was furnished is in striking contrast to the manner in which information of an untrustworthy nature was thrust upon us. The most reliable that we were able to obtain came from our distinguished colleague, Major Dundas Grant, of London, who held a position in the British Army somewhat similar to that which we held in the American Army. The ratio that he furnished was the basis upon which we worked, making certain deductions from the physical character of our forces and the type of warfare that ensued after the A. E. F. entered the campaign. Even our calculation of one half of one per cent. to the total wounded was even greater than the actual results. We had enrolled upon our list of instructors, in speech reading, one

hundred teachers who were willing and anxious to enter the service as reconstruction aides under full army regulations. Our list of instructors in speech defects was not quite so large, but included some excellent teachers—the number was fifty-three. As we were only forced to call upon ten of these for speech reading, and three for speech defects, you can readily see how well we were prepared for the emergency. It is due to the superintendent, principal, and instructors to state that I never expect to find a better equipped, more intelligent, more enthusiastic, and more devoted band of laborers in any field of human endeavor than in this body. They had one object in view, that of making a perfect speech reader out of every patient presented, and they came very near to the full accomplishment of the task. Individual temperament and the mental status of the patient were the only obstacles that prevented the achievement of complete results.

The methods which were employed in our work were those which are known as the Muller-Walle method and Miss Bruhn's textbook was selected as a basis. We also made use of the Nitchie method. We were as catholic in our efforts as possible to obtain good results. We followed out the usual routine method in all cases, although there was a considerable amount of speech reading taught "by doing it." We resorted to the use of mirrors, blackboard illustrations, demonstrations, and the use of the Northampton charts. It had been our intention also to make use of moving picture demonstrations, but we found that such a course was practically unnecessary.

The method of teaching was an intensive one. The patients were taught by the individual method. Each patient was at first given one to two lessons a day, which were rapidly increased to two or three periods a day, according to his mental ability to absorb. Care was taken to see that no patient suffered mental fatigue from overwork. The time employed at each period was forty-five minutes. Most patients requested more work than we were able to give them or more time than we thought wise for them to receive. In the section of defects in hearing we treated 112 patients; in the section of defects of speech we treated fifty-four.

RESULTS.

The reports of the home service section of the American Red Cross are very interesting and I shall present a few of them. These reports agree generally with the standard of the patient when he was discharged, although many show improvement:

Name.	Grade.	Impression of Visitor.
L. H. A.	Excellent	No trouble for him to understand.
B.	Excellent	Very proficient.
B.	Excellent	Understands remarkably well.
B.	Excellent	Understands well.
B.	Excellent	Reads lips well.
B.	Excellent	Understands well.
D.	Good	Much impressed with lip reading.
C.	Fair	Apparently needs no help.
H.	Excellent	No trouble in understanding.
H.	Good	Reads lips well.
H.	Excellent	Has very little trouble in understanding all that is said even in crowd.
J.	Good	Answers freely; adept lip reader.

*Read before the Section in Otology of the New York Academy of Medicine, March 4, 1920.

Name	Grade	Impression of Visitor.
M.	Excellent	Most favorable; can hardly believe him deaf.
R.	Excellent	Answers very readily; can always understand.
S.	Excellent	Visitor saw patient several times and talked with him; did not know he was deaf until told.
W.	Excellent	Lip reading helps; people do not know of deafness.
W.	Good	If you speak slowly is able to read lips well.
W.	Fair	Lip reading difficult.
D.	Average	Has difficulty.

These few reports will indicate that we not only achieved results, but that the good results were maintained by the men many months after they were discharged from the service. I hope I may be pardoned for stating that our results have been unexpectedly great. The success in our speech hearing sections can be measured by the following figures: Excellent, fifty-three per cent.; good, twenty-one per cent.; average, fourteen per cent.; fair, six per cent.; poor, six per cent.

During the course of the sectional work, both at G. H. No. 11 and at G. H. No. 41, numerous persons interested in the teaching of the deaf visited our sections and were most complimentary as to the character of the work, the methods employed, the staff of instructors, and the results attained.

During the meetings of the American Medical Association and the Congress of Physicians and Surgeons, at Atlantic City last year, numerous members of these bodies visited G. H. No. 11, and from whatever viewpoint they sought medical information, during their visits at Cape May, they lingered longer and studied more intently the work that was being carried on in the section of defects of hearing and speech. I do not know whether this was due to something new to them being accomplished with apparent success, or whether the results attained through the scientific methods employed appealed to them.

We believe the work accomplished by this section marks an advance in the teaching of speech reading to the deaf. It also demonstrated that a high grade of intelligence is not necessary to acquire facility in speech reading. We had all types of minds, all grades of education, and all forms of temperaments, but not one required, nor was it necessary to give to anyone, the manual method of training. These efforts have brought more forcibly to the American medical mind the fact that the deaf can be placed upon a purely independent plane through speech reading better than by any other method of which I am aware. In conclusion, I might suggest that there is a possibility that the method of intensive training instituted in our work might be of some service in the instruction of the lay deaf.

Malaria Treated by Hypodermic Injections of Cinchonine Bihydrochloride.—D. S. Ollenbach (*Indian Medical Gazette*, February, 1920) reports twenty-three recoveries in a series of twenty-five cases. The other two patients were probably cured as they did not return for more injections. No local or constitutional symptoms were observed.

INFLUENZA IN THE AGED.

By MALFORD W. THEWLIS, M. D.,
New York.

Hippocrates described the phenomenon accompanying an epidemic cough, or influenza, which took place in Perinthus, and was complicated with pulmonary affections, angina, and paralysis. He observed that any member who was exposed to fatigue was the most likely to be attacked and noted that women were less likely to be affected than men, since they were less exposed to the air. In women, he found the attacks were mild but when a febrile rigor supervened, the attack speedily became fatal.

Old age, with its debility, predisposes to influenza, which in many cases rapidly proves fatal. The lowered resistance of the senile organism, accompanied by heart disease, emphysema, weakened condition of the gastrointestinal tract, and nephritis, makes the old person an easy prey to this disease. Influenza is frequently the disease which ends the life of a chronic sufferer from cancer, Bright's disease, or other maladies.

Influenza is a fatal disease in old age primarily because of its tendency to develop into pneumonia, and secondarily, because it is prone to cause other serious complications. An arteriosclerotic patient, or one suffering from emphysema, bronchitis, nephritis, or diabetes, does not bear this infection well because the vital spark is already weakened. The complications are fully as important as the disease itself.

The various epidemics we have witnessed were in all probability due to a mixed infection, although the presence of the *Streptococcus pyogenes*, pneumococcus, pneumobacillus, and staphylococcus are secondary agents to Pfeiffer's bacillus. It is not always easy to cultivate the latter, however, and it may lead to a mistake in diagnosis. The bacillus is cultivated with difficulty on ordinary media, it is grown much more easily if placed on blood agar, with stabs of the *Staphylococcus aureus* with it at intervals. Around each colony of staphylococci the Pfeiffer's bacilli will be twenty times as large as those of the pure control culture (Dieulafoy). This cultural satellism (Meunier) is obtained in twenty-four hours and is a valuable assistance in finding Pfeiffer's bacillus.

An old person who is debilitated as the result of some chronic disease will suffer from an aggravation of the old condition while fighting the infection itself. A man with interstitial nephritis may have a hyperacute nephritis which will give nearly every symptom of pneumonia and lead to a mistaken diagnosis. Again, influenza will often cause nephritis as a complication and it will be the beginning of a long illness. Convalescence in the aged is slow, even without any complication.

Influenza in the aged begins as in maturity; it is ushered in with coryza, conjunctivitis, and sore throat. The preliminary symptoms are headache and general aching all over the body; the temperature is subfebrile, since the aged do not usually have a febrile temperature in any illness; the pulse may or may not show changes. The temperature and

pulse are uncertain and the only safe rule in diagnosis is the counting of the heart beat with a stethoscope, since the radial arteries are usually sclerosed. The pulse may be irregular and rapid. The respiration must be counted as it gives one of the most valuable signs of the progress of the disease. Failure to count respiration in aged individuals is a serious mistake. There is great prostration at the beginning of the attack and in an aged person pneumonia may develop without presenting many local signs. Senile pneumonia is different from that seen in adults and the examination of the chest may not enable the physician to make a correct diagnosis. The respiration is increased; there may be dyspnea and cyanosis, sometimes a low, muttering delirium, and often the patient will hit his chest with his hands, seeking relief from distress. There may be little or no cough and the characteristic picture of the sputum as seen with pneumonia in adults is lacking. The physical signs in the chest are in complete discord with the gravity of the condition; the temperature runs a subnormal course, the pulse rate may be normal and the expectoration may be the same as that which usually accompanies bronchitis.

The patient may be apparently progressing well and a favorable prognosis given. A few days ago I saw an old man who was ill with influenza and he seemed to be progressing satisfactorily; I saw him at noon and at five o'clock had a telephone message that he had hemoptysis. His breathing was distressed and the clergyman was immediately called; a few hours later he died from pneumonia. It is indeed difficult to make a diagnosis in cases of senile pneumonia and we should depend upon the respiration chart as our greatest aid, as the respiration will show considerable increase before the pulse gives signs of gravity.

Some cases end in gangrene of the lungs but they are rare. Pleurisy is usually present but in the aged it is not necessarily accompanied with pain as sensibility is greatly reduced. As aged patients often have arteriosclerosis, there is usually a cardiac disturbance and influenza accentuates the symptoms due to it; cardiac action rapidly becomes affected and the patient may die suddenly from asystole which is the outcome of dilatation, causing us to give a cautious prognosis in every case of influenza in the aged.

As the stomach is debilitated, the gastrointestinal form may be seen either alone or in combination with other forms. There may be vomiting, diarrhea, cramps in the abdomen, gingivitis, stomatitis, aphthous stomatitis, and cachexia as a result of the small amount of nourishment taken. The prostration may resemble that caused by typhoid fever. Some epidemics are characterized by a biliary form with jaundice; the epidemic of 1775 in Vienna showed a marked biliary form (Stell) and the Paris epidemic of 1830 presented symptoms resembling those of cholera (Hardy and Behier).

Nervous influenza is common in old age; the headache may be intense, a severe throbbing pain, and may be associated with vomiting, insomnia, and photophobia. It may cause pseudomeningitis, and, moreover, a genuine meningitis may develop. Neu-

ritis is a common sequel of influenza and may last many months. There is great prostration accompanying the nervous type and some cases of encephalitis, myelitis, polyneuritis, and psychoses following influenza have been reported.

Influenzal nephritis is one of the most serious complications and may be the beginning of chronic Bright's disease. It is well, with the aged, to watch the kidneys carefully and an increase in albuminuria is an indication of the extent of the toxemia. The condition of the senile kidneys is so important that it is well to protect these organs in every kind of illness. In fatal cases the urine is scanty and bloody and the patient dies of anuria and uremia.

Influenzal toxemia is a very serious condition and after the first day patients present a toxic appearance; the tongue becomes coated, the breath has a foul odor, and the skin becomes slightly yellow. Even with active catharsis, the toxins will accumulate unless great care is taken. The toxemia causes the prostration and often in convalescence tonics are administered without benefit, when an active treatment for toxemia is indicated.

TREATMENT.

In a recent publication (1) I gave the chloral hydrate treatment for influenza, as administered during the epidemic of 1919, in France, in Mobile Hospital No. 7, with the American Expeditionary Forces, where the results were excellent and rapid in most cases. Invariably, patients show an inflammatory process in the throat, although they do not complain of a sore throat. It is a recognized fact that the throat is the portal of entry of the disease producing germs and it is logical to believe that treatment given with this in view will produce good results. Routine examination of the throat will reveal a reddened condition. The principle of Fanning's treatment employed in our hospital was first, to rid the system of toxins already formed and, second, to prevent their further development. The routine treatment was as follows:

Four grains of calomel, followed in three hours with half an ounce of magnesium sulphate; gargle every half hour with a two per cent. solution of chloral hydrate. A soldier would enter the hospital in the afternoon quite ill, presenting a toxic appearance and with perhaps a temperature of 102° F. In many cases, under this treatment, the man would be returned to duty in twenty-four hours. I have used the treatment in private practice and it gives excellent results. Recently I saw five persons quite ill with influenza, in one home. Every one used the chloral hydrate gargle except a little girl of five years, and the next day there was a decided improvement in all the patients except this child. Clinically, it works rapidly in many cases.

It is difficult to give the theory of the action of chloral hydrate. However, we must employ the remedies that give us clinical results. Thus far theory has been of little benefit in the treatment of influenza. Chloral was discovered by Liebig in 1830. It was the product of the action of dry chlorine on ethyl alcohol, a chlorine derivative of aldehyde, closely allied structurally to the group including alcohol and chloroform. Horand and Peuch

used it as a local anesthetic and it is found that it will often relieve the pain caused by inflammatory conditions of mucous surfaces. Externally, chloral hydrate has a marked antiseptic action (Reynolds Webb Wilcox). Burgraeve first pointed out its value in dressing ulcers, but it is used chiefly in ulcers of a bad character, particularly gangrenous ones.

Dujardin-Beaumez, Hirne, Martineau, Cadet-Cassecourt, and Fereol showed that a one per cent. solution acted favorably on gangrenous bedsores in enfeebled patients; Crequy used it in ulceromembranous stomatitis. In the throat it has an antiseptic and anesthetic action. Chloral may be altered in some way when mixed with the secretions of the mouth; possibly its effect depends upon its chlorine derivative; moreover, it might be absorbed through the mucous membrane and have some effect after absorption.

It is safe to employ chloral hydrate in private practice even with infants. Eight five grain tablets in four ounces of water will make a two per cent. solution. It can be prescribed as follows:

Chloralis hydratis,	5j
Aque,	15j
Elixir aromatici,	q. s. ad 5ij

Misce et ft. sol. Sig.: One teaspoonful in half a glass of water as a gargle every half hour.

This will make a two per cent. solution and can be used frequently, but with care. For an aged person ill with influenza, the treatment should be the same, except that the catharsis should not be too drastic. If the patient is robust, one grain of calomel in divided doses, followed by a saline; if physically frail, two compound rhubarb pills may be used.

The throat should be gargled every half hour with the two per cent. solution of chloral hydrate. Supportive treatment should begin early, as the prostration comes quickly. If there is no evidence of kidney disease, one grain of quinine sulphate may be given every three hours, and if there is prostration one sixtieth grain strychnine sulphate is given every three hours, increased later to one thirtieth grain every three hours, if necessary.

Whiskey or brandy is a valuable adjunct to treatment, I should say a necessity, one half ounce being given every three hours if there is prostration. When the weakness is extreme, alcohol should be given in its full physiological action, a half ounce every half hour until a red spot appears on each cheek, then enough to continue the full physiological effect. Alcohol is indispensable in treating many maladies of old age, but physicians ordinarily use too small doses. The present legislation has deprived physicians of the free use of one of their most valuable weapons for treating many diseases of old age. Legislation must be modified in some way to allow us the free use of remedies that years of experience at the bedside have taught us to be of value. Rest is essential, but old people should not be allowed to remain in bed if we can permit them to get up. It is often difficult to force them to sit up in a chair, especially when they are prostrated. Old patients will not do well in bed and it is a good rule to "keep senile patients out of bed." A nourishing diet should be given; milk, egg-nogs, and

broths. If there is an influenzal nephritis accompanying the condition, it may be necessary to use a milk diet with cereals; tea and coffee should be taken. The heart should be supported early with strychnine; if it is irregular, one fortieth grain of sparteine sulphate should be given every three hours. Digitalis is an uncertain remedy to use in old age, but there are some cases in which it works well. I prescribe a fat free tincture and use five minims every three hours, these small doses working as well as larger ones. It may be necessary to use oil of camphor hypodermically as a stimulant if there is much prostration. Caffeine may be used hypodermically as a stimulant and if there are signs of serious toxemia, indicated by the coating of the tongue, it is well to use mercury and chalk, one grain every three hours, for ten doses, followed by a saline laxative. A bowel movement each day will save many old patients from death and oftentimes, the toxemia being lessened, the heart will be relieved of its extra work.

Convalescence is often protracted and requires much attention. Uranalysis should be made frequently and if there is a kidney complication great care should be given to it. Ordinarily, I prescribe a tonic of elixir calisaya, a teaspoonful every three hours, combined with a tablet of one sixtieth grain of strychnine sulphate, three times a day. The ex-official elixir of iron, quinine and strychnine phosphates will work well in many cases as a tonic. It is necessary to give much attention to the bowels in convalescence as the toxemia following influenza is likely to continue for a long time. Vittel water, a pint or more a day, will have a beneficial action.

RÉSUMÉ.

Old age, with its debility, predisposes to influenza, which often proves fatal.

Danger of influenza in old age is due to the tendency of the disease to develop into pneumonia and the serious complications which often follow.

Influenzal nephritis may cause symptoms similar to those of pneumonia.

Convalescence in the aged is slow, even if there are no complications.

Diagnosis of senile pneumonia is difficult as the disease may not present classical symptoms.

The throat is usually the portal of entry of disease producing germs and shows inflammation.

Treatment consists of preventing the formation of toxins, and ridding the system of toxins already formed. Practically, it consists of gargling every half hour with a two per cent. solution of chloral hydrate and the administration of two to four grains of calomel followed in three hours with one half ounce of magnesium sulphate. Chloral hydrate has marked antiseptic action. Whiskey or brandy used as a stimulant is a valuable adjunct to treatment and should be administered in its full physiological doses. Rest is essential but it is a safe rule to "keep senile patients out of bed."

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51 EAST FIFTY-NINTH STREET.

PHYSIOLOGICAL THERAPY IN
INFLUENZA.*From the Viewpoint of the Consultant.*BY ALBERT C. GEYSER, M. D.,
New York,Consultant to the Nazareth Trade School, Farmingdale, L. I.; Radi-
ologist to the Huntington Hospital, Huntington, L. I.

What I shall say in this article is really based upon the experience gained during the epidemic of 1918-1919. For the sake of brevity I shall admit the specific cause to be the bacillus of Pfeiffer; that the disease is endemic, epidemic, and even pandemic; that we can recognize several varieties of the disease, as the catarrhal, the rheumatic, the gastrointestinal, even a neurotic form; that the disease is highly infectious, and that each succeeding infection is milder; that the disease then disappears for some time, only to manifest itself again in a new and virulent form; that there exists more or less of an immunity, yet that one attack does not produce a lasting immunity in the individual. These statements are, in the main, admitted; some of them will receive more detailed elaboration.

The Specific Cause.—All infections are the result of the implantation of germs into a suitable soil. If the bacillus of Klebs-Loeffler flourishes in a suitable soil, we name the resulting disease diphtheria; if it is the bacillus of Koch, it is phthisis; if the coccus of Neisser, it is gonorrhea, and so on. When a farmer sows wheat, he expects to see a wheat field; when he plants potatoes, a potato field; onions, an onion field, etc. The crop, therefore, depends upon the seed. An onion crop looks different from a wheat crop. In the same manner does an infection with the coccus of Neisser look different from an infection with the *Spirocheta pallida*; so does an infection with the Klebs bacillus differ from an infection with the bacillus of Pfeiffer.

While all of these various implantations, seeds and germs necessarily differ from each other because of their own individuality, specificity, the same seed also differs according to the soil in which it is implanted. In agriculture both the seed and the soil are under the immediate control of the sower; not so with disease. We cannot control the presence, and only to a slight extent the spread of some germs. The farmer cannot control the spreading of weeds except by continuous eradication. Whether weeds or crop, everything depends upon the soil in which they grow. While the farmer prepares a suitable soil for each specific crop, all soils, in order to be productive, must have one thing in common—the soil, whatever else it may contain, must have an abundance of nitrogen. Since the crop depends upon the presence of nitrogen and since, for all practical purposes, all cocci and bacilli are but miniature plants, it follows that in order to have an abundant crop of Pfeiffer bacilli, we must have a good supply of nitrogen.

The Nitrogen Supply.—All protein tissue, especially meat, fish, eggs, beans, peas and lentils, contains a large amount of nitrogen. Unless this nitro-

gen is oxidized, either by muscular exertion or the limitation of intake, there will be an excess of this substance in the body. It so happens that in the winter months the foods mentioned above are our staple diet. We do not inhale as much oxygen laden air as we should; therefore our bodies become overloaded with the very substance which is so essential for the propagation of whatever germs happen to be about at that time. As the seed of winter wheat lives and defies the cold, so does the Pfeiffer bacillus thrive particularly well in this season.

While we cannot control the bacilli, we certainly can do a great deal toward the control of the soil. This leads us to the question of prophylaxis. In order to practice prophylaxis it is necessary that the public be instructed in the proper manner of living, working, rest, and hygiene. At present there seems to be little or no tendency toward those ends. Prophylaxis can be dismissed as impracticable at this time.

Treatment resolves itself into general and specific. When a patient is first seen and the diagnosis of influenza confirmed or suspected, the intake of all foods of a nitrogenous nature should be cut off. There is no danger of starving the patient; he can live on the excess contained within his system. Thorough evacuation must be secured by the use of rectal enemas at least twice a day for the first two days. Each injection should consist of a quart of water containing soapsuds injected by means of a fountain syringe; high enemas are not necessary. For every degree of temperature that the patient has, deduct three degrees from 100° F. from the temperature of the water; for every degree of temperature of the patient below 100° F. add three degrees to the temperature of the douche. If a patient's temperature is 105° F., deduct 15° from 100° for the temperature of the water. If the patient's temperature is 97° F., add 9°. To further assist the elimination give one quarter grain hydrarg. chlor. mite every hour until six doses have been taken daily for the two days.

At this time it will have become apparent that all cases fall into two classes—those that have hyperacidity and those that have hypoacidity. The great majority of patients with this acute infection are of the hyperacid variety; therefore it is not surprising that so many physicians have placed such implicit reliance upon the alkaline treatment. There is, however, a proportion of cases of hypoacidity. When the alkaline treatment is administered to these patients, they rapidly become worse; in fact, they are the more severely sick from the very start. It must also be borne in mind that the systemic condition changes in the same patient during the course of the disease. As a rule in the beginning the condition in the patient is one of hyperacidity, and as the disease progresses and apathy manifests itself the condition becomes one of hypoacidity; then, at or during the crisis, the condition again changes to one of hyperacidity, and the patients make a speedy recovery. Those patients who show a condition of hyperacidity should receive alkaline treatment, twenty grains of bicarbonate of soda every hour for six doses daily. The

patients with hypoacidity should receive drinks containing acid, fruit juices or cider, hydrochloric acid and pepsin. Do not attempt to feed the patient unless the patient calls for it, but give water *ad libitum* without urging. Once a day the patient should perspire freely. This may be brought about either by a hot bath or by the application of a wet blanket and hot water bottles. In institutions the dry hot air apparatus or diathermia may be applied for the same purpose. The patient's room should be large and well ventilated; this does not mean that the windows must be open during the severe weather. It has been abundantly proved that for ordinary purposes it is sufficient to keep the air in motion; it must not be allowed to become stagnant with the exhalations and body emanations of the patient. A fan, judiciously placed and kept operating, will serve for this purpose.

The only complications that I shall refer to are tonsillitis, pharyngitis, and laryngitis. There is nothing more grateful to the patient than the application of a cold compress to the throat. This compress requires remoistening every five or six hours.

Specific Treatment.—In the true sense of the word there is no real specific for this disease. Yet there are certain conditions that will yield to certain specific treatment. Since the disease process is the result of an infection with a specific germ, it follows that the system becomes overburdened with certain toxic materials elaborated by these germs. For this toxin we require an antitoxin. Not possessing an artificial product, we must depend upon the system of the patient for its production in a physiological manner. Most of the antitoxins are produced in the system by the breaking down of the leucocytes and erythrocytes. From their component parts antibodies are formed. Sometimes it happens that there is a physiological response by a leucocytosis, but this is not enough. A certain number of the leucocytes must be destroyed to furnish the antibodies. One of the best and oldest drugs for this purpose is sodium iodide. In the ordinary cases of influenza with the usual amount of pulmonary involvement, twenty c. c. of sodium iodide, injected intravenously every twelve to twenty-four hours for two or three doses, acts with almost magical precision. The cough lessens, the expectorations become more fluid, the respiration becomes slower and deeper, and the condition of the patient becomes more restful.

In some cases where the patient complains of aches and pains over the entire body, where there appears to be a rheumatoid condition, better results will be obtained by the intravenous injection of twenty c. c. of the salicylate and sodium iodide combined. As a rule, after the second injection, the crisis occurs, and in twenty-four hours a marked change for the better is noted. I have never been obliged to use more than four of these injections in any single case. These two drugs, salicylate and sodium iodide mixed, act like a specific at a certain stage of this disease.

The Cause of Death.—Influenza is a toxemia causing capillary paralysis. When we remember that it is in the capillary system that all the

processes of nutrition and body waste take place, it becomes apparent how important it is to counteract the toxemia in these vessels. There certainly can be no surer, quicker, or more direct method than by the intravenous route.

There is still a third drug that a large proportion of influenza patients require about two or three weeks after convalescence. Nearly all of these patients suffer from secondary anemia. Iron and arsenic intravenously once or twice weekly for six or eight doses will certainly change the blood picture. Unless these patients regain their normal blood count and hemoglobin percentage, they are either likely to relapse or are subject to any and all of the various chronic diseases that follow in the path of influenza.

The entire therapeutic procedure resolves itself into assisting the natural physiology of the patient. Every recovery and every cure is a physiological process, and this process is or is not inherent within the system of the individual. By making judicious use of rest, hygiene, diet, and a little physiological therapy, the best interests of the patient are served.

Our attention should be called to the following points: We have no real specific for this disease; the germs cannot be destroyed; face masks, germicides, and bactericides are a myth and a fad. The face mask is of no use on the outside and the germicides and bactericides should not be put inside of the patient.

Drugs.—Quinine has not proved to be harmful, neither were any good results derived from it. Digitalis is a dangerous drug in this disease. The toxemia of influenza causes capillary stasis, digitalis causes capillary spasm with increased arterial tension, a dangerous combination.

The coal tar derivatives are contraindicated because the toxins of this disease cause profound cyanosis, as do all of the coal tar products. When they are used in small doses they are useless, in large doses they are not only contraindicated but dangerous. Camphor in any form has not shown any favorable results which entitle it to consideration. Strychnine is mentioned to be condemned, because when this drug is indicated it is too late; to use it before it is indicated is either useless in small doses or dangerous in sufficiently large ones. Alcohol is one of the best drugs at our command. A hyperacid condition in a patient requires warm, alkaline drinks. A teaspoonful of brandy added to a glass of some warm or even hot alkaline drink serves a double purpose. First it causes more rapid absorption, secondly it assists in overcoming the capillary stasis. A hypoacid condition in a patient requires a cool, acid drink. Orangeade, lemonade, lime juice, or cider to which the proper amount of brandy has been added is most beneficial. Morphine, codeine, and heroin have no place in the treatment of this disease. It is true that such drugs lessen the cough by abolishing the bronchial reflexes. They do even more, they lessen glandular activity and dry up the secretions. I have seen the secretions so dry that they could no longer be removed by the most violent effort on the part of the patient. The cough is a physiological effort to expel the excess of mucus;

the effort should be assisted by making the mucus more fluid.

During the acute stage the patient does not require food. What he does require is the elimination of waste products by the skin, bowels, and kidney. Do not urge the patient to drink more than his thirst calls for; you cannot flush the kidneys as you would a city sewer, and if you could, the toxins are not in the kidney, they are throughout the entire system, especially in the capillaries. When the patient craves food, vegetable soups and cereals are indicated; the more simple the food, the easier it is to digest. Above all do not give raw or soft boiled eggs, meats or milk. It may be true that some patients have recovered not because of these protein foods, but in spite of them, but many, many more have succumbed, when they might have been saved, had their digestive apparatus not been overtaxed.

301 WEST NINETY-FIRST STREET.

AFTERTREATMENT OF FRACTURES.*

BY WILLIAM T. JOHNSON, M. D.,
Philadelphia.

The great value of physiotherapy as shown in the reconstruction work since the war is so generally recognized that this seems an appropriate time to discuss some effective measures that may be used to hasten the recovery of fractures. At first thought it might seem superfluous to add to the large and almost formidable group of procedures advocated and used in the aftertreatment of fractures. Unfortunately, some fractures fail to heal as well as they should, and realizing the economic importance of securing the best functional results, useful measures additional to those in common vogue should be welcomed.

The physician, or even the surgeon, is often disinclined either to refute or qualify the popular dictum that a sprain is worse than a break, and feels that in many simple cases his duty is largely done when good position has been secured and adequate splints applied.

We believe there could be an improvement in the handling of nearly all fracture cases by using combinations of physical measures that have proved their worth when applied after fractures have failed to heal properly.

We all recognize the need of the best possible reposition of broken bones and the application of suitable splints to immobilize the injured parts. Early and persistent passive motion is also recognized as important in certain fractures. Baking, massage, and active exercises added to these measures complete the list of procedures commonly employed.

Dr. A. E. Barclay (1) makes the following statement: "All viscera . . . require the alternate conditions of activity and rest to keep them in vigorous health. If this condition is not observed or attended to, structural changes and deterioration of function are sure to follow." Doctor Barclay re-

fers to the work of Lucas Championniere and Dr. H. J. Seeuwen as demonstrating what skillful massage will do when begun two or three days after fracture. "The splinted, immobilized fracture is at rest, but if it is possible to supply activity" also by really skillful massage without disturbing the fracture, union of recent fractures takes place in a surprisingly short time, and, even more important, function is little impaired. Some of these cases were watched by a series of x ray plates and good callus was seen only ten days after fracture, which is at least half the usual time for its appearance. In a simple transverse fracture of the ulna the patient was able to return to work in four weeks, and demonstrated his cure by lifting a fifty-six pound weight over his head. The value of this treatment is impaired by the difficulty of securing masseurs of requisite skill.

In his effort to do something for the large number of patients with ununited fractures resulting from war injuries, Doctor Bradley applied a current of the faradic sinusoidal type through electrodes cleverly incorporated into the splints, thus obviating the need for their removal; and also devised some special splints which made the application of the current easier. The amount of current used was just sufficient to supply the stimulation required to keep muscles and skin in good condition and hasten repair, without violating the principle of rest for the broken parts. No contraindications were found. Some old ununited fractures have united satisfactorily, and some sinuses have ceased to discharge almost at once.

A case referred to the writer three years ago gave the following history:

CASE.—A woman, seventy-one years of age, had four months previously suffered a Colles's fracture of the left wrist, which was unrecognized for over two weeks, after which splints were kept on for four weeks. For the next two and a half months persistent baking and massage were employed. The skiagraph taken two weeks after the injury showed an impacted fracture in excellent position. Four months after the fracture there was almost complete disability of the hand, flexion and extension of the fingers being limited to an arc of about an inch, and could forcibly be increased but slightly on account of the pain. No finger could be straightened nor flexed to touch the thumb. All motion at the wrist was very slight. The hand and lower half of the forearm were mottled and cold.

The treatment used was diathermy for fifteen minutes, getting the hand and forearm thoroughly warmed, followed by the static wave current applied at various places on the hand and forearm. The treatments were always stopped before there was any fatigue. Within two weeks the blueness and coldness were gone, and the pain, which had been fairly constant and severe, was entirely relieved. The functional improvement was much slower, but the patient was encouraged by what had been accomplished and was faithful in continuing treatment. For three months three treatments a week were given, then two a week for the same period, then one a week until almost a year from the time of beginning. This may seem slow, but

*Read at the twenty-ninth annual convention of the American Association of Electrotherapeutics and Radiology, held at Philadelphia, September 16-19, 1919.

the baking and massage had produced a less rapid improvement. All discomfort was relieved and there was an almost complete functional recovery. Considering the age and history of the patient the result was most gratifying. In a number of subsequent cases of fractures near joints, although baking and massage had been tried for some weeks or months, additional improvement was secured by this method. In all cases the patients were told that massage might be continued advantageously, but the baking was stopped, it being my opinion that diathermy fully replaced it.

Diathermy has been applied soon after fracture with electrodes on opposite sides of the limb so that the current would penetrate the region of the fracture. It would be far easier and probably as effective to place the electrodes beyond the ends of the splints, thus stimulating a larger portion of the limb as well as the region of the fracture.

By proceedings similar to those outlined we should stimulate nutrition, thus guarding against passive congestion and such degenerations as are favored by *laissez faire* methods.

Doubtless when all the reports from the reconstruction camps are in, valuable additions will be made to the treatments mentioned. It is not our purpose to claim superiority for fixed procedures in all cases. Baking, massage, passive and active motion with or without apparatus, galvanism for polar effects or ionization, faradism, the sinusoidal, practically all forms of high frequency currents, the static induced or wave current or sparks, are all treatments that may be judiciously used, and any one of them might be preferred in a given case. The indications for each must be left to those familiar with the effects produced and skilled in the application. The wave current, which should be used sparingly if at all before the splints have been removed, is one of our best treatments immediately afterward, and should always be preceded by diathermy at the same treatment.

Enough has been done and is now in the records to warrant us in urging that appropriate treatment be started soon after the splints have been applied, if our patients are to have the earliest functional recovery.

REFERENCES.

I. BARCLAY, A. E.: Electric Stimulation of War Injuries, *Archives of Radiology and Electrotherapy*, December, 1918.

The Dangers of Ascariasis.—Bowman Corning Crowell (*American Journal of the Medical Sciences*, March, 1920) reports a number of cases of ascariasis because he considers the dangers of the disease to be underestimated. The worms may cause symptoms and even death through toxic, reflex, and mechanical effects, either in the larval stage or while adult in the intestines, or in the course of their migrations to other parts of the body. Cases of disease of the intestine or other parts may assume much more than their usual seriousness on account of the presence of these worms, and the accidents due to the migratory proclivities of the worm may cause fatal complications of simple surgical procedures.

THE RELATION OF FOCAL INFECTION TO MENTAL DISEASES.

By HENRY A. COTTON, M. D., A. M.,
Trenton, N. J.,

Medical Director, New Jersey State Hospital at Trenton, N. J.
Lecturer in Psychopathology, Princeton University.

(Concluded from page 727)

METHODS OF EXAMINATION AND TREATMENT.

We should have no difficulty in accepting the principle of focal infection as there has been enough work done to prove to the most conservative mind that such infections do exist. In order to determine the existence of chronic infection in our patients we must adopt the following methods, utilized by those who have established this very important principle and elaborated in our clinical pathological laboratory.

Complement fixation tests of the blood.—The complement fixation test of the blood for the streptococcus group and the colon bacillus. While there has been some criticism of the fixation test for the various bacteria, and while we do not claim that this test is infallible, at the same time we do believe that it offers a very good basis for deciding that infection exists in a given case where other external or causal evidence is absent. We would not argue that there was no infection in a given case if the fixation test was found to be negative. But when we find this test positive in eighty-eight per cent. of our patients, we can assume with justice that it is more than an accident and give the proper weight to this finding. Probably the agglutination test for the infecting organisms may prove to be more reliable, as stated in the work of Dochez, Avery, and Lancefield, quoted above. But this latter method is much more difficult. Errors in technic and difficulties in determining agglutination in the streptococcus types make the method one that an expert technician alone can handle. If comparative experiments were carried out between the two methods we might be able to judge the relative value of the method. But at present we have to use the fixation test as the most practical method at hand.

The difficulty with the use of the fixation test has been in the method and source of the antigens used. Thus if we use an antigen made up of a large number of strains; for instance, as we have done, use all the nonhemolytic strains in one antigen and the hemolytic strains in another and then test the blood serum of the patient, we found that we got a large proportion of negative tests. If we use individual antigens from each strain of streptococcus and make separate tests for each strain, we obtain better results. And the reason is plain. If seven out of eight strains proved to be negative and only one, say pyogenes, was present it is possible that the seven negative strains would overcome the one positive. So in view of this fact we have adopted the method of using separate antigens and tests for each strain and we think our results are more accurate than under the old method of bunching the antigens and making one test. During the last year we have been utilizing fixation tests for the colon bacillus and we feel that this test is important in determining the pathogenicity of this organism.

The error in both these fixation tests is in the negative results and in this respect it resembles the Wassermann reaction. We found a positive reaction in eighty-eight per cent. of our cases in which we were able to confirm the tests by bacteriological findings. In twelve per cent. the reaction was nega-

later returning to the teeth and extracting the doubtful ones, which procedure was followed by the recovery of the patient, I feel assured we are right in our methods. These experiences make us suspicious of all crown and bridge work that we find in our patients, but I am willing to admit that five per cent. of the work is good and if I could determine who had done the work and that it was all right I would not remove it. Unfortunately for us and for the patient we cannot afford to run the risk of leaving these crowns and bridges as we feel that every suspicious tooth should be extracted. We cannot always depend upon the radiogram to determine infection, as I have found to my sorrow, for there are certain conditions which may not be revealed by this method. I refer to the granuloma, especially just below the gum where the bone tissue is not involved. Imperfectly filled teeth may also

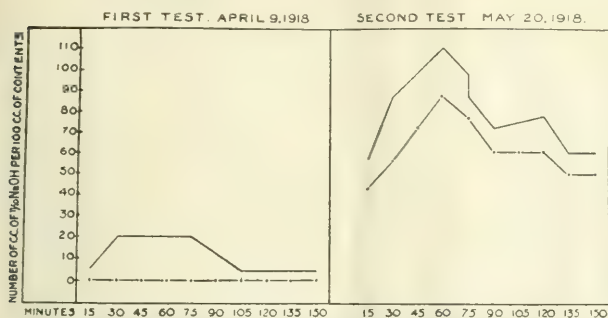


CHART 1.—Curves showing range of gastric acidity on April 9 and May 20, 1918. Culture tests. April 9: stomach, streptococcus, B. coli, and staphylococcus. May 20: no growth.

— Total acidity.

- - - Free HCl.

tive, but the bacterial findings were positive. So it can be readily seen that the error is not so great as to nullify the use of this test. As no previous work has been done with the fixation test for the colon bacillus we feel that this is an important test in that it corroborates our opinion based upon the clinical and pathological work of the pathogenicity of this organism.

Examination of the teeth.—We make use of the x ray to determine the existence of alveolar abscesses. Combined with the radiogram, inspection of the teeth will reveal the presence of bad teeth, in fact, in the majority of our patients a radiogram, while desirable, is not always necessary. We would if time permitted radiograph every case and we do in all doubtful ones, but the existence of teeth which need to be extracted can often be determined by simple inspection by a competent dentist. When the teeth are badly decayed or the gums are purple, swollen and puffy, one could not possibly do wrong in extracting them. Call it pyorrhea or infected teeth or what you will, we can agree upon that fact that they are bad and should be extracted. We extract all capped and pivot teeth and removed all fixed bridge work. Perhaps we are too radical as I am informed that at least five per cent. of the repair work of this kind may be good and uninfected, but after having numerous experiences where we allowed these bridges, caps and pivot teeth to remain, either because they did not show any external evidence of infection or the radiogram was not definite enough to justify extraction, with the result that the patient did not improve, then

be infected and have to be removed, even if the radiogram is not decisive. I find I should correct another erroneous idea and that is the effects of extracting so many teeth upon the patient's nutrition. From my experience in all cases in which infected teeth were extracted the patients immediately began to gain weight, and it is not unusual for them to gain twenty or thirty pounds, even when all the teeth have been extracted and no artificial teeth supplied. And further, after an experience extending over a period of three years, I have not had but one patient who berated me for extracting her teeth, no matter how many had needed to be sacrificed. In practically every case the patient was not only grateful for the loss of the teeth, but did not hesitate to advise other

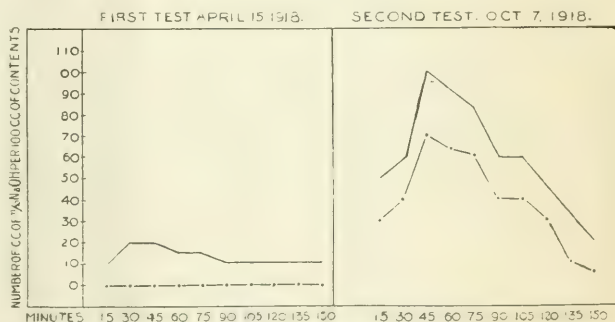


CHART 2.—Curves showing range of gastric acidity on April 15 and October 7, 1918 (Case 13, page 310). Culture tests. April 15: stomach streptococcus and staphylococcus; duodenum, streptococcus and staphylococcus. October 7: stomach and duodenum, no growths.

— Total acidity.

- - - Free HCl.

patients who were wavering to have similar work done.

Infected tonsils.—In about fifty per cent. of our cases the tonsils are infected as well as the teeth, and because this fact is not recognized there is

no result when the teeth are extracted except the ill will of the patient who has been promised relief by the dentist. Therefore, it behooves the dentist to explain to the patient that the results of extracting teeth depend upon whether or not there is any secondary infection, especially in the tonsils, and that a good throat man should be consulted. Often the dentist can readily see for himself while working in the patient's mouth that the tonsils are infected, and it is his duty to call attention to this fact and have the patient consult a physician. Here again, as is the case with infected teeth, the patient may not have any symptoms which would lead him to consult a throat specialist. Very badly infected tonsils may exist without producing any discomfort and hence the danger to the patient. Often small buried tonsils are severely infected and can be easily overlooked, but a thorough examination by a competent man and cultures taken from the crypts will reveal the infection. We are indebted to Dr. J. J. King (6) for his work on the relation of tonsillar infection to systemic diseases and his methods for determining infection. In order to eliminate infection in the tonsils it is necessary to enucleate them. We may discover some method of eliminating this infection without an operation, but at present there is no

toxemia from infection of the teeth or the tonsils and not to an infection of these organs. In such cases the removal of the infection in the teeth and tonsils will clear up the symptoms, but we make a routine examination of the gastrointestinal tract in all patients and when infection is present it is treated by means of autogenous vaccines made from the bacteria found there. We get the *Streptococcus viridans* as the principal infecting organism and in a small number of cases we find a virulent colon bacillus both of which are concerned in the toxemia.

For the past two years we have been convinced that some of our severe cases had profound gastrointestinal infection and we made routine examinations of the stools in such cases and in fact in all new cases admitted. This method of determining the intestinal infection was very unsatisfactory, as the intestinal flora were so numerous and undifferentiated we could not single out any one organism and place the blame for the infection upon it. The method of Rehfuess finally supplied the last but most important link in our chain and through this method we were able to determine definitely the location of the infection and the organism responsible for its existence. The Rehfuess method consists of the fractional examination of

FIRST TEST APRIL 5, 1918 SECOND TEST MAY 28, 1918 THIRD TEST, JUNE 10, 1918. FOURTH TEST: OCT 7, 1918

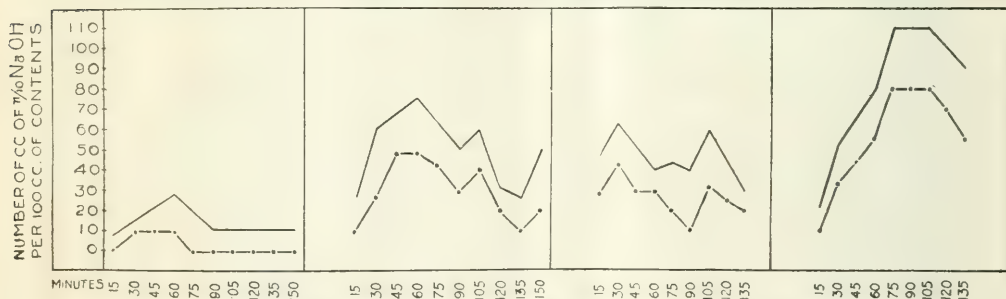


FIGURE 3. Curves showing range of gastric acidity on April 5, May 28, June 10, and October 7, 1918. Culture tests. April 5: stomach, streptococcus; B. coli and staphylococcus. May 28, June 10, and October 7: no growth (duodenum also negative, October 7). — Total acidity. --- Free HCl.

other known method available. Autogenous vaccines may influence the infection, reduce the size of the tonsils and prevent secondary infection after operation, but the tonsils must be enucleated if we expect to eliminate this source of infection. An erroneous idea, generally found to be prevalent in the laity and often with physicians, is the danger of enucleating tonsils in adults. Our experience has shown that such fear is entirely without grounds. In a number of patients of sixty-five and seventy and even one patient of seventy-seven years the tonsils have been enucleated without any untoward effects.

Gastrointestinal tract.—This seat of secondary infection fortunately is not so constant as others and in only twenty per cent. of the cases do we have involvement of the stomach, duodenum, and lower intestinal tract. There may be very severe symptoms, producing discomfort to the patient, but in many cases these symptoms are due to the general

the stomach contents and of culturing the stomach and duodenum by means of the stomach tube. He deserves the credit for not only furnishing a method of examining the stomach, its function and the secretion of hydrochloric acid, but has demonstrated that the infection of this organ is responsible for the lack of proper function.

This method in brief consists of the usual test meal of two pieces of toast and a cup of unsweetened tea. After fifteen minutes the Rehfuess duodenal tube is swallowed and allowed to remain in the stomach. By means of a syringe attached to the tube a specimen of the stomach contents is withdrawn every fifteen minutes until ten specimens are taken, these are examined for free hydrochloric acid for total acidity, and cultures are also made. This gives the hydrochloric acid curve which should begin somewhat low, gradually rise, and reach a maximum at the middle of the test, then gradually descend. As an indication of the

hydrochloric acid secretion it is far more accurate than the older methods which consisted of giving a test meal and in an hour withdrawing the contents and testing them for the hydrochloric acid. Aside from this value of the test the cultures made from the stomach contents give us definitely the

treatment of infections of the stomach and duodenum is by means of autogenous vaccine, made from the organisms found in these organs, usually streptococcus, Staphylococcus aureus or Bacillus coli, or all three. After a course of vaccine a reexamination of the stomach shows a normal hydrochloric acid curve and sterile cultures. (See charts 1, 2, and 3.)

Our methods for examining the lower intestinal tract are the result of the work of Draper and Lynch (9), who have given years to this problem and have furnished a very important link in the chain of focal infection as related to the lower intestinal tract. Under this direction during the past year all patients with abdominal symptoms have been thoroughly investigated, especially by means of the x ray, and operative procedures instituted when necessary. The result of this work will appear as a separate paper in the near future.

The genitourinary tract, especially in the female, also has received considerable attention, mainly through the work of F. Ward Langstroth (17). All female patients receive a thorough gynecological examination, and uterine cervixes, when found to be infected, are enucleated. Cultures taken from this source show uniformly

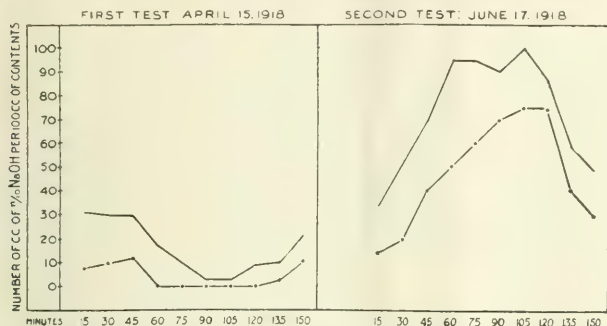


CHART 1.—Curves showing range of gastric acidity on April 15 and June 17, 1918. Culture tests. April 15: stomach streptococcus, B. Coli, and staphylococcus. May 20: no coccus; duodenum streptococcus.

— Total acidity.

- - - Free HCl.

bacteria responsible for the infection and that is why we consider that Rehfuß has not only added a valuable method for the internist, but has supplied us with the missing link in the chain connecting the infection of the teeth with the infection of the gastrointestinal tract. Further, by means of this method, the duodenal contents can also be cultured, and frequently we find the stomach entirely normal with the infection in the duodenum.

In our cases with infection of the stomach we find either an entire absence of hydrochloric acid (achylia gastrica), or it is very low, and the reason for this condition is to be found in the fact that the streptococci are in the stomach wall and in the peptic glands and they interfere with the secretion of the hydrochloric acid. We have been able to demonstrate these organisms in the walls of the stomach and duodenum in cases coming to necropsy. This would mean, apparently, that the organisms find their way into the stomach wall through the lymphatic system. It is possible that the infection comes through swallowing the bacteria. In the more simple types we find the streptococcus alone, but in the more severe and chronic forms of mental trouble we nearly always find the Bacillus coli and often in the duodenum as well as in the stomach. Here is where Satterlee's work is of the utmost importance, for without the presence of the Bacillus coli in the stomach would have no special significance. The

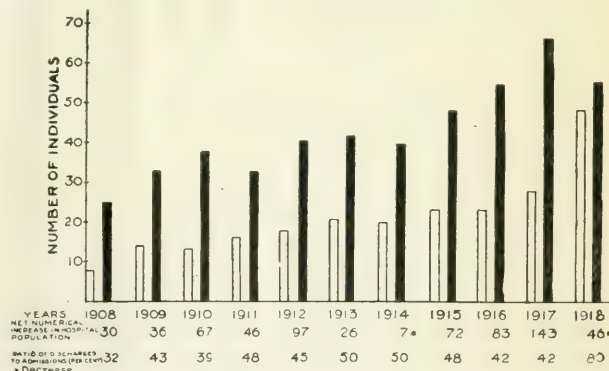


CHART 2.—Comparison of average monthly admissions and discharges, New Jersey State Hospital, Trenton, 1908-1918. The white columns stand for discharges; the black columns for admissions.

	Per Cent.
1. Ratio of average monthly discharges to admissions, 1908-1917	43
Ratio of average monthly discharges to admissions, 1918	80
2. Increase in the ratio of average monthly discharges to admissions, 1918	37
3. Average yearly numerical increase in the hospital population, 1908-1917	50
Decrease in the hospital population, 1918	46
Net gain in discharges, 1918	96
Net annual increase in the hospital population, 1908-1917	50
Decrease, not including transfers from Mental Farms, 1918	92
Net decrease, 1918	141

either streptococcus infection or infection due to the colon bacillus. In many cases the removal of this source of infection has resulted in the recovery of the patient when all other methods were unsuccessful. In the male the prostate has also been inves-

tigated as well as the seminal vesicles for possible sources of infection, but this work has been started only recently and it is too early to report any results. This field is being investigated by Dr. Fredrick Smith, of New York.

The sinuses and mastoid cells.—A small proportion of our patients present some form of sinus trouble; when suspected, x ray studies of the head are made, and if the focus is located it is removed. This is an important field and should not be neglected. Fortunately we have not had many such cases, but undoubtedly the condition does exist in a small number of patients.

RESULTS OF THE WORK AT THE STATE HOSPITAL AT TRENTON.

In Chart 4 we have compared the results of our work for the last ten years with the work of the last nine months. The difference is seen to be very striking. The ratio of discharges to admissions,

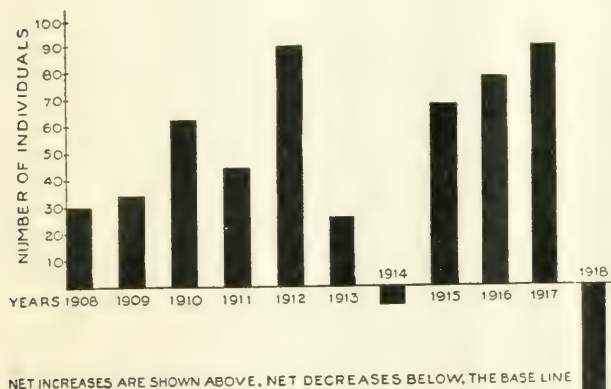


CHART 6.—Comparison of yearly net increases or decreases (exclusive of transfers) in the population of the New Jersey State Hospital, Trenton, 1908-1918.

given as the monthly averages for the ten year period, was forty-three per cent. The average net annual increase in the population of the hospital for the same period was fifty. Some of the variations are interesting. In 1914, we had a decrease of seven patients; in the medical director's report for that year it was noted that the dentist had extracted 450 teeth, on his own initiative. The former dentist did little or nothing, and as I was not then interested in this work, both did about as they pleased. The next year we had a new dentist and the net increase in population was seventy-two. As there were no important changes excepting the one mentioned, it may have some bearing on the case. (I have never been able to explain this variation; I made the chart a few days ago.)

When we compared the admissions for the nine months in 1918, from April, 1918, to January 1, 1919, with those for the previous ten year period, we noticed a decided difference in the proportions. During this recent period, instead of the average of forty-three per cent. for the ten year period the discharges mounted to eighty per cent. Instead

of an increase in our population of fifty for the ten year period there was a decrease of forty-six in the recent period. This has occurred despite the fact that we received ninety-one patients by transfer from Morris Plains to relieve the congestion there, and have transferred forty-six patients to Skillman, leaving a net gain of forty-five in our population by these transfers. We have an actual decrease of forty-six, but exclusive of transfers the decrease was ninety-one. Adding this number to the average net annual increase previously would make our total approximate decrease of patients, 141. If we study the data for the year 1917, we find that we had the usual forty-two per cent. of discharges, but our increase in population at the end of the year was 143; exclusive of transfers, ninety. This is explained by the fact that, in the month of August of that year, the medical director and six of the staff entered the government service and hence all work with the patients ceased; and as the dentist also left, no dental work was done.

Of course, as has been suggested, we may be giving a wrong interpretation to these figures. We all know that one can make figures prove anything; but the fact remains that, in spite of a gain of forty-five patients by transfer, we have today a decrease in our population of forty-six. This has not been accomplished by an increase in our death rate, for the average for this period is only nine per cent. in spite of the influenza epidemic, during which we lost thirty-nine patients—all from among the chronic class (Chart 5).

No matter how beautifully we spin our theories, if we cannot show results in decreasing our hospital population, our theories go for naught. I had not felt, in the eighteen years I have been con-

nected with state hospital work, that I had done anything until recently, toward effecting cures in cases which would not recover spontaneously; but, from the results of our efforts during the last nine months, I feel I am justified in believing we are doing something now that has not been done before. It has been a source of much gratification to see improvement in some of my old patients. One, for example, whom I had watched for nine years, finally recovered last June; and she not only continued well but steadily improved, and is now entirely normal. She was the first patient from whom I had the teeth extracted. This was done in 1916. We removed her tonsils in 1917, and then cleared up her stomach infection. I feel that if this work had not been done she would still be a patient in the State Hospital instead of being well and at home. And this patient understands this fact as well as I do.

These results are all the more remarkable when we consider that our work has been done during a

period of unusual stress; with a medical staff reduced from eleven to four, and sometimes to three; with a shortage of attendants and nurses amounting to nearly a hundred, and with the concurrence of the influenza epidemic, which for the month of October (1918) rendered continuance of our work impossible. In spite of these and sundry other handicaps, we have had the courage of our convictions and have insisted that this work be continued. The result is that the State is paying for the maintenance of ninety-one patients less than last year, which means a saving of at least \$66,000 this year alone; and if these patients are truly recovered, which fact will be shown in time, we cannot calculate the saving to the State in the years to come, aside from the other most important work of returning these patients to their families and to the community. Fortunately, while members of the medical profession still doubt the results of our work and are skeptical as to the validity of the theories discussed, men of the dental profession have taken an almost unbelievable interest in the subject and are endeavoring, by every means possible, to correct an evil which has been evident to the leaders in the profession for years. Instead of combating these theories, which to some extent indict a great many of their profession, the dentists have accepted the challenge, and by their interest and activity have shown a marvelous disposition to cooperate with the medical men who have pointed out these relations.

An active interest in the teeth of their patients by physicians, will do much to prevent the occurrence of nervous and mental diseases. In cases where poor dental work has been done it should be the concern of the family physician to see that it is corrected. With active cooperation between the dental and medical professions we can look forward hopefully to the time when the types of mental diseases discussed in this paper may be almost eliminated, especially among the better class of people who can afford to have good dental work done. We then can truly look forward to an era when all dentists will realize the importance of doing not what the patient wants in saving his teeth but what is best for the patient—extracting all infected teeth and putting his mouth in such a condition that it will not be a future menace to his health.

As a further proof of the efficacy of the treatment outlined in this paper we would quote our results for the year 1918-1919, ending July 1st. There were admitted 400 cases classified as the functional group, including manic depressive insanity, toxic delirium, and dementia præcox. At the end of the year there were only 130 patients of this group remaining in the hospital, for 270 had been discharged during the year—a percentage of sixty-seven. At the end of a six months' period, thirty patients of this group had been discharged, and three months later only sixty of the original four hundred were still in the hospital. A further examination of this group of sixty revealed the fact that a large proportion had definite intestinal lesions. These patients are having x rays and the conditions found are corrected as soon as possible.

The number of those who have returned is small and in these cases it has been found that some source of infection was overlooked in the original examination, usually a lesion of the intestinal tract.

In concluding I wish to express my thanks and appreciation for the valuable assistance rendered by my colleagues, especially the members of the staff of the State Hospital at Trenton, who have diligently endeavored to carry out the examinations and treatment outlined in this paper. Without their help this work would have been impossible. To Dr. Joseph L. Gariss and Dr. R. K. Johnson I am indebted for their excellent radiographic work. The laboratory work has been carried on through the efficiency of the assistants in that department, including Dr. Ray Buhrman, Mr. Striefler, Miss Ellinger, and others. Doctor Draper and Doctor Lynch have by their advice and counsel rendered valuable service, and their interest in the surgical problems has materially aided the work of eliminating all sources of infection. To Dr. F. Ward Langstroth for his interest in the gynecological work and Dr. Frederick Smith in the neurological field we are under deep obligations, and also to Dr. John F. Anderson of New Brunswick, consulting bacteriologist, for his valuable help with the laboratory work.

THE EYE IN GENERAL PRACTICE.*

BY GEORGE D. WOLF, M. D.,
New York,

Adjunct Otolaryngologist, Bronx Hospital; Assistant Otolaryngologist,
Harlem Hospital; Assistant Ophthalmologist, Mount
Sinai Hospital, O. F. D.

This paper is written from the viewpoint of the general practitioner and is meant to appeal to the man in general practice. It has no claims on originality or new ideas, except to call attention once more to some frequently overlooked but nevertheless important facts concerning the eye. It is generally conceded that entirely too little time is devoted to the specialties in our medical schools. But it is particularly true that the average graduate almost makes it his business to forget the few elementary principles he has learned in school, since it is generally accepted among physicians as well as the laity that abnormalities of the eye belong to the specialist. The result is that in a few years after graduation the very terminology as applied to the eye becomes foreign to the average practitioner. This has gone so far that few men these days, while examining a patient, let us say, for some neurosis or stomach disturbance, will not only fail to examine the eye, but will not even take the trouble to look at it. This condition is also explained by the general apathy of the general practitioner as regards the eye. He very openly and sometimes with pride admits that he knows nothing about the eye and refers his cases to an ophthalmologist.

It is rather a curious fact that while the average patient will readily imbibe any medications internally for all sorts of ailments, whether advertised in the press or suggested by some ignorant neighbor,

*Read before the Bronx County Medical Society, December 17, 1920.

he will insist on having a specialist's advice when he suffers from eye trouble. This explains why the ophthalmologist is consulted by most of his patients directly and not through the recommendation of the family physician.

On the other hand the general practitioner, and very often the specialist, while being thorough in every respect as regards their own specialty, often omit the eye from their routine. Dr. J. Rawson in a paper read at the last A. M. A. convention insisted upon the knowledge and practice of a thorough examination on the part of every specialist. It would be fair to ask for what reason one considers the rectal examination so much more important than the eye, which latter organ he fails to mention. It is inconceivable that, while the eye is looked upon as the mirror of the soul, it should in our general routine of work be neglected and receive at most a casual glance by the practitioner. To illustrate my statement I will cite a few examples:

CASE I.—S. N., male, Hebrew, native of Russia, aged twenty-nine; occupation, designer. He came to my office on July 24, 1919, complaining of severe pain in the legs and occasional headaches. He had visited a number of physicians and dispensaries and various diagnoses were made, such as flat feet, neurosis, or rheumatism. At first glance I noticed that the pupils were irregular and fixed. On further questioning the patient admitted that he had lues ten years ago, but had received intensive treatment in one of the best clinics in Russia and was pronounced cured. What is more, his blood was found negative to the Wassermann test on June 6, 1918. On further examination a diagnosis of cerebrospinal lues was made; the Wassermann test at this time was found three plus and he showed some improvement on specific treatment.¹

CASE II.—J. B., aged forty-eight years, married; occupation, cutter, came to my office to be examined in order to be admitted to membership in an organization. In the course of the examination I found that his pupils were irregular and did not react to the light. He denied that he had ever been sick and declared that he had passed an insurance examination recently. On further questioning, he admitted that his wife had had four miscarriages soon after their marriage, but thereafter she had given birth to three children, all of whom were living and healthy at the present time. He himself, complains of no ailment but his blood shows a 4 plus Wassermann.

CASE III.—Some time ago I was called upon to treat a female patient who seemed to be quite distressed with general abdominal pain and vomiting for the past two days. There was no distention or other symptom of obstruction or anything else about the patient suggesting her being in a critical condition. There was a history of a similar attack several years ago. The case at first impressed one as an attack of cholelithiasis. The eye examination revealed an Argyll Robertson pupil. The blood was examined and was found four plus, but the patient

had in the meantime been removed to a hospital. I later elicited the history that she was a widow, her husband had died of paralysis some years ago, and that she had had no children.

CASE IV.—J. C., aged twenty-three, born in the United States, salesman. His chief complaint was that for the past year his sexual power had been declining until at the time of his visit to my office it was practically nil. He admitted he had three recurrent attacks of gonorrhea, but denied having had a chancre or any other luetic manifestations. For the past ten months he had received rectal massage at the dispensary. Here too the sluggish reaction of his pupils to light gave the clue to the real etiological factor. His blood gave a four plus Wassermann reaction. Very likely one of his gonorrheal attacks was an intrameatal chancre.

Now let us turn our attention for a few minutes to another type of patient which seems to be the stepchild of the medical profession.

CASE V.—I. G., woman, aged thirty-nine, married, had five healthy children. Her past family and menstrual history were negative. About nine years ago she was operated upon for gallstones at Mount Sinai Hospital, from which event her present complaint dated. On the seventh day after that operation she had what she termed a chill (more correctly a tremor) of her upper and lower extremities and partly involving the whole body. These chills continued to appear daily and sometimes twice a day. They would last one or two hours and then stop. She felt cold even when the weather was warm. During all these years she had visited numerous nerve and other specialists of repute, also every well known dispensary. She was told that she had malaria, but quinine did not relieve her. Repeated blood examinations were made, and various medications were tried, including electrotherapy, without results. On routine examination I found her vision much below normal, being 20/100 in the right and 20/70 in the left eye; she required minus 2.75 and minus 2.50 cyl. respectively to bring her vision up to normal. After she began to wear the glasses her nervous symptoms were much ameliorated, and while she was not quite cured of her troubles she felt better than she had in many years.

CASE VI.—Mrs. C. D., aged twenty-two, housewife, complained that she always had a feeling as though her head was floating, felt very nervous, and did not sleep well. Her vision was found to be only thirty per cent. normal, and a correction of a fairly high degree of astigmatism against the rule remedied her condition.

CASE VII.—Mrs. W. K., aged fifty-seven, born in the United States, passed her climacteric about ten years ago. Complained of having crying spells without any apparent cause. She wore glasses for near work but not for distance. She later wore glasses for distance and her symptoms were gradually disappearing.

CASE VIII.—Finally I should like to quote one more instance to demonstrate that if a patient wears glasses it does not exclude the possibility that he has not been fitted properly. E. R., male, aged fifty-nine, merchant, born in Germany. His past

¹ The Wassermann test gave a negative reaction on September 11, 1919. The report on the spinal fluid by Dr. E. P. Bernstein on December 15, 1919, was as follows: cell count, 140 cells per cm. m.; Wassermann reaction, complete fixation in 0.1 c.c. of fluid and upwards.

and family history were negative, except that he had been suffering from headaches as far back as he could remember. He hardly passed a day without a headache. His eyes were refracted by an optician who failed to correct the astigmatism but was satisfied to give a sphere glass.

Several more instances could be cited but I fear that I might be accused of trying to create the impression that by the eye examination all sorts of puzzling conditions could be cleared up, or that glasses were a panacea for all ailments. Neither do I advocate that all physicians before they go into practice should receive a thorough training in ophthalmology. But I wish to emphasize that a casual eye examination may help us very often and for this reason the eye should be examined. There is a great sense of gratification to the physician when he sees a patient who has been traveling from doctor to doctor and all sorts of diagnoses made, from maladjustment of the vertebrae to dyspuitarism, to find that poor vision has to be corrected. It has a psychological effect on the patient, who is satisfied to explain all his neurotic symptoms as being produced by his poor eyesight.

There is no reason why every physician should not have a Snellen and an astigmatism chart in his office. They are inexpensive accessories and can be used even by an office assistant. A few words in regard to the use of the vision test: I saw a few men returned from camp during the recent draft, in whom one eye was partially or completely blind. These same men were sent out from the local boards as Class A recruits. Enormous expense and embarrassment could have been saved both to the recruits and to the government had each eye been examined separately. So let it be a rule when we examine for vision, first, to examine one eye at a time; second, not to stop at 20/20 and be satisfied that the patient is first class, but try to investigate whether he will see 20/15 or 20/10. Hyperopia more frequently gives rise to headaches and other nervous symptoms than does myopia. When a patient seems to read 20/20 it is a good policy to inquire whether the last one or two lines are perfectly clear or blurred. Undoubtedly there are a great many patients who subjectively show a perfect acuity of vision yet objectively show errors of refraction and are greatly benefited by correction.

CONCLUSIONS.

1. The Argyll Robertson pupil is a trustworthy and very easily demonstrable pathognomonic sign in neurosyphilis and ought to be looked for in routine examination.

2. Gross refraction errors can be discovered by the average practitioner.

3. A good many patients who complain of some general ailment are often very much surprised to learn that their eyesight is defective.

4. A family physician may often be agreeably surprised to see conditions such as vertigo, insomnia, neurasthenia, melancholia, and similar conditions ameliorated or entirely cured by proper correction of refraction errors no matter how small these may be.

5. Each eye should be tested separately.

6. When a patient wears glasses it should not

be taken for granted that they are correctly fitted, but an inquiry should be made regarding where and by whom they were fitted. An attempt should be made to test whether or not the vision is normal with the glasses on, as entirely too great a percentage of poor work is done in this field, particularly by opticians.

815 PARK AVENUE.

LONDON LETTER

The Hospital Situation in Great Britain.

LONDON, March 1, 1920.

The hospital situation is, of course, in *statu quo* and no one can foretell the exact trend of events. There is a great deal of opposition to state or municipal control of hospitals, but at the same time it seems obvious that a continuation of the existing state of affairs is impossible for any length of time. Institutions caring for the sick and injured are in sore straits. As an example of the serious financial position in which voluntary hospitals are placed an account of meetings of two well known English hospitals may be cited.

At the annual meeting of the Royal Free Hospital, London, a very old institution and renowned for the fact that many of the professors at its school and most of its students are women. Dr. May Thorne, secretary of the Royal Free School of Medicine for Women, said that the London hospitals under prevailing conditions were faced with three possibilities, bankruptcy, nationalization, or allowing patients to pay for treatment according to their means. The majority of the London hospitals had been obliged to adopt that last plan as the least of the three evils, and the governors of the Royal Free Hospital were taking steps to extend the hospital to make accommodation for paying patients. At present the governors have had to face a deficit of over \$100,000, but as soon as the financial conditions have improved, and they have some money in hand, they propose to start building operations. The second example of the embarrassed condition of English hospitals is that of the Royal Hampshire County Hospital at Winchester, which is this year faced with a deficit of more than \$25,000. At the Court of Governors, on May 24th, the treasurer said that it was plain that steps must be taken, not only to clear off this deficit, but also to place the institution on a sound financial basis. Dr. H. I. Bodington, speaking on behalf of the medical staff, said it was generally felt with regard to hospitals all over the country that they could no longer be maintained by purely charitable efforts, but that there must be a system for payment by patients according to their means. Provision should also be made for that large class of people called the "new poor" who were not eligible for treatment as ordinary patients, and yet could not afford the very high fees which were charged for treatment in nursing homes. It was felt that for these there should be separate wards provided, where treatment could be had for reasonable fees, plus the doctor's fees, which the staff of that institution were prepared to fix on a moderate scale.

Editorial Notes and Comments

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NEW YORK, SATURDAY, MAY 1, 1920.

THE NEW ORLEANS MEETING.

The presidential address of Surgeon General William C. Braisted, which he delivered in New Orleans at the Seventy-first Annual Session of the American Medical Association, appears in this issue of the NEW YORK MEDICAL JOURNAL. This masterly address was the keynote of the meeting.

On the surface it would seem from the throngs of carefree physicians filling the boulevards of the quaint, semitropical old city, that they had come for a day of merrymaking—for a day away from their busy practice. But they came to talk things over, to make plans for the coming year; they came to take an annual inventory and to determine how they could improve their methods and so be of greater service to humanity.

Last year the meeting following so closely after the war was marked by the presence of men in uniform from the Allied countries, who came to tell of the lessons taught by the great war. As the great shadow of the war slowly recedes we feel the desire to bury memories which to most of us were most disagreeable, and in order better to prevent these thoughts from coming back to our consciousness we are prone to avoid discussion of anything which may even suggest the war in a remote way. In view of this fact the address of General Braisted is most timely.

He has shown how important it is to safeguard the health of the children. This was brought home with startling clarity during the compilation of the report of the Provost Marshal. For the first time in the history of the nation an analysis was

made of health conditions. When the surface was scratched the conditions found under the veneer of apparent good health were startling. And one of the most noteworthy phases, one of the most profitable, was the number of inefficient men, who, the report revealed, could have remained in a state of good health if proper care had been given them as children. The reports of the draft boards will furnish material for study for years to come.

It is good to note the interest which has been shown by a military man in the welfare of the civilian population, but we must not forget that first of all he is a physician. It would be well if all of us would bear this fact uppermost in our own minds. Let us forget our other interests when it comes to our work. Of course we are always confronted by the grim struggle for existence and in times of stress, such as we are going through at present, it is harder than ever to make satisfactory adjustments. In spite of all these factors and many others which arise from day to day let us not forget our calling: first of all we are physicians. May the lesson of the New Orleans meeting be carried back to our home towns and may we profit from it. Until we meet again.

THE DIAGNOSIS OF NEOPLASMS OF THE CAROTID GLAND.

Neoplasms of the carotid gland are not so uncommon as was formerly supposed, and, now that their topographical situation has been carefully studied, the diagnosis is more frequently made. These neoplasms occur between the ages of thirty and fifty; they are a trifle more frequent in the female and have been met with a little more frequently on the left than on the right side. The special pathological character of these growths is their intercarotid situation, the neoplasms lying astride the fork formed by the carotids. Histologically, these tumors are composed of cells distributed in alveoli having walls of either a vascular or a fibrous nature. The fibrous tissue is occasionally abundant, especially at the centre of the growth. The vessels are few and do not penetrate into the cell masses dispersed throughout the connective tissue. The scirrroid aspect thus realized would seem to be an argument in favor of the epithelial origin of these growths, as opposed to the connective tissue theory.

Given the relatively large number of cases of neoplasm of the carotid gland now published, it

is surprising how few correct diagnoses have been made. This shows the real difficulties encountered in practice. In order to reach a correct conclusion as to the nature of these tumors it is essential to detect the carotid site of the growth, or, more precisely, that it is situated in a space formed by the sternomastoid region behind, the infrahyoid region in front, and the submaxillary region in front and above. The relationship of the tumor to the neurovascular bundle should be made out. The growth, like the vessels, is movable transversally, and, being attached to the vascular trunk, is immovable vertically. The carotids transmit their beats to the growth, and with the tumor they can be pushed inward toward the pharynx. The mass composed of growth and vessel may offer a systolic souffle, which confirms the intimate connection of the neoplasm with the carotids and should lead the clinician to suspect a tumor of the carotid gland, while if the so-called Licini's sign is present—pulsations felt in front and back of the pathological production—there can be no question but that the tumor is intercarotid in situation. But even when the relationship with the vessels is clear, hesitation is permissible, because affections of the lymph nodes of the region are so common, whether they are inflammatory or neoplastic, primary or secondary. Subacute adenitis, tuberculosis of the lymph nodes, or the lymphatic involvement from pharyngolaryngeal malignant disease are what may be called vulgar affections, and growths of the carotid gland are rare.

By a very minute examination primary lesions of the tributary regions of the suspected node must be first eliminated and the condition of the tonsils, pharynx, and larynx verified. Ordinary adenitis or tuberculosis usually involves several lymph nodes, and even when one is particularly involved infected satellites will be discovered. But lymph nodes will be about equally movable in all directions, and they are less intimately related to the arteries; it is the internal jugular that they accompany on its external aspect. Lymphosarcoma and sarcoma of the lymph nodes have a rather characteristic rapid evolution, while other nonmalignant growths, such as lipoma, fibroma, or enchondroma, must also be considered when making the diagnosis. If the tumor is soft, it is probably an aneurysm of the carotid, and a sign that will usually prevent mistakes in the absence of expansion in the case of neoplasms of the carotid gland, which is the principal symptom of aneurysm. Congenital or acquired cysts of the neck could never be mistaken for a growth of the carotid gland.

PULMONARY EMBOLUS FOLLOWING HYSTERECTOMY.

Does a pulmonary embolus occurring after abdominal hysterectomy offer the same clinical picture as pulmonary emboli in general? In other words, are the symptoms of the pulmonary embolus the same as those described for this pathological accident and which are well known. From the relatively large number of cases which have been recorded during the past thirty years it would appear that the symptomatology of pulmonary embolus following hysterectomy is about the same as that given in the classical descriptions of this process. When this accident occurs after hysterectomy it is usually when the patient is in full convalescence, the sutures have been removed, and in most cases the postoperative period has been perfectly smooth so that recovery seems assured. No premonitory symptoms which would lead the practitioner to suspect the advent of the forthcoming pathological drama exist. It is true that occasionally the patient will complain of pain between the shoulders or in the lower limbs and the cheeks may be somewhat injected, but these phenomena are so mild that they are hardly referred to by the patient.

In the midst of a conversation or even sleep the patient cries out while suffering from an extreme dyspnea and assumes the position which gives the easiest play for the inspiratory muscles. The patient is sometimes conscious of the obstacle to the circulation and will indicate its exact site and autopsy will confirm this singular diagnosis. The respiratory distress is extreme, there is cyanosis of the face, the eyes projecting with dilated pupils, the jugular turgescence, the heart beats are in a tumult, the pulse small and rapid. Occasionally convulsions and delirium complete the symptomatology and the patient expires before medical aid can be tendered.

This is the most common clinical picture of pulmonary embolus following hysterectomy, but there is also the syncopal type, denied by some writers, where the patient dies instantly. Sometimes, after an ictus similar to what has just been described, a marked amelioration occurs, soon to be followed by another attack and the improvement and aggravation of the symptoms continue—the remissions probably corresponding to a displacement of the clot, until the patient dies in a final paroxysm. Although pulmonary embolus usually occurs from two to four weeks after the operation, there are some infrequent instances where it has taken place one or two days after the hysterectomy.

Taking the symptoms separately, the first to be noticed is dyspnea; the inspiration is deep, long, incessant; the mouth is slightly opened and air

hunger is only too evident. The patient assumes the posture of orthopnea, the respirations reaching from forty to fifty a minute. This dyspnea, however, is not the result of nonpenetration of air into the lungs, because if auscultation is resorted to all evidence of pulmonary disturbance is wanting and it is only later that percussion dullness appears with signs of congestion and edema, the outcome of a sudden cessation of the hematosis.

The heart and circulation furnish important signs. The blood forced from the right ventricle into the pulmonary artery is obstructed in its flow; it is forced back into the right heart which becomes powerless to control the mass of blood, hence the venous plethora and arterial anemia. There is one diagnostic sign of some importance, namely, the discord between the pulse and temperature; the latter remains normal, while the pulse is small and rapid for four or five days before the development of the other symptoms of thrombosis. The nervous disturbances directly depend upon the arterial anemia and, consequently, cerebral anemia. They consist of vertigo and loss of consciousness, but the patient generally remains mentally lucid up to the end.

It has been noted that very few patients with postoperative pulmonary embolus recover. Whether death results from asphyxia or syncope is still a moot question, but death from asphyxia occurs from one of two causes: either from the inability of air to enter the lungs or from cessation of hematosis and the latter is in all probability the cause of death in pulmonary embolus.

MUZZLING THE OX.

For the past five months Congress has had under consideration measures looking to the increase in the pay and emoluments of the officers and men of the Army, the Navy, the Marine Corps, the Coast Guard, and the Public Health Service. The House of Representatives finally passed a measure increasing the pay of the enlisted personnel of the Navy. When this arrived at the Senate, it was so modified as to include an increase in the recompense of the officers of these various services. Very recently, after considerable delay and under a special rule, the House of Representatives has agreed to a conference in regard to the amended bill. While that body, by several votes taken during the process of arranging for the appointment of the conferees, indicated very clearly its opinion that both officers and men should participate in this much needed readjustment of salaries, the conferees which

were appointed were, without exception, representatives of the Naval Committee of the House, and, it is understood, consist for the most part of representatives who, by a gentlemen's agreement, purpose to confine the action of the conference to the matter of the original bill, which provided only for the enlisted personnel of the Navy.

So far as the medical arms of the service are concerned, it is believed that close adherence to such a policy is fraught with great danger. The surgeon generals of the Army, the Navy, and the Public Health Service report that resignations are taking place at an alarming rate, and that it has proved impossible to secure medical men of proper age and professional qualifications to fill the vacancies so created. The rewards of civil practice are so much greater than those of governmental service that it has only been with extreme difficulty that reserve officers have been secured in sufficient numbers to meet existing requirements. While this situation as it affects the Army and the Navy is less serious at the present time, it is one of pressing urgency to the Public Health Service, upon which devolves the very important task of furnishing the medical and surgical relief to those men and women who suffered injury or contracted disease during the Great War.

The medical services then are confronted with the alternative of lowering their standards, and efficiency, or rendering inadequate service by reason of scarcity of medical personnel. It is to be hoped that Congress will see the futility of muzzling the ox when he treads the corn, that it will recognize that the older men in the service have been deprived of their ability to readily readjust themselves in civil life by reason of their Government service, and that the pursuance of a niggardly policy will undoubtedly undermine the foundation upon which rests the health of the combatant forces of the Government and of the civilian population as well.

COMPULSORY VACCINATION IN TORONTO.

The Court of Appeal of Ontario unanimously dismissed the appeal of the Ontario board of health for a mandamus to compel the Toronto city council to enforce compulsory vaccination in that city. The grounds taken by the learned justices were that the Toronto city council and the Ontario board of health were distinct bodies and that neither had the right to interfere with the decisions of the other. According to Mr. Justice Riddell, who drew up the judgment and in which the other justices concurred, the Ontario Vaccination Act, which authorizes com-

pulsory vaccination, is not well drawn; and under Ontario law a mandamus is not granted unless the applicant can show that he has a clear legal specific right to ask for the intervention of the court. No such right is thus given to the Ontario board of health, specifically nor by application.

In the last three or four months Toronto has had in all some two thousand cases of smallpox, and it is only recently that any deaths have occurred from the disease. The local board of health tried to persuade the Toronto city council to order compulsory vaccination of all citizens, but partly withdrew from the fight when the provincial board of health stepped in and invoked the courts in behalf of compulsory vaccination. A goodly portion of the populace has been vaccinated, but many children were being excluded from the schools on account of failing to have the operation of vaccination performed. The sticking point has been the compulsory feature, many balking at that, declaring that they were in favor of vaccination as a preventive, but not as a compulsory procedure.

The entanglement over the whole question which has arisen in Toronto shows the lack of uniformity as to the duration of immunity after vaccination. It would probably be wise on the part of medical men and officers of health to throw into the discard all mention of specific numbers of years' immunity, and to advise the vaccination of everybody when there is danger of a widespread epidemic, and especially so when the number of deaths recorded bears a considerable proportion to the number of cases of the disease. When an epidemic is so mild that no deaths are being caused, compulsory vaccination should be carefully and wisely considered.

Obituary.

WILLIAM JAMES MORTON, M.D.,
of New York.

Dr. William J. Morton, of 80 Madison avenue, New York, N. Y., died on March 26 at Miami, Fla., of heart disease, at the age of seventy-four. He was the son of Dr. William Thomas Green Morton, the discoverer of the use of ether as an anesthetic.

Doctor Morton was a graduate of Harvard University, class of 1867, and of the medical school, class of 1872. He also studied extensively in Vienna and Paris. He was a noted neurologist, whose opinions were recognized both in Europe and in this country. He also was a pioneer in the use of electricity in the medical profession. In 1881 Doctor Morton devised a mechanism consisting of a Holtz or influence machine and Leyden jars, by means of which a new kind of electric current was established, termed the static induced current. By the aid of this current x ray pictures are produced.

He was known as a man of great simplicity and personal charm. He had a very deep interest in his profession and contributed materially to scientific medicine. He was a member of many medical societies. His death is a great loss to the medical profession.

News Items.

Maryland Hospital Supplies Stolen.—The Maryland General Hospital was robbed of virtually its entire supply of whiskey a few nights ago.

French Physiological Congress.—A congress of physiology will be held in Paris, July 16th to 20th, under the presidency of Professor Charles Richet.

Appointment of Doctor Kindred.—Dr. J. J. Kindred of Astoria, L. I., has been appointed highway commissioner of the Borough of Queens, New York City.

Hospital Bequests.—The will of the late Charles Vogt, Jr., of Brooklyn, leaves \$10,000 each to St. Catherine's Hospital and the German Hospital of Brooklyn.

Gift for Red Cross Hospital.—The American Red Cross has made a gift of 2,000,000 Polish marks to the Polish Red Cross to enable it to equip and maintain three hospitals in combating the spread of typhus.

New Hospital in Baltimore.—The new hospital of the Volunteers of America, situated in Baltimore, will be opened on May 5th. The hospital will be maintained for poor families.

Nominations for Hall of Fame.—Names of medical men placed in nomination for a niche in the Hall of Fame of New York University include Dr. William Shippen, Jr.; Dr. Titus M. Corn, and Dr. John Murray Carnochan.

Bequests to Hospitals.—Daniel J. Carroll, who died April 4th in New York, has left bequests to the following institutions: St. Vincent's Hospital, \$100,000; Cancer Hospital, Industrial Home for the Blind and the Brooklyn Hospital, \$25,000 each; Brooklyn Home for Consumptives, \$20,000.

Appointment of Doctor Flattery.—Dr. M. Douglas Flattery, formerly a professor of physiology, has been appointed a member of the Harvard Cancer Commission. Doctor Flattery has endowed a number of fellowships and clinics in malignant diseases at the Harvard Medical School and other universities.

Congress of Otorhinolaryngology.—The Congrès français d'otorhinolaryngologie will be held May 10th to 13th in Paris under the presidency of Professor Sieur, of Paris. The subjects to be discussed are: 1, Radium and radiotherapy of tumors in otorhinolaryngology; 2, parodontal cysts of the superior maxillary.

New Government Hospital.—The United States Marine Hospital at Baltimore will be razed next month to make room for the new hospital costing \$1,000,000 which the Government plans to build in its place. Patients at the Marine Hospital will be moved to Fort McHenry Hospital.

Memorial Meeting for Doctor Jacobi.—The New York Academy of Medicine will hold a memorial meeting in honor of the late Dr. Abraham Jacobi on the ninetieth anniversary of his birth, May 6th, at 8:30 p. m. A bas relief of Doctor Jacobi will be presented by George McAneny, Esq., and will be accepted by the president of the Academy, Dr. George David Stewart. An oration will be delivered by Dr. George Vincent, of the Rockefeller Foundation.

Oldest New England Physician.—Dr. William M. Parsons, of Manchester, N. H., the oldest medical practitioner in New England, recently observed his ninety-fourth birthday. During the day he attended to patients in his office as usual.

Measles in New York.—Dr. S. D. Hubbard, acting director of the Bureau of Public Health Education, of the New York City health department, has issued a warning to teachers and parents to take special precautions against the further spread of measles. There are between 1,000 and 1,200 cases of measles in the city.

Doctor Hegner to Go to Brussels.—Dr. Robert W. Hegner, associate professor of protozoology in charge of the department of medical zoology in the School of Hygiene and Public Health, has been appointed from the Johns Hopkins University to attend the Congress of the Royal Institute of Public Health to be held in Brussels May 20th to 24th.

Foreign Medical Men Coming.—A mission from France and Great Britain is about to visit the United States to study the system of medical education and examination. The British members are Sir Humphry Rolleston, K.C.B., M.D., and Dr. Norman Walker, of Edinburgh, chairman of the examination committee of the General Medical Council.

Medical Faculty of Buenos Aires.—Dr. Pedro Chutro, who rendered great service at Paris during the war, has been named professor of clinical surgery of the Faculty of Medicine of Buenos Aires. Doctor Houssay has been made professor of physiology. Plans are under way for the foundation of a special institute of physiology which shall include chemistry and biological chemistry.

Organizations Combine to Fight Tuberculosis.—The pooling of intelligence, experience, and equipment by all the organizations combatting tuberculosis in New York City is the plan sought by the newly formed Associated Tuberculosis Auxiliaries. Announcement of the cooperative work was made at the first meeting of the association held recently at the Academy of Medicine. Affiliated with this association are the New York Tuberculosis Association and the Tuberculosis Committee of the Brooklyn Bureau of Charities.

Personal.—Dr. A. Ross Matheson, of Brooklyn, has recently completed fifty years in the practice of medicine, and in his honor the board of managers, the medical faculty and the Society of Ex-Internes of the Methodist Episcopal Hospital recently tendered him a complimentary dinner.

News of the safety of Dr. and Mrs. Marion C. Wilson of Vauxhall, N. J., in charge of the Near East Relief Hospital at Marash, Turkey in Asia, which has been cut off from Beirut headquarters by the fighting between the Turks and Armenians, has been received by the organization here.

Dr. Thomas W. Harvey, Sr., after thirty-eight years' service as attending surgeon at the Orange Memorial Hospital, N. J., has resigned and been appointed to the consulting staff. Dr. D. A. Carter, of East Orange, has been appointed attending surgeon. Lieutenant Colonel R. H. Hunt, of East Orange, has been appointed attending physician.

Hospital Campaign for Funds.—The Society of the New York Hospital, which operates the New York Hospital, the Bloomingdale Hospital, and the Campbell Cottages for Convalescent Children at White Plains, is renewing its campaign for a new building and improvement fund. A fund of \$100,000 will be sought to meet a current deficit.

Riverside Hospital May Close.—Unless an appropriation is made this week for its further continuation, Riverside Hospital on North Brother Island, where the New York City health department has treated 2,300 drug addicts since last August, may be compelled to close. It is expected that an appropriation will be made enabling the institution to continue until July 1st.

Red Cross Scholarships.—Ten scholarships of \$1,000 each in public health nursing will be offered by the League of Red Cross Societies to the Red Cross membership of stricken countries or to nations with inefficient Red Cross organizations. The course of study will be carried out at the women's department of King's College, University of London, and will begin next October. Traveling expenses to London and return will be provided for holders of scholarships.

Correction.—Dr. Moses H. Behrend, of Philadelphia, calls our attention to a typographical error in his article on Upper Abdominal Disease, which was published in our April 10th issue. The concluding sentences of the next to the last paragraph of the article, page 631, should read as follows: "I perform the operation of *cholecystostomy* only in cases of pancreatitis. In all other conditions *cholecystectomy* is the operation of choice."

International Health Organization Proposed.—A press dispatch from London states that a permanent international health organization under the League of Nations was proposed by a conference representing the United States, Great Britain, Italy, Japan, France, the League of Red Cross Societies and the *Office International d'Hygiene Publique*. The delegates recommended to the League of Nations Council that an international health office be established in London.

Social Science Institute Awards Medals.—At the seventh annual dinner of the Immortals, held on April 22nd at the Hotel Astor, New York, a medal awarded by the Council of the National Institute of Social Sciences was conferred upon Dr. Alexis Carrel in recognition of his aid in the advancement of surgery. Award of a medal was also made to Dr. Wilfred T. Grenfell for his services among the people of Labrador, but this medal will be sent to him, as Doctor Grenfell was unable to attend.

American College of Surgeons.—The next meeting of the American College of Surgeons will be held the week of October 11th in Montreal, with headquarters at the Windsor Hotel. Daily clinics will be held in the English and French hospitals; in the afternoons there will be "dry clinics"—demonstrations of cases in patients showing end results and methods of treatment; there will also be evening meetings, for which an interesting program has been prepared. This will be the first meeting outside of the United States.

New York Neurological Society.—A stated meeting of this society will be held on May 4th. Following the presentation of patients by Dr. Thomas K. Davis, Dr. Walter M. Kraus and Dr. Byron Stookey, papers will be read as follows: Dr. Byron Stookey, The Motofacient and Nonmotofacient Cycles in Elevation of the Humerus; Dr. Sanger Brown, Some Medical and Social Problems of Childhood Delinquency; Dr. Edith R. Spaulding, An Emotional Crisis.

Canadian Medical Association.—The annual meeting of the Canadian Medical Association will be held June 22nd to 25th at Vancouver. Medical men from the United States who will take part in the program are Dr. Charles Lyman Greene, St. Paul; Dr. H. H. Young, Baltimore; Dr. William House, Portland, Ore.; Dr. W. S. Lemon, Rochester, Minn.; Dr. John P. Manning, Seattle; Dr. Roland Hill, Grand Rapids, Mich.; Dr. G. S. Whiteside, Portland, Ore.; Dr. W. P. Graves, Boston; Dr. Louis Frank, Louisville, Ky.; Dr. H. P. Newman, San Diego, Cal.; Dr. August McLean, Detroit; Dr. John C. Hirst, Philadelphia; Dr. George H. Noble, Atlanta; Dr. F. L. Horsfall, Seattle; Dr. V. P. Gibney, New York; Dr. A. R. Macausland, Boston; Dr. Fred H. Albee, New York; Dr. Winnett Orr, Kansas City; Dr. E. G. Abbott, Portland, Me.

New York State Civil Service.—The Civil Service Commission of New York State announces the following examinations for State, county and village positions, to be held on May 15th: Assistant bacteriologist, State Department of Health, salary, \$2,000 to \$2,500; assistant sanitary engineer, State Department of Health, salary, \$2,600 to \$3,000; director, Division of Communicable Diseases, State Department of Health, salary, \$4,000 to \$4,500; epidemiologist, State Department of Health, salary, \$3,500 to \$4,000; sanitary supervisor, State Department of Health, salary, \$3,500; director, Division of Public Health Nursing, State Department of Health, salary, \$3,250; pathologist, Craig Colony for Epileptics, Sonoma, N. Y., salary, \$2,500 with maintenance. Application forms will not be sent out by mail after May 3rd. For application form, address the State Civil Service Commission, Albany, N. Y.

Meetings of Local Societies.—The following local medical societies will meet during the coming week:

MONDAY, May 3rd.—New York German Medical Society, Clinical Society of the New York Polyclinic Medical School and Hospital.

TUESDAY May 4th.—New York Academy of Medicine (Section in Dermatology and Syphilis), Clinical Society of the Harlem Hospital, New York Neurological Society, Society of Alumni of Lebanon Hospital.

WEDNESDAY, May 5th.—New York Academy of Medicine (Section in Historical Medicine), Bronx Medical Association, Harlem Medical Association, Society of Alumni of Bellevue Hospital, Brooklyn Society for Neurology.

THURSDAY, May 6th.—New York Academy of Medicine (stated meeting), Brooklyn Surgical Society.

FRIDAY, May 7th.—New York Academy of Medicine (Section in Surgery), New York Microscopical Society, Practitioners' Society of New York, Alumni Association of Roosevelt Hospital (annual), Brooklyn Gynecological Society.

SATURDAY, May 8th.—Medical Officers' Reserve Corps Association of the United States Army, New York Division.

Typhus in Eastern Europe.—Typhus is spreading through Ukrania, according to figures given out by the Ukrainian Bureau in Copenhagen, and health conditions in territory occupied by the Poles are appalling. There are now 250,000 cases of typhus in Eastern Galicia, Volhynia, and Podolia, and the number of deaths each month is approximately 25,000. In Lemberg there were 43,107 cases from January 1st to March 6th. Reports from Crimea state that cholera and dysentery have appeared in Feodosia, Sebastopol, and other Crimean cities, adding to the horror of the typhus epidemic.

Iowa Medical Meetings.—The sixty-ninth annual session of the Iowa State Medical Society will be held May 12th to 14th at Des Moines, under the presidency of Dr. William L. Allen, of Davenport. Among those who will present papers are Dr. Robert H. Babcock, of Chicago, and Dr. Charles H. Mayo, of Rochester, Minn. Dr. William E. Sanders, of Des Moines, is chairman of the section in medicine; Dr. Charles S. James, of Centerville, of the section in surgery, and Dr. Frank W. Dean of the section in ophthalmology, otology and rhinolaryngology. The State Society of Iowa Medical Women will hold its twenty-second annual session May 11th at Des Moines, under the presidency of Dr. Nellis S. Noble, of Des Moines.

Cheap Milk for Crowded New York Districts.—A plan whereby Grade B milk can be sold in public schools in densely populated districts at eight and one-half cents a quart is under consideration by Health Commissioner Copeland, of New York, and the school authorities. The fluid will be "dip milk" and will be sold under the supervision of city inspectors. The only equipment to be furnished by the city is an icebox of proper capacity for each station. It is hoped to have the eight and one-half cent milk on sale soon after April 15th in the fifty-five public schools located in congested districts and also in other boroughs where malnutrition is high. The regular price is eleven cents, and the milk to be sold at the school stations will be of the same quality as that retailed in stores at the higher figure. The low rate will be maintained during the summer months; it may even go lower.

International Surgical Congress.—The Fifth Congress of the *Société Internationale de Chirurgie* will be held July 10th to 23rd in Paris. The International Committee has drawn up the following provisional program: Cardiovascular Surgery—Surgery of the Heart, M. Tuffier, Paris; Transfusion of Blood, M. Jembraux, Montpellier; Surgery of the Heart and the Great Vessels, M. Alessandri, Rome. Surgical Radiology—The Treatment of Tumors by X Rays and Radium, M. Régaud, Paris, and Dr. N. S. Finzi, London. Surgical Hematology—Analysis of the Blood and Biological Reactions in Surgical Affections, M. M. A. Depage and Goovaerts, Brussels. Fractures of the Thigh, M. Patel, Lyons, and Major Maurice Sinclair, Fairport; Prophylaxis and Treatment of Tetanus, M. Donati, Modena, and Mr. Cummins, London. At the close of the congress a week's tour will be made of the battlefields in France and Flanders. The *Société* is exclusively for practicing surgeons.

Book Reviews

NEW BOOKS ON SURGERY.

Orthopedic and Reconstruction Surgery. Industrial and Civilian. By FRED H. ALBEE, A.B., M.D., Sc.D., F.A.C.S., Lieutenant Colonel, M.C., U.S. Army, Professor and Director of Department of Orthopedic Surgery at the New York Post Graduate Medical School and at the University of Vermont. With 804 Illustrations. Philadelphia: W. B. Saunders Company, 1919. Pp. xvii-1138.

This book will undoubtedly receive a warm welcome among orthopedic surgeons. Albee has included the findings of a long war experience in this splendid textbook, the keynotes of which are simplicity, clarity, and good common sense. Albee needs no introduction as an orthopedic surgeon. Throughout the world orthopedic surgeons have come to look upon him as a master of technic, a bold and very successful worker. It is only by close examination of this book he has written that one can realize in a measure the reason for his success. He has taken each subject and dug deeply into the work of the past, pruning the unimportant and making the most of essentials, but always contributing new and constructive ideas. He is not satisfied with methods merely because they have been adopted, but only after careful examination and application has he accepted the findings of the past.

We now have an opportunity, to examine carefully the technic which he has found most useful in the reconstruction of the various bony portions of the body. He shows himself to be a prudent architect and an efficient builder. The results justify this assertion. It must not be inferred that he is radical in every instance, for it is only the surgeon who realizes the price he must often pay for a radical procedure and is sure of his ground who will advocate conservative measures when he feels they are the proper line of treatment.

It is pleasing to note that the balance of the book—as regards civilian surgery—has been well established. While Albee has made the most of the findings of the war, he has not lost sight of the importance of the branches of orthopedic surgery used in everyday practice.

Manual of Surgery. (Rose and Carless.) For Students and Practitioners. Tenth Edition. By ALBERT CARLESS, M.B., M.S., Long., F.R.C.S., Emeritus Professor of Surgery to King's College, London. Illustrated. New York: William Wood & Co., 1920. Pp. i-1558.

We have not been in the habit of looking to our British colleagues for surgical technic, having been led to believe that our own surgeons were the most skillful. This may all be very true, but we must recall that the British surgeons did many years of war surgery before we entered the war and from them came many innovations which we were glad to adopt. For this reason, this particular book, or rather this edition of a well known book should be valuable, as the lessons learned in surgery during the war have been incorporated. We find a rather extensive review of the treatment of infected wounds, the use of the x ray in surgery, the proper handling of fractures, and many kindred topics.

Apology is made by the authors that perhaps many of the war findings will be unsuitable for civilian practice. We do not feel this apology necessary. This idea has been too prevalent. The field for this type of surgery may be more limited, perhaps, but nevertheless practically all the work done will have extensive application in the field of industrial surgery. If the methods are not completely adopted, they will at least have a profound influence upon the entire field of surgery.

The use of physical agents during the war was fully recognized and their worth in civilian practice has not received full recognition. The review of these subjects is rather brief, and while it covers the ground fairly well, more could have been said on these subjects.

The subject of facial surgery—and this did receive true impetus during the war—is divided into regions instead of being handled as an entity, which makes it more comprehensible. Little mention is made of the tubed pedicle, which was one of the most useful discoveries of the war. It is referred to only casually in connection with many other methods now obsolete.

It is to be noted that the many interesting sections of the last edition have been retained, for in order to include the many war time discoveries the size of the book has been increased. While the volume is a bit bulky, the bookmaking is very good and on the whole a rather presentable piece of work. No fault can be found with the illustrations and diagrams.

PSYCHONALYSIS IN EVERYDAY LIFE.

Psychoanalysis. Its History, Theory, and Practice. By ANDRÉ TRIDON. New York: B. W. Huebsch, 1919. Pp. 1-272.

A very useful book. One might at first glance accuse the author of being sketchy, but with more careful observation it will be found that in this simply worded book he has dug deeply into the psychoanalytical literature and taken the gist of the material. His presentation is admirable and the book should prove of value in the field of psychoanalysis.

He sketches the history of the psychoanalytical movement and shows how Jung and Adler broke away from the main Freud school. This was due to each of them having a certain phase of analysis which they wished to develop, and felt they could do this better if they had free rein. In principle there has been no real break and for practical purposes their teachings can be reconciled.

Tridon then shows how the movement grew in various countries—some not taking kindly to the subject. Finally we are given the growth of the movement in this country. Brill was one of the founders of analysis in America and yet little reference is made to him. Perhaps the author feels that Doctor Brill has added little original material to the translations; on the other hand, he feels that Jelliffe, Kemp, and White have found new applications for analysis, have given it a broader scope and a bigger meaning. He goes on to show how the

arts, music, and dancing can be considered from a psychoanalytical point of view. In the field of music he is especially at home and he includes some of his original researches which have a direct bearing on the subject. The analysis which he has made of primitive music is extremely interesting. His observation in the field of literature, while not as extensive as those of Mordell, are far more important.

The descriptions of psychic disorders are so well put that they can be understood by the physician who has not specialized in this field and, more important, there is little danger of their being misunderstood and garbled by the laity.

The practical application to which analysis has been put and the possibilities which it offers are briefly yet clearly stated. On the whole it is a very fair presentation and should win many friends for psychoanalysis and for the author. If the reader will have his interest stimulated to the point of looking into the more profound studies of analysis he will benefit. If he is content with what Tridon says, no harm will be done.

FROM THE NORWEGIAN.

The Great Hunger. By JOHAN BOJER. Translated from the Norwegian by W. J. ALEXANDER WORSTER and C. ARCHER. New York: Moffat, Yard & Co., 1919.

This book is such as to rouse in the really honest and courageous reader a spirit of hardihood and resolution. It spares no reminder that existence demands of each of us far more than ordinarily we permit our eyes to see as realities or our ears to hear as the call of real endeavor. There is an undertone of old Norse fatalism in the writer's insistence on the fate to which the hero is bound. Careful reading distinguishes a deeper and truer message than this. The reader is stimulated to a willingness to share even the hard experiences of the hero if he may know that necessity of endeavor, that unconquerableness of action, which sends a Prometheus to seize the fire whatever the consequences.

This is the fatalism which lies in the dynamic nature of the human spirit itself, by which it has its "share in the creating of God." There is something further, too, in its restless dynamism which illuminates the hero's life, dimmed only in his deepest adversity, to hold him steady at last to something more than mere blind impulsion. "Adversity can crush thee, death can blot thee out, yet art thou still unconquerable and eternal."

The austerity of natural surroundings and the rigor of existence in Norway are productive of two types of character. On the one hand, the hardy soul finds stimulus to defy these, to master them and succeed in spite of them or because of them; on the other, these conditions favor a repression and stern resignation which grows too content with a contracted life and fails in initiative. It is natural, therefore, that this sort of literature with its ringing blows upon such blindness to realities, common enough the world over, should be struck by a Norwegian writer. He has also utilized the special beauty of the natural setting as he has the two types of character to add to the effect of contrast in joy and sorrow, success and disaster which attend his hero's life.

Peer Holm as a boy bears the double claim of the human spirit amid the narrow limitations of poverty and ignorance. He knows the ceaseless call to activity and at the same time the idealization which sets a special worth for him upon his attainment and even shines out finally beyond all his adversity. His activity cannot cease. It is restless, insatiable, even though disaster follows heavy in its train. He wins at first a slow but steady success against the odds of poverty, illegitimacy, and obscurity. Determination, perseverance, and a greediness for knowledge bring rich reward. Yet even in the early days struggle is accompanied by sorrow and loss, in the death of the sister which results from the necessary privation to which Peer subjects himself and her. But here, too, is that reward of a deeper reality of the spirit which Peer never completely loses. In middle life he returns from abroad, marries a gifted wife and builds for himself a home, where his life is marked by all that denotes success.

The enjoyment of these fruits of his earlier labors and self denials cannot long satisfy his more active, trained mind. The grip of steel—it was to this he had devoted himself professionally—is still upon him. He is seized with the idea of a useful and needed invention. Before this is completed he has again been drawn into construction work, a vast enterprise in his own country. This time he does not prosper. Misfortunes beyond his control overtake him and worn by financial loss, anxiety, and overwork, he struggles to perfect his invention. Only one small device stands between him and success with ample financial return. His overdriven brain cannot, however, seize the idea of that one thing needed.

Night and day he is driven relentlessly to the discovery of it only to fail, until broken in health he is driven with wife and children to a remote humble home. Here the incessant drive toward activity is balked by the illness which holds him from month to month. At last his skilled brain seizes clearly the inspiration to the perfection of his work and he completes it only to find that someone had stolen his almost completed invention and it is already upon the market.

His poverty is now so complete that it is necessary to send his older children to another home that they may have opportunity to find their inevitable careers of activity. His youngest child is killed through the jealousy and distrust awakened in the heart of a neighbor, too bitter and narrow to understand or tolerate the intrusion of Peer and his family into the peasant world.

It is then that Peer and his overburdened wife discover the healing of which they had almost despaired. Through an act of kindness to this darkened peasant, known only to themselves, the oppression of their misery is broken, faith in their own spirit is restored. Stripped of all outside possessions they find again the unconquerableness that makes man what he is—"so much surplus energy of soul that he has sent it radiating forth into the cold depths of space and warmed them with God."

The story is one of calamity multiplied like the afflictions of Job. It is saved, however, from a sense of exaggeration through the sincere appreciation of human happiness and human love, which

Peer never despises, and which for a time he enjoys undisturbed. It is restrained still more through its consistent development toward the final sustaining recognition of the inner reality of man's nature which underlies and transcends all external events.

PSYCHOLOGY.

Psychology of the Normal and the Subnormal. By HENRY HERBERT GODDARD, A.M., Ph.D. New York: Dodd, Mead & Co., 1919. Illustrated. Pp. iii-341.

A great many words have been used and very little of value said in the writing of this book. It seems as though the author was fearful of going beyond the point where he could be understood by the people about whom he wrote the book. Even if the patients described in the book were to receive the full benefits of the shallow teachings it contains, little good would result. The author has attempted to talk about psychology in an authoritative fashion and he has skipped about in a mincing manner—afraid. It seems pathetic that such low standards should be accepted and the book offered as a textbook to students of psychology. The only suggestion one gets is that the educator is sadly in need of education.

PROBLEMS OF SPEECH.

Aphasia and Associated Speech Problems. By MICHAEL OSNATO, M.D., Associate in Neurology, Columbia University. Preface by FREDERICK TILNEY, M.D., Ph.D., Professor of Neurology, Columbia University. Illustrated. New York: Paul B. Hoeber, 1920. Pp. i-190.

Doctor Osnato presents the subject of speech deficiency from several angles—the hereditary, congenital, and pathological. Certain forms of disturbance particularly noticeable in children are treated, such as stuttering, stammering, agrammatism, hearing mutism, word blindness and deaf mutism combined with cretinism. The author believes that aphasia is a defect of the intelligence, that the development of the mind is inseparable from the development of speech, and that the mental functions are unfavorably affected in cases of aphasia and apraxia. The chapter on disturbances of speech arising from emotion or fatigue contains much interesting material. The book should be of value to teachers and parents as well as the medical profession.

SANITATION.

Sanitation for Public Health Nurses. Fundamentals of Public Health. By HERBERT WINSLOW HILL, M.B., M.D., D.P.H., Late Director, Division of Epidemiology, Minnesota State Board of Health; Executive Secretary of Minnesota Public Health Association. New York: The Macmillan Company, 1920. Pp. 211.

While this volume may be of use to the tentative public health nurse, its scope and method recommend it most to the attention of the general public. Doctor Hill takes up the question of infectious diseases, emphasizing the mode of infection and time of becoming noninfectious. A brief outline of body operation is given, and this is followed by chapters on food, water, milk, and insects as carriers of infection. There is an excellent discussion of dirt versus infection, which, however, should be read only by persons who are naturally inclined to be clean. This volume seems to be somewhat elementary as a textbook for the student of

public health, and the author might as well have named it *Sanitation for Everybody*. In fact, we can think of no better book to be placed in the hands of as many lay readers as possible: it is graphic, short, easy to read, and full of information stated simply enough to be easily comprehensible.

New Publications Received.

The Burning Secret. By STEPHEN BRANCH. New York: Scott & Seltzer, 1919. Pp. ix-175.

My Neighbors. Stories of the Welsh People. By CARADOC EVANS. New York: Harcourt, Brace and Howe, 1920. Pp. 3-244.

Miss Lulu Bett. By ZONA GALE. Author of "Friendship Village," etc. New York: D. Appleton & Co., 1920. Pp. i-264.

The Amethyst Ring. By ANATOLE FRANCE. A translation by B. Drillion. Second Edition. New York: John Lane Company, 1920. Pp. iii-304.

Origine, evolution et traitement des maladies chroniques noncontagieuses. Par J. DANYSZ. Paris: Librairie J. B. Baillière et Fils, 1920. Pp. 7-130.

From Newton to Einstein. Changing Conceptions of the Universe. By BENJAMIN HARROW, Ph.D. Portraits and Illustrations. New York: D. Van Nostrand Company, 1920. Pp. i-74.

The Natural History of the Child. A Book for All Sorts and Conditions of Men, Women and Children. By Dr. COURTENAY DUNN. New York: John Lane Company, 1920. Pp. xiii-316.

Measure Your Mind. The Mentimeter and How to Use It. By M. R. TRABUE, Ph.D., and FRANK PARKER STOCKBRIDGE. With Illustrations in Text. Garden City, N. Y.: Doubleday, Page & Co., 1920. Pp. iii-349.

Etude Sur l'épilepsie traumatique. Travail du service de la clinique des maladies du système nerveux à la Salpêtrière. (Professor Pierre Marie.) Docteur Pierre Béhague, médecin aide-major de tre classe, au centre neurologique de la Salpêtrière. Paris: Librairie Littéraire et Médicale Louis Arnette, 1919. Pp. viii-320.

Orthopedic and Reconstruction Surgery, Industrial and Civilian. By FRED H. ALBEE, A.B., M.D., Sc.D., F.A.C.S., Lieutenant Colonel M.C., U.S.A., Professor and Director of Department of Orthopedic Surgery at the New York Post Graduate Medical School and at the University of Vermont. With 804 Illustrations. Philadelphia: W.B. Saunders Co., 1919. Pp. xvii-1138.

Diseases of Women. Including Abnormalities of Pregnancy, Labor, and Puerperium. A Clinical Study of Pathological Conditions Characteristic of the Five Periods of Woman's Life. Presented in One Hundred and Seventy-three Case Histories. By CHARLES M. GREEN, A.B., M.D. Professor Emeritus of Obstetrics and Gynecology in Harvard University. Illustrated. Boston: W. M. Leonard, 1920. Pp. 3-22.

Miscellany from Home and Foreign Journals

Focal Infection.—Thomas D. Coleman (*South-ern Medical Journal*, February, 1920) sounds a note of warning that we may go too far in eliminating suspected sources of focal infection. It is true that where an organ is diseased to an extent which renders it a menace to the body, it should be removed, provided that this does not entail too great danger to other and more important tissues. But it should also be remembered that pathogenic organisms often remain strictly localized and produce no systemic effect, and that in removing these foci openings may be made into the blood stream or lymphatics which lead to a general infection. Excesses in treatment need to be avoided. The fact that a patient has a circumscribed abscess at the root of a tooth does not necessarily mean that the abscess is acting as a focus of infection. While it is true that many acute and chronic infections start from infections in the mouth, nose, ear, sinuses, and genitourinary tract, it is also true that the alimentary canal is a source of infection more often than is generally appreciated. In making a diagnosis of systemic infection from focus or foci it is needful to employ every means of diagnosis at our command, and then we may fail. It is not only necessary to determine that the systemic infection is due to an infective focus, and to locate a possible focus, but to remember that a focus which seems potentially capable may be innocent, and that some other unsuspected focus is producing the trouble. At the present time he believes that many teeth are being sacrificed needlessly and unwisely. When a focus is found that is actually causing systemic disturbance it should be removed, but the removal of foci should not be made a diagnostic procedure.

Diverticulitis.—W. H. M. Telling (*Lancet*, January 10, 1920) presents clearly and forcibly the subject of diverticulitis, with a brief review of the recent findings in the field. The causes are chiefly constipation and flatulent distention of the bowel. The diverticula are most common in the large intestine and the usual location is at the sigmoid flexure. They vary greatly in size, appear most often in the appendices epiploicae, and are likely to escape detection at operation or at postmortem because of their small size and tendency to be hidden in the fat of the gut wall or in hyperplastic tissue produced by their chronic irritation. Being caused by pressure in the first place, the diverticula tend to enlarge as the pressure continues. As the protrusion of the mucosa increases it tends to dilate forming a bottle shaped pocket in which there is much likelihood of retention of fecal matter. Inflammatory processes result, with an important series of complications more serious than the initial simple diverticular formation. First, ulceration of the mucosa takes place, resulting in perforation or in the formation of adhesions to other organs and possibly in the development of fistulous communications. If there is no perforation, the chronic infection frequently produces a marked peridiverticular fibrous hyperplasia which leads to a tumor formation and gradual stenosis of the bowel. This

may readily be confused with carcinoma of the intestine and indeed it may undergo carcinomatous degeneration ultimately. Clinically, the condition conforms more or less to the following types: 1, Inflammatory trouble or tumor in the left lower quadrant of the abdomen; 2, general peritonitis; 3, vesicocolic fistula; 4, pelvic syndromes; 5, intestinal obstruction; 6, mimicry of carcinoma. The cases occur chiefly in males at or after middle age, usually with a history of constipation and very rarely causing blood in the stools. The diagnosis is greatly aided by one of these three means: the sigmoidoscope, which is often disappointing in its results; the cystoscope, which is of great assistance in a few cases; and the x ray, most efficient of any of the methods. The treatment of the condition is surgical unless contraindicated.

The Symbol as an Energy Container.—Smith Ely Jelliffe (*Journal of Nervous and Mental Disease*, December, 1919), says that a new concept of energy in its relation to the individual is being brought forward. This concept is so vast in its scope that only one pathway at a time can be followed to point out, as our author says, "the unseen but ceaseless capture, transformation and release of energy and the effort, now foiled and disturbing, now successful and health producing, which has gone on in the individual and in the human race." The pathway traced by Jelliffe is that of speech, and the evidence of the energy captured and released in speech, especially as demonstrated by the single word, symbolism. Containers of energy exist in light, heat, gravity, chemisms, motion and inertia. They came to exist in the combination of life. Thereafter life had to make its adjustments to the other energy containers around it, and in human life speech was pressed into service. This mechanism of speech, accompanied by the development of a psychic element as stimulating factor, has attained today immeasurable possibilities as a feeling reaction and as a source of fresh stimulus. Just as Wagner in his music sought expression of his psyche, his reaction to his surroundings, his capture and release of energy, so do we find in speech the energy pathways through which we make our effect upon the outside world.

Certain words have been made conspicuously that express thoughts so wide, so powerful as captors and transmitters of energy, that they persist with everlasting force today and will persist for all time. The term symbol is such a word, and in the concept of the symbol, "that which in the course of time comes to express the first direct chemico-physical needs—then the interpretation in feeling and the further desire that arises—and sweeps the gamut of human experience from the lowest reactive sensation, through all the range of primitive passions, up to the most remote resymbolizations of human intellectual thought," we have a container of energy of the simplest and yet of the most powerful order. All this cannot be in the conscious, however. Yet the demand for expression, whether conscious or unconscious, is just as urgent. Speech cannot al-

ways serve as the accurate, acceptable medium, and then it is that the symbol is used. "Each word lives and breathes anew as it passes into action, and this means that it performs its physiological function as a symbol." It restrains, contains, digests, assimilates, and transforms into usable form the energy of the thought which it clothes. "A monograph on the cultural history of mankind," Mauthner has called the word, used as a symbol, or as it stands. A study of the Greek word symbol itself illustrates this, from the purely etymological combination of the concepts "to throw" and "together" to the complex picture obtained from the explorations of the unconscious.

The word as a symbol carries with it the contact it has had with life during the whole history of its development. It forms the link with the future, the tool that enables the analyst to explore the unconscious mind of man, and finally, woven into language, forms the most complete and active energy container.

The Phantom Limbs of Amputés.—Edred M. Corner (*Practitioner*, February, 1920) investigated the subject of sensations in amputated limbs in over 500 cases. His inquiries established these facts: 1. Phantoms made their appearance immediately after operation. 2. They were very unusual in the young, but were more frequent among the older. 3. As a rule, they obtruded themselves less in frequency and sensation as time went on. Within eight months or a year the patient slept well, did not dream, and was conscious of the phantom limb only when he thought of it. It was a sign of considerable clinical importance if he was undisturbed by his missing limb in sleep and unaffected in dreams. 4. There was great confusion in the answers as to the limb in dreams. The man may have lost one limb, yet in his dreams have both, or sometimes one and sometimes both; such conditions strongly suggest that there can be no local lesion of nerves. In some dreams the man has even lost the wrong limb; this must arise from the mind, the condition is central. Some always have two limbs, but the one which has been amputated seems awkward or hurts, or there is pain at the site of the amputation; such cases suggest a local lesion. 5. The character of the sensation was usually cramplike or crushing, occasionally scalding, but these sensations were momentary or of short duration. 6. As a rule, the phantom limb could not be bent or moved. 7. Usually, in time all sensations of a phantom limb disappeared, but when it persisted the man grew very depressed and even homicidal. From time to time in such a man, and after wearing an artificial limb, the sensations and the dreams return. A badly fitting, unsuitable limb has possibly irritated the newly grown nerves in the stump. 8. Operation frequently failed to cure the sensations in a phantom limb. More frequently, if on the right place, it altered, but did not abolish them. 9. The factors which most frequently affected the sensations were cold, damp, changes of weather, and absence of occupation for the mind. Hospital life is bad for such patients. 10. The distribution of the sensations are often not in the anatomical area of a nerve or nerves, and by their variations suggest their central origin. 11. The nearer

the trunk, particularly in shoulder amputations, the more persistent these sensations are apt to be. The shoulder and high arm amputations seem to be especially troublesome. 12. A heavy, ill fitting limb, by its irritation, can bring back phantom sensations. The mere wearing of an artificial limb may do this. The important thing is to be able to discriminate those cases in which the phantom sensations are due to irritation of the nerve in the stump, and which are of central origin. Sometimes a painful stump can be cured by massage and movement in a short time; the origin of both pain and phantom in such a case is central. A careful study of a case sometimes reveals that there is not a constant sensation in the distribution of a nerve, suggesting a source of irritation on that nerve giving rise to the sensation which is projected into the phantom. Some cases can be cured by surgery, but in general all that can be hoped for is that operation will alter the phantom sensation and lead to its cure in course of time. The writer concludes that in the great majority of cases the symptoms are wholly or partially of central origin, and that operation should be performed only when there are constant unvarying local physical signs.

Brachial Birth Palsy: A Pseudoparalysis of Shoulder Joint Origin.—T. Turner Thomas (*American Journal of the Medical Sciences*, February, 1920) comes to the following conclusions: 1. Obstetrical or brachial birth palsy represents only one phase of a much larger shoulder joint problem. Almost all shoulder joint injuries are associated with a brachial paralysis, palsy or weakness of varying degree and duration. Very rarely will an actual nerve rupture be associated with the paralysis.

2. The best evidence of the absence of such a nerve rupture is the almost uniform and gradual disappearance of the paralysis. This is easily proved in connection with the adult cases, and seems to be true of the obstetrical cases, in which the paralysis is usually of longer duration and more difficult to follow up. If the crippling of the limb persists into adult life it will probably be found in all cases in which a posterior dislocation of the shoulder is associated, often with some moderate permanent disturbance in the elbow joint.

3. In obstetrical paralysis soon after birth there is a profound and almost complete paralysis of the whole limb and not a paralysis limited to the small Duchenne-Erb group of muscles. This is best explained by the inclusion of the branches of the brachial plexus in an axillary inflammation consequent upon a birth injury of the shoulder joint.

5. The extravasation into the axilla of blood and synovial fluid causes an immediate inflammation and later cicatricial tissue, all of which is probably absorbed in time, thus accounting for the disappearance of the paralysis.

6. The Duchenne-Erb localization of the paralysis by electrical reactions to the deltoid, biceps, brachialis anticus (Duchenne and Erb), infraspinatus (Duchenne) and supinators of the forearm (Erb) has been widely accepted but not corroborated.

7. In his four cases Duchenne found posterior dislocation of the shoulder which he said occurred at birth and was chiefly responsible for the paralysis.

He thought, however, that some of the paralysis was due to injury of the brachial plexus. Since then practically nothing has been said of a shoulder joint origin, the dislocations passing unrecognized, and all cases being attributed to injury of the brachial plexus. Since 1911, when the shoulder joint injury was offered as the primary cause, this theory has made rapid progress.

8. It is very likely that sufficient traction on the head at birth to rupture the brachial plexus has never been applied in a successful delivery.

Obstetrical Paralysis.—James Warren Sever (*Canadian Medical Association Journal*, February, 1920) says that obstetrical paralysis is due to stretching or tearing of the cervical roots of the brachial plexus. It occurs in boys as frequently as in girls, and more often on the right side. The upper arm type is much more frequent than the lower arm type; both arms are affected very seldom. It is practically always associated with a difficult labor in which ether and forceps have been used and force has been applied. Not uncommonly the baby is asphyxiated. Head presentations show the larger percentage of occurrences of both types of cases. It may rarely be associated with fracture of the clavicle, but is not the result of a fractured humerus, or a dislocated shoulder joint. The prognosis for a useful arm is good in the upper arm type, and bad in the lower arm type.

Persistent Occipitoposterior Positions.—H. E. Miller (*New Orleans Medical and Surgical Journal*, February, 1920) deals exclusively with occipitoposterior positions which persist and do not rotate early and become anterior. He advocates the Scanzoni method of dealing with these cases and thus outlines the steps of this forceps maneuver. The forceps are applied to the head in occipitoposterior position according to certain scientific rules, not haphazard with the sole idea of getting a grasp on the head. There is no excuse for getting other than a true cephalic application, except in cases where the landmarks have been obliterated by a large caput. Proper application of the forceps having been attained, gentle traction is made in the direction of the pelvic canal without any attempt to rotate manually.

Too much stress cannot be laid on these two points, as a failure to appreciate their significance will lead to disastrous results. Further traction is made until the head is brought down to the pelvic floor, the occiput still posterior. Here slight upward traction is made to favor flexion. Continued traction now brings the natural rotating forces of the pelvis into action, and the occiput rotates anteriorly of its own accord. So serious is any attempt to rotate the head with the forceps at this stage that it is best to sacrifice the perineum and deliver the head in posterior position should the head fail to rotate, which rarely happens. The occiput having rotated anteriorly the forceps are upside down. They are released, removed, and reapplied according to the technic required by the anterior position. The essential points to remember are that forceps are to be used solely as traction agents, and that the natural mechanics of the pelvis will accomplish the rotation if the head is brought down far enough.

Modern Conceptions of Heart Disease.—Wilfrid Edgecombe (*Practitioner*, March, 1920) says that the old conception of valvular disease and its aftereffects on the heart was largely a mechanical one, in which infection was recognized mainly as the initial cause. The modern conception regards infection as the primary factor in the production of heart failure and relegates a secondary and subsidiary part to the mechanical factor. In the diagnosis of organic disease of the heart a systolic bruit alone is of no value. A systolic bruit with a permanent enlargement of the heart is definite evidence of organic disease, but it is the enlargement that matters, not the bruit. A diastolic bruit is definite evidence of an organic valve lesion; without a permanent enlargement, it is of relatively less import; with enlargement there is definite evidence of carditis. Enlargement, with or without a bruit, is definite evidence of organic disease. All gradations of infection are met with in heart disease. The old mechanical conception of compensation is no longer tenable. Perhaps the most striking change in our outlook on cardiac affections lies in the domain of abnormalities of rhythm. The chief forms of irregularity of which we have now a more or less exact knowledge, discussed at some length by the writer, are: Sinus irregularity of the young, sinoauricular block, extra systoles, paroxysmal tachycardia, auricular flutter, auricular fibrillation, heart block, and pulsus alternans. The unravelling of irregularities of rhythm and the establishment of their diagnosis and relative import on a sound basis are an immense advance in our knowledge of heart disease; they have replaced the old nebulous notions by a clear conception.

Restoration of the Heart in Chloroform Poisoning.—Fred Ransom (*Journal of Pharmacology and Experimental Therapeutics*, January, 1920) found in perfusion experiments that frogs' hearts depressed by chloroform may be restored to nearly or, in some cases, quite normal activity by adding to the chloroform solution small quantities of adrenalin, tyramin, strophanthus, diuretin, caffeine, or strontium chloride. Pituitrin, on the other hand, fails to yield this result. In the case of adrenalin and tyramin the restored hearts will continue beating well in the presence of toxic amounts of chloroform for some hours. The other substances at first cause restoration and then toxic symptoms of their own; this latter difficulty may, however, be overcome if, as soon as restoration has taken place, the perfusion fluid is changed to plain Ringer solution. By this method of giving a small quantity of the antagonist and following with plain Ringer, restoration is much quicker than when the chloroform is simply washed away from the heart. As regards clinical application, it should be noted that the antagonism of the drugs to chloroform shown in these experiments applies only to the effect of the chloroform on the heart muscle, and that, to be effectively used, the antagonist must reach the heart. The experiments indicate the importance of detecting the early symptoms of heart failure under chloroform. An injection of a suitable antagonist made at once would probably be successful, while delay till failure had actually occurred might be fatal.

Proceedings of National and Local Societies

AMERICAN LARYNGOLOGICAL SOCIETY.

Forty-first Annual Meeting Held in Atlantic City, N. J., June 16, 17 and 18, 1919.

The President, Dr. CORNELIUS G. COAKLEY, of New York, in the Chair.

(Continued from page 748)

Brain Abscess Dependent upon Empyema of the Frontal Sinus.—Lieutenant Colonel THOMAS J. HARRIS, of New York, reported the case of a man, aged twenty-six, who was admitted to the eye ward of General Hospital No. 14 on September 10, 1919, suffering from a swelling of the right eye. A diagnosis of pansinusitis on the right side was made and confirmed by x ray pictures, but the patient refused an intranasal operation for correction of the septum to secure better drainage. Under threat of court martial the patient finally consented to operation, and a radical Killian operation was performed. Convalescence was slow, and it was then noticed that palpation of the operated field showed a soft, apparently fluctuating mass. A diagnosis of brain abscess was made and confirmed by the neurologist.

After careful consideration, an expectant course of treatment was decided upon. For the next twenty-four hours no change could be noted in his condition except an increase in his apathy. Suddenly, at the end of twenty-four hours, he became almost completely comatose. The pulse had dropped to a little over forty, and the optic neuritis was found to have increased since the last examination to three diopters. Immediate operation was decided upon. This was performed under one per cent. novocain. An incision was made directly through the integument over the swelling. Retraction of this revealed at once the dura with little or no granulation tissue intervening. Palpation at this time no longer gave any sensation of fluctuation. With the desire to reduce to a minimum the danger of meningitis, extreme care was exercised in the exploration of the frontal lobe. A probe introduced through the dura immediately entered a large cavity without meeting any resistance at all. Bearing in mind the proximity of the ventricles, the probe was not carried beyond two centimetres. No brain tissue was encountered and pus in quantity was not evacuated, a few drops only following the incision of the dura. No irrigation whatever was employed. A rubber drainage tube was introduced and held in position by a suture to the outer wound. The wound was left open. An immediate improvement in the condition of the patient took place. His pulse in the course of a few hours returned to normal, and within seventy-two hours he was mentally in the same state as he had been a short time previous to the onset of the active symptoms. There was at no time any escape of cerebrospinal fluid. A small brain hernia, however, took place which gave some trouble. Amputation of the protruding mass was practised with benefit. The patient was still in the hospital in February. Later reports were to the effect that while it was necessary to open up the wound for purpose of better drainage, and the pa-

tient had proved to be the victim of recurring erysipelas, there had been no return of the brain compression symptoms.

As distinguished from abscess of the temporo-sphenoidal lobe, abscess of the frontal lobe was virtually symptomless. Unless the disease had extended beyond the silent area, no paralysis took place, which increased the difficulty of making an early diagnosis. Headache was probably the most characteristic symptom. Several of the case reports contained reference to the apathetic condition of the patient. Projectile vomiting had long been recognized as a symptom of brain abscess. Repeated references were made in the literature to vomiting. In the case reported the patient had been subject to this for weeks before the abscess was recognized, and it is impossible to say positively whether the cause lay in the brain. The latent period could last for an indefinite time. Only when brain compression had taken place or the abscess had extended so far as to cause absorption was it capable of easy recognition. Clinically speaking, cases divided themselves into acute and chronic types. The acute cases were associated with pain and increased temperature. Usually an empyema of the frontal sinus had been recognized and a radical operation performed without relief to symptoms. Often at the time of the operation, a disease of the posterior wall of the sinuses was discovered. In these cases immediate operation had followed; in others, the brain had been explored only after an interval of several days. The prognosis was grave, but by no means hopeless. In a number of cases reported there had been satisfactory recovery after operation. This depended upon the type of case, whether acute or chronic with a walled off cavity. Meningitis was chiefly to be dreaded.

A valuable suggestion had been made by Elsberg, who stated that if before an abscess of the brain was opened, packing of gauze soaked in tincture of iodine was placed under the dura all around the wound the danger of meningitis was practically avoided. He further recommended that two drainage tubes be introduced, neither of which should be removed until ready to be taken out, and that they should be shortened from time to time.

Discussion.—Dr. WILLIAM B. CHAMBERLIN, of Cleveland, said he would like to emphasize a point which Doctor Harris had made in regard to the lack of symptoms in compression of the frontal lobe. Some three or four years ago, at a meeting of the American Laryngological, Rhinological and Otolological Society in Washington, he had reported the involvement and practical loss of the entire frontal lobe on the left side. The patient presented absolutely no symptoms of brain involvement, and had consulted him on account of a discharging sinus beneath the margin of the left orbit. The probe went so far that he was afraid to introduce it any further. At operation it was found that practically the whole of the frontal lobe was gone, so that the area involved was represented by a plane passing through the external auditory meatus posteriorly,

by the midline of the skull, and by the floor of the anterior fossa. The man had no cerebral symptoms before operation or afterwards. At the time of the operation large masses of polypi were removed which had extended up through the nasofrontal duct. The entire posterior wall of the frontal sinus was also removed as a sequesterum. The cavity persisted some six or eight months, as a smooth walled cavity without granulations.

Sir ST. CLAIR THOMSON said he thought the subject was ripe for further study. The condition was rare, but, as Doctor Harris had pointed out, probably not so rare as one might think. The lesson is that we must not be in too great a hurry to blame ourselves or our colleagues for cerebral complications in sinus cases unless we get a postmortem.

A Case of Nodular Headache of Nasal (Sphenopalatine-Meckel's) Ganglionic Origin.—Dr. GREENFIELD SLUDER, of St. Louis, said that nodular, or rheumatic headache, as it was sometimes called, was not frequent compared to other headaches. It was characterized by the presence of nodules from the size of a pea to that of a hazelnut in some part of the scalp or the nape of the neck which were supposed to be the cause of the headache. Sometimes they were spoken of as being found lower down in the shoulders. A lady, forty years old, gave a clear history of a "lower half headache" of great severity from her childhood, stating that when it was very bad "knots" came in her neck and over her scalp. She had been the speaker's patient for fifteen years, but he had never succeeded in seeing her when the "knots" were present until one month previously. At that time she had had an unusually severe attack of nasal ganglion neuralgia. She spoke of the severity of the attack and called attention to some "knots" in her neck. At the lowermost part of the occiput were two nodules, near the middle line, each side, one centimetre wide and two centimetres long, tender to touch. Full cocaineization of the nasal ganglion relieved the pain and an hour later the node of the right had disappeared. That of the left side was present twenty-four hours later, but smaller and less sensitive. It disappeared in ten days more. Doctor Sluder said he thought that these nodes were manifestations on the part of the sympathetic not unrelated to some of the skin lesions of neurotic, sensory or trophic origin. One case, however, must be remembered merely as one case.

Bacteriology of Streptococcus Hemolyticus.—Major ALPHONSE R. DOCHET, M. C., of New York, said that the complete biological classification of any pathogenic microorganism presented a very complex problem. The first phase of the undertaking concerned itself with the development of reliable methods for the determination of antigenic differences between members of the species and the application of these methods to the discovery of the immunological relationship between a limited number of strains purposefully selected. In this way the degree of similarity and diversity of types was shown and also the probable number of types, and the proportion of classifiable to unclassifiable strains. The next step of necessity was the testing of the adequacy and universality of the information so gained by applying the tentative classifi-

cation to a large number of strains of the organism obtained under what might be described as normal conditions of pathogenicity. That some sort of equilibrium had been established in nature among microorganisms that had produced disease over long periods of time was not unlikely. Indeed, evidence obtained from the study of pneumococci supported this view although departure from the norm might occur under special conditions. After the relationships of the pathogens of the species to one another had been discovered, it then became important for purposes of epidemiological study to compare by the same methods the pathogenic with the saprophytic varieties. Such a task required years for its completion, and many difficulties and seemingly unexplainable phenomena were encountered. In the beginning, the broader lines of differentiation must be drawn, and divergent results discarded for the time being, since, if the original conception was correct, most of the discrepancies disappeared with the advance of knowledge.

The author presented the facts so far obtained in the present study of *Streptococcus hemolyticus*, in accordance with the plan outlined above. The strains were collected in a limited community during the course of what might be considered an epidemic of bronchopneumonia secondary to measles. Individuals, however, from all parts of the United States were passing rapidly through this community, which was a centre for primary training of the aviation service, so that a wider range of territory was represented than the immediate community itself. All the strains were investigated as to their cultural reactions, bile solubility, capacity to hemolyze red blood cells and to ferment the different test sugars, and as to the hydrogen ion concentration limiting their growth, and thus identified as accurately as possible with *Streptococcus hemolyticus* of the human type. A technic was then developed for studying the immunological reactions of agglutination and protection. By the reaction of agglutination four distinct immunological types and a certain number of unclassifiable strains had been discovered among the 125 strains studied. Individuals of the same type were closely related to one another immunologically, and the different types could be sharply distinguished one from the other. In addition to the four types, study of the reactions of which had been completed, there were in addition two other types, investigation of which was as yet incomplete. The technic of the agglutination reaction demanded great care, both in regard to the handling of the organism and the preparation of the medium for their growth. In the medium used, a large proportion of strains had grown sufficiently diffusely to permit the preparation of stable suspensions. To what extent continuous growth in this medium had promoted the tendency to diffuseness, and whether the same percentage of freshly isolated strains would grow diffusely, it was as yet impossible to say. A highly specific agglutinating serum had been obtained by the immunization of sheep, but the serum produced from rabbits was not so specific and might show a wider range of crossing, especially in one of the types of streptococcus described. Whenever it had

been possible to raise the animal virulence of strains of *Streptococcus hemolyticus*, the evidence obtained from the agglutination tests had been confirmed by that gained from the protection reaction. In all instances in which this had been done, the one reaction had corroborated the findings of the other.

Major Dochez said that this work had cleared up a number of points about *Streptococcus hemolyticus* which had been in dispute for years. In the first place, *Streptococcus hemolyticus* of human origin was not a unit type as was previously supposed, but probably consisted of a number of types, at least four of which had been definitely identified. Previous investigators had stated that freshly isolated human strains changed their antigenic properties on animal passage, and that the latter procedure for the development of animal virulence gave a common antigenic character to all strains. No evidence had been found to support this contention—in fact, immune sera produced with human strains that had never been passed through animals afforded a high degree of protection against strains that had received many animal passages. In addition, the antigenic differences between strains of *Streptococcus hemolyticus* which had been passed through animals were quite as distinct as those between strains which had not been so passed. The types of *Streptococcus hemolyticus* had been studied almost exclusively from the respiratory tract and from a limited source of supply and there was some reason to believe that those which produced cellulitis, erysipelas and septicemia might be of somewhat different character. It was, therefore, readily seen that but a beginning had been made in the classification of *Streptococcus hemolyticus*, and that before the classification was complete, and the relative dominance of the different pathogenic varieties determined, much work must be done.

(To be continued)

Letters to the Editors.

REVISION OF INSANITY LAWS.

BROOKLYN, N. Y., April 20, 1920.

To the Editor:

For years this society has advocated a readjustment of our insanity laws, not only for the welfare of our patients, but for the protection of society. Insanity, as it is usually termed, is a medical, and not a legal problem. As the laws now stand, a judge or a jury has the deciding opinion as to whether a man is sane or insane, safe to be at large, or unsafe; and neither by education nor by training is either competent to decide. Most judges having sound common sense, realize this, and prefer to abide by the opinions of psychiatrists. There are a few who do not. Some of the most dangerous types of insanity—particularly paranoid conditions without deterioration—are the most difficult ones to diagnose.

Not infrequently such patients are merely asked in court whether they are insane, and on replying in the negative, are discharged forthwith! And a

potential homicidal patient is thrown back on society! We as physicians are helpless, for in this branch of medicine—psychiatry—a judge or jury are by our present laws clothed with superior diagnostic powers!

The Medical Society of the County of Kings, with a membership of one thousand physicians, indorsed our attitude, and in February so notified the Governor. But unless all physicians, individually and collectively, will interest themselves in this subject, and interest both the press and the public, our efforts will not bear fruit. Instead, the present laws and the present procedure will remain as they are to the detriment of our patients and the danger of society.

Will you not send resolutions to the Governor, and to the members of the Legislature, asking for an investigation into our insanity laws?

For let it be reiterated, that insanity is a mental disorder—a medical problem—rather than a legal one. Personally, I know that most members of the bar agree with this. There should be no division of authority.

J. F. W. MEAGHER, M.D., president,
Brooklyn Neurological Society.

Births, Marriages, and Deaths.

Died.

BECKETT.—In Seattle, Wash., on Friday, April 9th. Dr. Ernest E. Beckett, aged forty-eight years.

BLACKER.—In Indianapolis, Ind., on Tuesday, March 23rd. Dr. Charles E. Blacker, aged seventy-eight years.

DEANE.—In Springfield, Mass., on Saturday, April 10th. Dr. Wallace Harlow Deane, aged sixty-seven years.

FRAENKEL.—In New York, N. Y., on Saturday, April 24th. Dr. Joseph Fraenkel, aged fifty-three years.

GOULEY.—In Brooklyn, N. Y., on Monday, April 26th. Dr. John W. S. Gouley, of New York, aged eighty-eight years.

HODGSON.—In Nutley, N. J., on Thursday, April 15th. Dr. Charles Hodgson, aged sixty-three years.

HOLLIS.—In Hartford City, Ind., on Saturday, March 13th. Dr. Samuel Hollis, aged sixty-eight years.

HORNOKER.—In Silversville, Ind., on Tuesday, March 16th. Dr. Simon D. Hornoker, aged eighty-seven years.

LANEHART.—In Hempstead, L. I., on Sunday, April 25th. Dr. Louis Nott Lanehart, aged fifty-one years.

MAGEE.—In Troy, N. Y., on Sunday, April 18th. Dr. John Magee, aged sixty-five years.

MCPHAIL.—In Richmond, Va., on Thursday, March 11th. Dr. Donald McPhail, aged sixty-five years.

SCHEIDER.—In New York, N. Y., on Monday, April 26th. Dr. Julius Scheider, aged seventy-four years.

SNOOK.—In Parma, N. Y., on Friday, April 16th. Dr. George Mortimer Snook, aged seventy-nine years.

WEIDNER.—In Sarasota, Fla., on Monday, April 12th. Dr. Calvin Weidner, of Hartford, Conn., aged fifty-three years.

WILCOX.—In Middletown, N. Y., on Tuesday, April 20th. Dr. Sidney Freeman Wilcox, of New York, aged sixty-five years.

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ACIDOSIS: ITS MECHANISM, RECOGNITION, AND CLINICAL MANIFESTATIONS.*

By GEORGE MORRIS PIERSOL, M. D.,
Philadelphia.

Although the term acidosis has become a popular and convenient expression, it is used loosely and inaccurately. When the expression is employed to indicate the occurrence of variable quantities of acetone bodies in the urine, it is a misnomer. It can be clearly shown that acetone bodies in the urine do not always mean acidosis, and conversely grave acid intoxication may occur with the total absence of these substances from the urine. Acidosis has been defined by Van Slyke (1) as "a condition in which the concentration of bicarbonate in the blood is reduced below the normal level." Or, perhaps better, as Lawrence J. Henderson (2) puts it, "any modification of the normal equilibrium between the acids and bases within the organism whereby the power to neutralize the acids is diminished, is to be regarded as a condition of acidosis." Therefore, to understand acidosis from the point of view of these definitions, it is necessary to inquire into the means by which Nature maintains the normal equilibrium between acids and alkalis in the body.

Nothing is more remarkable than the constancy in reaction maintained by the normal blood and body fluids. This reaction is slightly alkaline. By reason of delicately balanced physicochemical regulations, the blood is capable of withstanding additions of acids and alkalis without altering its reaction. The importance of this in maintaining the numerous sensitive reactions of the body is obvious. Howland (3) puts it graphically when he points out that a change in the reaction of the blood from the normal one to precise neutrality is sufficient to render life impossible, and that a change from the reaction of ordinary tap water, which is more alkaline than blood, to that of distilled water, which is more acid than the blood, would be incompatible with life. The chemical reactions by which this constancy of the blood is maintained, have been admirably described by Lawrence J. Henderson (4), and few noteworthy additions to our knowledge of this subject have been made since the publication of his paper in 1909.

Acids and alkalis are constantly being intro-

duced into, and elaborated within, the animal body. The exogenous are derived from the ingested foods, and the endogenous are the result of metabolic activity. Acids such as carbonic, phosphoric, sulphuric, and lactic are continually being produced by processes of oxidation. The amino acids and proteins are said to be amphoteric, they are capable of acting either as acids or alkalis as the occasion requires. How then are these acids eliminated, and what is the mechanism by which the reaction of the blood and body fluids is kept slightly alkaline? Four chief factors are responsible for maintaining the acid base equilibrium: 1. The elimination of carbon dioxide by the lungs; 2, the so-called buffer action of the blood to acids and alkalis; 3, the ability of the kidneys to eliminate an acid urine from an alkaline blood; 4, the production of alkalis in the form of ammonia.

Large quantities of carbonic acid are continually being produced in the tissues to be eliminated in a gaseous condition by the lungs. The carbonic acid, however, must be brought from the tissues to the lung by the blood. In a healthy adult in twenty-four hours the quantity of acid that must be conveyed by the blood from the tissues to the lungs amounts to the chemical equivalent of several hundred c.c. of concentrated hydrochloric acid (5). If, therefore, some adequate means were not provided for neutralizing this carbonic acid during its passage through the body, life could not go on. Carbon dioxide is constantly being transferred from seats of high tension to those of lower tension. That is, the carbon dioxide flows from the tissues where the concentration is highest, into the blood where it is lower, then to the alveolar air where it is still lower, and finally to the external air where it is lowest. This neutralization of acid carbon dioxide is brought about by the sodium bicarbonate of the blood. As the result of certain physicochemical laws governing the solutions of weak acids, the sodium bicarbonate of the blood is able to neutralize this large quantity of acid without the hydrogen ion concentration of the blood, that is the degree of acidity or alkalinity of the blood, being altered. This relationship between carbonic acid and bicarbonate of soda of the blood, may be made more clear by putting down the molecular ratio of the

two substances thus¹: $\text{Ch} = \frac{\text{H}_2\text{CO}_3}{\text{NaHCO}_3}$. The ratio

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¹ Hydrogen ion concentration is expressed by Ph or Ch

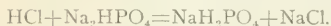
these two substances bear to one another has been shown to be one to twenty (6). If, however, for any reason carbon dioxide is produced in excess so that this normal ratio in the blood becomes temporarily altered so that the hydrogen ion concentration is increased, the respiratory centre, which is exceedingly sensitive to any variation of the blood toward the acid side, becomes at once stimulated, and the excess of carbonic acid is promptly eliminated by increased ventilation through the lungs.

The second mode of maintaining equilibrium is by the buffer action of the blood. By buffer action is meant the ability of a solution to take up acids or alkalis without changing its hydrogen ion concentration, that is, its degree of acidity or alkalinity. Buffer action of the blood depends upon the presence of, 1, sodium bicarbonate both in the plasma and the corpuscles; 2, sodium and potassium phosphates which occur entirely in the corpuscles; and 3, protein. When strong acids, whether exogenous or endogenous, are introduced into the blood, as for example oxybutyric, hydrochloric, and others, they at once displace the weaker carbonic acid of the sodium carbonate, and carbon dioxide is liberated. The increased carbon dioxide thus formed acts as does an excess of carbonic acid in the blood from any other cause; the sensitive respiratory centre is stimulated, and the excess of carbon dioxide is promptly eliminated by increased respiratory activity. This reaction is made clear by the following typical equation:



The hydrochloric acid introduced splits up the sodium bicarbonate into salt, water, and carbon dioxide. The sodium chloride is removed by the kidneys and the carbon dioxide eliminated by the lungs. Such a reaction is probably the first and simplest which occurs when an excess of acid is added to the blood. Henderson has termed the carbonates of the blood "the first line of defense."

In addition to the carbonates of the plasma, a second buffer substance is furnished by the sodium and potassium phosphates contained in the corpuscles. When an acid is introduced into the blood, intracorporeal alkalis may be rendered available to the plasma, either by the potassium or sodium passing from corpuscles to plasma or by the hydrochloric acid of the plasma entering the corpuscles and thus releasing alkalis in the plasma which combine with any excess acidity. The hydrochloric acid upon entering the red cells, reacts with the phosphates as follows:



In this way the phosphates in the blood are rendered available for neutralizing acids in the plasma even when the normal carbonates of the plasma are exhausted. A similar reaction goes on with many other cells of the body, so that actually the blood plasma can avail itself when the necessity arises, of the alkalis contained in all the body cells.

The method by which proteins act as a buffer substance is not clearly understood. They probably play a subsidiary rôle. They are amphoteric and are capable of combining with either acids or alkalis.

It is more than likely that this trio of buffer substances can act synchronously.

The ability of the kidneys to eliminate acid urine from alkaline blood is another important factor in maintaining the acid base equilibrium. Were it not for this, neutral salts would be eliminated through the kidneys, and to quote Howland (7), "every molecule of acid would rob the body of a molecule of bicarbonate." Instead, when an acid is introduced into the body and is neutralized, sodium chloride and acid sodium phosphate are eliminated by the kidneys as is shown by the following equation:



Acid sodium phosphate is removed, but some base is saved. Another reaction which may occur is as follows:



Under these conditions the bicarbonate reserve of the blood is actually increased. Although some alkali is lost in the urine, enough is retained by reason of this ability of the kidneys to conserve the bases, so that the difference under normal circumstances can be made up by the food. It has been shown that the alkalis saved by this function of the kidney, i. e., to free the body of acid and acid phosphate while alkalis are held back, amounts to from two hundred to eight hundred c.c. of one tenth normal sodium hydroxide a day.

The fourth defense of the body against acids is its ability to produce alkalis in the form of ammonia. This mechanism is not called into play in all forms of acidosis. It is particularly conspicuous in the acidosis associated with ketonuria. The excess of ammonia is produced from urea, and the amount of alkali saved in this way is fairly great, but in cases of diabetes it may reach enormous proportions. When the fixed alkalis have failed in conditions such as diabetes, this increased ammonia production attains its greatest efficiency.

Viewed in the light of its essential features, this defense of the body against alkaline loss appears comparatively simple, but the words of Lawrence J. Henderson (8) should be borne in mind, that the acid base equilibrium is involved in a great variety of other equilibria, such as those of osmotic pressure and volume. It influences the distribution of electrolytes between corpuscles and plasma, and the state of colloids, hence, perhaps the union of oxygen and hemoglobin. It modifies the activity of the enzymes, and it is probably involved in many undiscovered phenomena. It modifies, moreover, the general metabolism and the activities of the lungs and kidneys.

To what degree must these defensive mechanisms above discussed be disturbed before we can say that a condition of acidosis exists? Strictly speaking a true acidosis implies a definite increase of the hydrogen ion concentration of the blood, an increase which persists by reason of the failure of the respiratory centre and other defensive mechanisms to eliminate the excess of acid and thereby restore the reaction of the blood to normal. Such a condition is termed an uncompensated acidosis. But a true increase in the hydrogen ion concentration is

rarely met with, and if it persists, is incompatible with life. Therefore, it is of little avail clinically to limit the term acidosis to a condition which is admittedly late and almost invariably fatal. In most conditions associated with increased acid production in the body, the respiratory centre, alkali reserve and other factors are able to maintain the hydrogen ion concentration of the blood at its normal level, even though in doing this the alkali reserve is markedly decreased. Such a condition is spoken of as compensated acidosis, and is the usual condition met with clinically. From the therapeutic viewpoint obviously it is important to recognize acidosis during this compensated period when the hydrogen ion concentration of the blood is still normal. Hence, it seems justifiable to apply the term acidosis to those states in which the hydrogen ion concentration of the blood is still normal, but in which evidences of failure or diminution of the alkali reserve exists.

What are the means at our disposal by which this failure of the alkali reserve may be noted? Along these lines the last few years have been productive of great advances and today there are available a number of comparatively simple laboratory tests by which the compensated, as well as the true, condition of acidosis may be recognized. These tests resolve themselves into three groups, those applicable to the urine, to the respiratory apparatus and to the blood. The most unsatisfactory and inaccurate of these tests are those applied to the urine. It has been repeatedly demonstrated that the urine merely shows what is eliminated, not what is retained in the blood.

The most popular and time honored evidence of acidosis has been considered the presence of acetone, diacetic or butyric acid in the urine. It should be emphasized that the mere qualitative examination of the urine for the presence of these substances is a totally unreliable guide to acidosis, and even the quantitative determination is a cumbersome and inaccurate method of estimating the degree of acidosis. The presence of acetone means little or nothing. Acetone may exist in the urine, but the blood and expired air give practically no evidence of acidosis. Conversely, grave states of acid intoxication may be present and the urine wholly free of acetone. Howland and Marriott (9) look upon acetone in the urine in the course of the acute infections of childhood as a mere symptom, having little more significance than fever. On the other hand, large amounts of oxybutyric acid may be found in the blood when the urine only contains traces of acetone. It is probably true that marked acetonuria always indicates some definite metabolic disturbance, possibly the presence of abnormal acids in the blood, but it is in no sense an index of the degree of acidosis.

A much more reliable urinary evidence of acidosis is the amount of ammonia nitrogen in the urine, compared with the total urinary nitrogen. As has already been pointed out, ammonia may be markedly increased in the urine when the body attempts to preserve its alkalinity against the attack of acids. An increase in the relative amount of ammonia nitrogen to the total urinary nitrogen is the important thing and strongly indicates acidosis.

Normally ammonia in the urine varies from five tenths to one gram, the ratio between the ammonia nitrogen and the total nitrogen in the urine is almost constant at one to twenty-five or four per cent. In severe acidosis the ammonia may increase to eight grams in twenty-four hours, and the ammonia-nitrogen nitrogen ratio may be increased from the normal four per cent. up to forty-four per cent. Joslin (10) reports a case in which this ratio reached forty-four and four tenths per cent. As soon as alkali is administered to a patient, this test loses some of its value, since the body will utilize the ingested alkalis, thereby lessening the abnormal production of ammonia. An increase in the urinary ammonia occurs in some conditions other than acidosis. Therefore, though the ammonia-nitrogen nitrogen ratio is of value in determining acidosis, it should be utilized in conjunction with other tests.

The acidity of the urine measured in terms of hydrogen ion concentration has been carefully studied by Henderson and Palmer (11). But it has been shown to be an unreliable index of acidosis, since the hydrogen ion concentration of the urine varies widely in normal individuals.

Sellards (12) has devised a method of measuring acidosis by estimating the amounts of sodium bicarbonate that must be administered by mouth or intravenously, in order to render the urine alkaline. He and numerous other workers have found that it requires much more soda to render urine alkaline when acidosis exists than under normal conditions. The more sodium bicarbonate required, the greater the degree of acidosis. Rowntree (13) has pointed out that before the results obtained by this so-called alkaline tolerance test can be properly interpreted, the functional capacity of the kidneys, as determined by renal functional tests, must be known. In certain diseased states, the kidneys fail to eliminate alkalies and under such circumstances the results obtained are valueless. This test is decidedly useful, but chiefly as confirmatory evidence of acidosis and when associated conditions are given due consideration.

The expired air furnishes reliable information in regard to the presence and degree of acidosis. The carbon dioxide of the blood diffuses so readily into the alveolar air of the lungs that the estimation of the tension of carbon dioxide of the alveolar air corresponds almost exactly with the amount of carbon dioxide present in the blood plasma. When abnormal acids are present in the blood, as has been pointed out, they displace some of the weak carbon dioxide. This displacement is proportionate to the amount of abnormal acid present, hence the greater the acidosis the less carbon dioxide there is in the blood. Since the carbon dioxide in alveolar air accurately reflects the amounts present in the blood, a low carbon dioxide tension means acidosis. Under normal conditions, the carbon dioxide tension of alveolar air varies between thirty-eight to forty-five mm. of mercury equivalent to 5.3–6.3 per cent. If the carbon dioxide tension is down to thirty-eight to thirty-two mm. of mercury slight acidosis exists, and when it is lowered to twenty-five mm. or under extreme acidosis is present. It is rare for recovery to take place with the carbon dioxide tension of the

alveolar air below fifteen mm. It is well recognized that when a patient is on a diet low in caloric value the carbon dioxide in the alveolar air is no longer an accurate guide to the amount of acidosis present. Changes in the excitability of the respiratory centre may also affect the carbon dioxide tension.

Fortunately several rapid, simple and accurate methods have been devised for determining the carbon dioxide tension. Marriott's (14) is perhaps the easiest to carry out and is sufficiently accurate. In Marriott's method the carbon dioxide tension is that of the venous blood, whereas in the methods of Haldane (15) and Friderica (16) the air has come into equilibrium with arterial blood, therefore the air has a carbon dioxide tension ten to twenty per cent. lower.

The most direct and accurate method of determining acidosis is by examinations of the blood which furnished first hand information as to the alkali reserve and acid base equilibrium. One of the most recent and efficient methods of doing this is by measuring the carbon dioxide capacity of the blood plasma or alkaline reserve. In acidosis the stronger acids replace the carbon dioxide of the carbonates, which is given off by increased respiration, hence the carbon dioxide of the plasma is diminished. Therefore, the amount of carbon dioxide present in the plasma is an index of the degree of acidosis. The method devised by Van Slyke (17) and now modified to meet earlier objections, renders this determination of the alkali reserve of the blood relatively simple. In adults sixty-three to seventy-seven volumes per cent. of carbon dioxide chemically bound by the plasma, is normal. Figures below fifty volumes per cent. mean acidosis. In normal infants the percentage amounts to only forty to fifty-five.

Variations in the actual hydrogen ion concentration of the blood are now readily determined by the dialysis method of Levy, Rowntree and Marriott (18). The blood (or serum) is placed in small collodion sacs and dialyzed against normal salt solution. The hydrogen ion concentration of the dialysate is determined by adding phenolsulphonephthalein as an indicator and comparing it colorimetrically with solutions of known hydrogen ion concentration. Determination of the hydrogen ion concentration is particularly important since the hydrogen ion concentration is only increased persistently when the various defensive mechanisms have failed and the alkali reserve is exhausted, i. e., uncompensated acidosis is present. Compensated moderate acidosis cannot be discovered by determination of the hydrogen ion concentration, since in such acidosis it is still unaltered.

Sellards (19) has utilized a method of determining the alkalinity of the blood by titration. The technic is simple and the results are an index of the gross acidosis present. This measure of titratable alkalinity of the blood is less desirable and delicate than the two above mentioned forms of blood analysis.

The detection of acetone in the blood plasma has also been utilized as a means of recognizing acidosis. The best method is that of Wishart (20) which is a modification of the nitroprusside reaction

for acetone in the urine, only adapted to blood plasma.

It is evident, therefore, that ample and efficient practical methods are now available for the detection of acidosis, both true and compensated. Of these methods, the ones which furnish the most reliable results and by which small degrees of acidosis may be accurately detected are the determinations of carbon dioxide tension in the alveolar air, the reserve alkalinity of the blood, and the hydrogen ion concentration of the blood. It must be borne in mind, however, that the latter only serves to establish the presence of true acidosis and gives no clue to the existence of compensated acidosis, which is the important condition to recognize early and to overcome if serious consequences are to be averted.

From what has been said, it must be apparent that acidosis is not a clinical entity due to a single cause, but rather is a state that may be produced under varied conditions. Acidosis is always secondary to something else, it is a result at first, although late it may in turn become the cause of serious difficulties. Clinical and experimental experience bear this out, for acidosis manifests itself in the course of numerous clinical conditions, among the most frequent of which are: Starvation, diabetes, certain nephropathies, cardiac disease, acute infections, severe diarrheas of children, various cachectic states, pregnancy, eclampsia, and after operations, general anesthesia and surgical shock.

The most striking, if not the only gross clinical manifestation peculiar to acidosis, is hyperpnea, without cyanosis or respiratory difficulty. Whenever this type of hyperpnea is observed, it should suggest acidosis, although this cannot be laid down dogmatically since hyperpnea even without cyanosis, is not always due to acidosis.

The most carefully studied and best known type of acid intoxications are those that occur in the course of diabetes or that result from starvation or improperly balanced diets. Since the acidosis of starvation and diabetes have essentially the same mechanism, it is proper to discuss them together. In both conditions acidosis is the result of beta oxybutyric acid, diacetic acid and acetone produced in excess.

If a healthy individual is fasted, a mild acidosis is promptly produced and persists. The best example of what happens to normal people in prolonged fasting is Benedict's (21) case, which was minutely studied during a complete fast of thirty-one days. The subject exhibited a mild acidosis during the entire time. The acidosis was recognized by determining the carbon dioxide tension of the alveolar air, the ammonia nitrogen, and beta oxybutyric acid. The acidosis did not increase as the fast continued, but it never disappeared. When obese individuals are starved, the acidosis is more marked than in healthy subjects. In no type of starvation, however, is the acidosis so great as that produced when a normal person is given an absolutely carbohydrate free diet. When on such a diet the fats are increased, the acidosis becomes greater.

It has been repeatedly shown that the source of these so-called acidosis compounds (beta oxybutyric

acid, diacetic acid and acetone) is chiefly fats and to a lesser degree proteins. Each molecule of a higher fatty acid, provided it has an even number of carbon atoms, as it is broken down to a lower fatty acid, yields one molecule of beta oxybutyric acid. This is particularly true of butyric acid. Beta oxybutyric acid is also formed from certain of the amino acids of the protein molecule. All the acid bodies are eliminated by the kidneys and acetone is also eliminated by the lungs. Beta oxybutyric and diacetic acid are eliminated as salts or as free acid in the urine.

When for any reason (carbohydrate free diet, starvation, or disease) there is a diminution of the rate of carbohydrate catabolism in the body, acidosis compounds appear. It is not so much an absolute decrease in carbohydrate metabolism that brings this about, as it is a relative diminution of carbohydrate utilization as compared to the rate of lower fatty acid combustion. It is contended that for the complete oxidation of six molecules of a higher fatty acid, at least two molecules of glucose must be utilized at the same time. Woodyatt (22) puts it picturesquely when he says: "When the mixture of metabolites oxidizing in the body contains more than three molecules of higher fatty acid to one of glucose, then the body 'smokes' with acidosis compounds like an automobile with too much oil in the cylinders."

Upon this mechanism is based the explanation of acidosis in starvation and fasting. When a person fasts the activity of the body cells continue and they obtain fuel for their oxidation processes from the supplies of fat and carbohydrate stored in the tissues. The carbohydrate in the form of glycogen is utilized more rapidly than the fats, hence soon the normal ratio between carbohydrate and fat catabolism is disturbed and acidosis bodies are produced which lessen the alkali reserve and acidosis in varying degree is produced. The rapidity with which this acidosis occurs and its severity will depend upon the relative amounts of glycogen and fat stored by the individual before fasting begins. The greater the supply of fat over that of carbohydrate, the more prompt and severe the acidosis.

On a carbohydrate free diet from which fats are not excluded, or in which they are increased, like results are obtained. The requisite carbohydrate oxidation to insure complete combustion of the fats is lacking, fats are incompletely broken down, and an excess of acidosis bodies results.

The acidosis of diabetes has the same fundamental cause for its development as that observed in normal individuals. The difference is purely one of degree. The elimination of beta oxybutyric acid and its derivatives in normal individuals never amounts to more than a few grams a day, but in diabetes it may reach to three hundred or four hundred grams in twenty-four hours.

The maximum rate at which glucose can be oxidized by the diabetic patient is absolutely lower than in a normal individual. Even if the rate of fatty acid metabolism in a diabetic patient is no greater than normal, proportionally it is excessive compared with the diminished rate of carbohydrate combustion. Hence, the ratio between carbohydrate

and fat metabolism that must be maintained in order completely to burn up the fats, is quickly disturbed, and, therefore, acidosis (the result of faulty fat metabolism) is easily produced, and is often severe in the diabetic patient. Herein lies the explanation of the prompt occurrence of acidosis in many diabetics when they are rapidly placed upon a carbohydrate free diet, without the fats first having been withdrawn. Even on a diet containing carbohydrates severe cases of diabetes develop acidosis, since all the ingested carbohydrate is lost to their metabolism. In the diabetic patient as in the normal person, the presence of abnormal amounts of acid bodies in the blood and tissues means non-combustion of carbohydrates or combustion of insufficient quantities.

It has been definitely established by Frederick M. Allen, Joslin and others, that even severe diabetics can be rid of acidosis by starvation and rest. On the other hand, as has been mentioned above, prolonged fasting in normal individuals produces acidosis. Here is an apparent paradox which is not so easy of solution. Woodyatt (23) has discussed this phase of the subject admirably and explains it on the following grounds. When a diabetic patient is fasted and put at rest, both the protein and fat metabolism are reduced. But, in spite of fasting, some protein metabolism goes on, and therefore some glucose is derived from it. However, "protein alone does not cause acidosis if the glucose derived from it is oxidized and when the rate of protein metabolism sinks low enough (as it does in prolonged fasts), even the severest cases of diabetes can oxidize all the glucose that is formed from protein." Furthermore, just as normal individuals vary in the ease with which acidosis can develop on starvation, so the diabetic patient is subject to like variations depending upon the amount of fat and glycogen that is stored in the body before fasting is begun.

At times in severe cachexia and anemia, due to carcinoma and other wasting diseases, some degree of acidosis is noted late in the disease. Frothingham (24) failed to find more than a slight acidosis by various blood and urinary tests in primary anemia, gastric cancer, Addison's disease and cirrhosis of the liver. In experimental anemia in dogs acidosis could not be demonstrated. When it does occur in cachectic states, it is probably the result of faulty metabolism and starvation and resembles in its mechanism the acidosis of fasting.

From time to time it has been asserted that an acidosis occurs in chronic renal disease, and by some it has even been claimed to be the exciting cause of uremic coma. In four out of six cases of advanced chronic nephritis, Frothingham (25) found moderate acidosis as evidenced by low carbon dioxide tension of the alveolar air and increase in the soda in the alkaline tolerance test. None showed acetone in the urine and the ammonia was low. The hydrogen ion concentration in the blood was normal or a little lowered. Obviously the acidosis in these cases was only compensatory and was due to causes other than those that produce diabetic acidosis. Rowntree's (26) observations correspond with those of Frothingham. He adds that although alkali therapy temporarily helps the symptoms in

uremic cases, he has rarely observed permanent benefit from their use in those conditions.

Most careful and thorough work has been done by Peabody (27) on the relation of acidosis to cardiorenal disease. He found that high grades of acidosis might occur in the terminal stage of uremia, but they could in no way be regarded as the cause of the uremia. In mild nephritis, acidosis did not occur, and the carbon dioxide tension of the alveolar air was only reduced when, as the result of advanced uremia, the nonvolatile acids accumulated in the blood.

In short, the acidosis observed late in nephritis is purely a secondary phenomenon and is probably the result of the inability of the diseased kidneys to rid the body of various toxic acid substances. Certainly, the condition has a vastly different etiology and significance than the acidosis observed in diabetes.

In cardiac disease with dyspnea, a slight instant acidosis may be noted in some cases, but the acidosis is insufficient to account for the dyspnea. At present it seems established that slight acidosis appears only during the acute stages of cardiac decompensation and rapidly disappears with improvement. Increase in the excitability of the respiratory centre, due to lowering of oxygen tension and defective blood flow, is the most likely cause of cardiac dyspnea.

Some observers have claimed that pregnancy is accompanied by acidosis. It is not a constant finding, a true acidosis does not occur but a slight acidosis which is compensated and unimportant has been frequently noted. Rowntree (28), however, has found a marked acidosis in some cases of eclampsia. In over half his cases a true acidosis existed, shown by increase in the hydrogen ion concentration of the blood. In eclampsia, as in advanced nephritis, the cause is probably related to retention of acids by the kidneys or to some perversion of the metabolic activities of the liver. If acidosis can be shown to be a frequent occurrence in the toxemia of pregnancy, active alkali therapy may furnish a valuable means of combating the condition. On the other hand, Losee and Van Slyke (29) found little variation from the slight compensated acidosis of pregnancy in fourteen eclampsias.

Various grades of acidosis have been recorded following surgical operations and anesthesia. Here it is important not to confuse the mere presence of acetone in the urine following the dietary disturbances and vomiting often attendant upon general anesthesia and operations with true acidosis. On the other hand, true acidosis and definite grades of compensated acidosis, have been observed after various operations. In postoperative acidosis the anesthesia appears to be the main factor. Austin and Jonas (30) found acidosis, as shown by a decrease in carbon dioxide capacity of the plasma, an almost constant condition after ether anesthesia. This depression was proportional to the length of anesthesia and persisted for five hours. A single injection of one quart of five per cent. glucose solution by rectum at the close of the anesthesia failed to lessen the reduction of the carbon dioxide during the next five hours. This transient acidosis was

apparently, therefore, due to some factor other than carbohydrate deficiency. Occasionally slight acidosis is observed after nitrous oxide anesthesia. In which case it is probably comparable to the acidosis noted after rebreathing experiments.

Most marked forms of acidosis have been noted after chloroform anesthesia. It is probably due to the toxic effect of the chloroform. At times grave delayed acidosis has followed chloroform anesthesia in which the symptoms simulate those of acute yellow atrophy and are possibly the result of hepatic degeneration. Whether postanesthetic vomiting is due more to the direct effects of the anesthesia or to the acidosis is not clearly determined.

In physiological shock, acidosis of a true and marked type has been observed both clinically and experimentally. The relation of acidosis to surgical shock was exhaustively studied by Cannon and the Shock Commission, during the war. There seems no doubt but that a true acidosis frequently occurs in shock, but after thorough investigation it was concluded by the Shock Commission, that the acidosis was but one of the secondary manifestations of shock, not its cause. The beneficial results of sodium bicarbonate and Ringer's solution, upon the blood pressure in experimental shock is added evidence of existence of acidosis in this condition.

Some of the most painstaking clinical work done on acidosis must be credited to Howland, Marriott (31) and their coworkers. Their work has thrown much light on the occurrence of acidosis in the acute infections and other conditions of children. Among instructive points that they have emphasized, is the frequency in febrile conditions of acetonuria, which is the result of partial inanition from the anorexia of fever or of the increased metabolism during fever. If then a diagnosis of acidosis is made simply on the qualitative tests for acetone and diacetic acid in the urine, acidosis becomes one of the commonest diseases of childhood. As has been pointed out, the diagnosis of acid intoxication must be based on more definite evidence. In these febrile acetonurias, as well as in most acetonurias of childhood, the acid base equilibrium of the blood is not altered. Conversely in some of the most severe true acidoses of children acetonuria is absent.

For convenience of study, Howland has roughly divided acidosis in children into two groups: 1, The forms that are due to the excessive formation of acetone bodies; 2, the forms that are not due to the formation of these bodies in excess. In both groups acetone bodies may be eliminated in the urine. Under the first group should be mentioned the acidosis of diabetes, that due to ileocolitis, the acetonuria associated with recurrent vomiting, and a type closely allied to the latter that develops spontaneously without vomiting.

Severe grades of acidosis due to acetone bodies are most frequently observed during diabetes in children. The enormous increase in acetone body excretion and the frequency of coma, are characteristic features of youthful diabetes.

Marked acetonuria (with acetone bodies in the blood increased to 183 mg. per 100 grams of blood) has been observed in acute ileocolitis in young children. Such cases show a definite diminution in the

alkaline reserve of the blood. The mechanism of this acetoneuria is unknown. It occurs too rapidly and is too severe to be due to starvation.

Another condition of children which is associated with acetoneuria and often acetoneemia, is recurrent or cyclic vomiting. The relation of the acetone bodies to this type of vomiting is obscure. In some cases the vomiting precedes the acidosis which then would appear to be due to starvation. In most instances, however, the acetone bodies appear in a few hours after vomiting begins and have even been observed before the vomiting. The vomiting bears no relation to glycosuria which is never present. Hilliger (33) believes limitation of carbohydrate ingestion causes cyclic vomiting, which occurs when the blood sugar falls below seven hundredths per cent., but subsequent researches have failed to bear out this view. In most children the vomiting attacks occur when they are on an ample carbohydrate intake. Sometimes cases of acetoneemia occur in children with little or no vomiting. They should all probably be placed in the one group, i. e., recurrent vomiting with early and severe acetoneemia. In addition to the acetoneemia, a few of these cases show positive evidence of lowered alkaline reserve in the blood and are undeniably true instances of acidosis, but in the majority there is not a real acidosis present. Those in whom actual acidosis develops may die, but for the most part the acetoneemia, which was spontaneous in its onset, clears as suddenly and the condition is self-limiting and rarely fatal.

Howland and others incline to the belief that the excessive production of acetone bodies in recurrent vomiting cannot be regarded as the true cause of the vomiting, but that the vomiting and acetoneemia are associated symptoms both due to some as yet ill understood metabolic disturbance, possibly an intoxication somewhat similar to that resulting from chloroform poisoning.

Group two consists of the forms of acidosis not due to acetone bodies and comprises the acidosis encountered in summer diarrheas and cholera infantum, profuse severe diarrheas as contrasted with the ilioocolitis cases mentioned in group 1. All such diarrheas do not develop acidosis, but a fair proportion have this complication which is usually fatal in spite of early and persistent alkali therapy. In these cases acetone bodies are negligible, but laboratory tests clearly show a lowered alkali reserve of the blood and increased hydrogen ion concentration of the blood. Such an acidosis is accompanied by hyperpnea and leads to coma. Its cause is uncertain. Blood analyses definitely exclude the acetone bodies. Some have contended that it was due to excessive loss of bases through the stools and to an accumulation of lactic acid. Neither hypothesis has been satisfactorily proved. A more likely explanation advanced by Howland (34) is that it is due to the anuria, kidney function is suppressed, the kidneys no longer are able to rid the body of acid products by eliminating acid sodium phosphate, hence acids are retained which overcome the alkali regulating mechanisms and true acidosis results.

Recently this same school of pediatricists have shown that the acidosis that develops in severe diar-

rhoea is the result of increased viscosity of the blood due to the dehydration which in turn produces an acidosis, and that the cure of this condition depends upon the administration of fluids rather than upon alkalis.

A form of acidosis is often seen in the acute nephritis of children in which acetoneemia is absent and the blood tests prove the existence of a real acidosis. An excess of inorganic phosphate has been demonstrated in the more severe of these cases, thus bearing out the contention that the acid eliminating functions of the kidney is lost and the acid phosphate is slowly accumulated in the blood until finally the acid base equilibrium is disturbed.

Although the exact mechanism by which it is produced is not clear, in children acidosis without significant acetoneemia also complicates severe burns. A similar condition is sometimes observed in pneumonia and other acute infections.

From what has been said of the clinical manifestations, it is again evident that acidosis is not a disease *per se*, but must be looked upon as a secondary condition, a symptom, which may appear under a variety of circumstances and depends upon several different mechanisms for its production.

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THE DRUGLESS THERAPY OF DIABETES.*

BY HENRY S. STARK, A. M., M. D.,
New York.

It is no exaggeration to assert that as a disease incidence diabetes will soon rank with tuberculosis and cancer in frequency and fatality. Although it has trebled itself in thirty years it is a sad commentary that nothing startling in the way of therapy has been evolved during that period. Still it must be recorded as a matter of medical history that diabetes today is not the fell disease of years ago, that its ravages are not so frightful as in former days (I refer especially to gangrene and dermatoses), that the diabetic's tenure of life has been notably lengthened, and that his dietary privations are not so exacting.

The manifest advances in the treatment of this affection cannot be attributed to drugs but rather to the fact that it is earlier and oftener detected; secondly, the likelihood of infections in the diabetic has become a matter of scientific study; thirdly, the problem of diet has been simplified through our better understanding of food values, and finally, the prognosis of diabetics has improved because of the greater security with which the surgical sequelæ are approached.

Prophylaxis should occupy as conspicuous a place in our efforts to thwart the disease as therapeutics does. With our knowledge of the nature and origin of its prophylaxis, it should be easily possible to secure exemption in many persons who from reasons of heredity are candidates for diabetes. Children of diabetic parents, therefore, even before they reach man's estate, should be on their guard by eschewing carbohydrates in great measure. For example, such persons should not sugar their coffee or tea, or else employ it in moderation.

Obese and gouty subjects, likewise those who overeat, should be ever watchful of the disease. In a previous publication I pointed out the advantages of having periodical examinations made of the urine; this procedure alone would in a great measure cut short, abort, or blot out the disease. Mental strain and a sedentary existence are factors which make for diabetes, and this dictum applies with double weight in the case of Hebrews who are, for some cause as yet unidentified, prone to diabetes.

Individualizing is one of the mainstays of the treatment of diabetes. The physician who forsakes the tenets of the textbooks but classifies and separates his cases will get better results than will he who casually prescribes an opiate and religiously proscribes sugar. The tendency to generalize along beaten paths has in every instance abridged our therapeutic resources and netted unsatisfactory results. The intrinsic tendency to chronicity, the fail-

ure of nature to effect a spontaneous cure, the vacillating state of mind as to its pathology, the notorious impotence of drugs, all combine to invest this disease with an importance second to no other. The drug treatment of diabetes has been a blot on the history of this disease, nevertheless even today there still remains a fair proportion of physicians who labor under the impression that drugs are the alpha and omega of diabetic therapy. Unfortunately we have no specific or near specific. The only drugs which approach the dignity of a specific but only on theoretical grounds are alkalies for the purpose of combating coma.

Naturally I am not questioning the value of certain drugs for the amelioration of special symptoms. I have experimented with many drugs in the treatment of diabetes and have carefully recorded the pharmacological effects; among such are the following: opium and its derivatives, arsenic salicylates, the coal tar preparations, potassium permanganate, antisiphilic drugs where lues was an etiological factor, jambul, yeast, lactic acid bacillus, a number of proprietary preparations, and finally a whole galaxy of organotherapeutic drugs. Some times in my efforts to cure diabetes, it would appear at first as though an improvement could be noted but subsequent events could not confirm my first impression, the improvement being merely psychical or apparent. The conclusion therefore forced itself upon me that we cannot point to any drug which has a decided antiglycosuric effect, but strangely enough, we do have a number of drugs which can provoke glycosuria.

A word regarding the use of opium. It is the most frequently prescribed drug in the treatment of diabetes even today. That its reputation as a curative agent has been grossly exaggerated, there can be no doubt. Nor can there be any doubt that its employment is more a matter of custom and tradition than a question of confidence in its efficacy. Sometimes it does seem as though the glycosuria decreases after its employment. This may be explained by its sedative effect on the nervous system together with its power of diminishing all secretions. If good results follow its use they soon become apparent; two or three weeks will decide the matter. If the urinary glucose does not entirely disappear or markedly decrease by that time, the further employment of the drug should be discontinued. Large doses of opium or its derivatives should be abandoned as having a pernicious rather than a beneficial influence on the glycosuria. I never as a matter of routine start a patient on opiates even though diabetics stand opium well; I prefer to make my patients aglycosuric through dietary measures.

The most fascinating innovation of recent therapeutics is the introduction of glandular or hormone therapy. Wiseacres in endocrinology hold out the hope that these agents offer a means of combating metabolic perversions of all kinds. They argue that the development and growth of the body, its physical, mental, psychical and organic disturbances are primarily due to dysfunctioning of the ductless glands, even the adjustments of the nervous system, the sympathetic in particular, likewise re-

*Read at the April, 1920, meeting of the Harlem Medical Society.

sistance to infections and intoxications, are all matters governed by the internal secretions of the ductless glands. In short, so numerous and diverse are the disorders that are attributed to this pathological Armageddon that it would appear that pathology must be rewritten with the ductless glandular system as a substratum. As a byproduct of this newer pathology we now lay claim to a newer therapy, one built up of animal extracts and hormones in the derivation of which every organ and tissue of the body has been drafted.

The participation of the liver, the pancreas and the ductless glands in the mechanism of glycosuria offered a promising field for organotherapy. In order to learn for myself whether any hope could be held out to diabetics from these agents, I employed them in over fifty cases. I was prompted to this on account of the extravagant claims reported by other investigators. Twenty diabetics were treated by me with various pancreatic extracts such as pankreon, grains twelve, three times daily for a period of four weeks, or pancreatin, grains twelve, three times daily. I have even fed a number of diabetics with pancreas of the sheep daily for a number of weeks. During the period of observation both the patient and the glycosuric curve were watched, and it must be confessed that nothing more encouraging than a temporary or psychical improvement could be recorded.

Truthfully I could not notice any radical improvement of the patient other than a better digestion of fats, which was to be expected since the pancreatic juice is largely concerned with fat metabolism. I never could convince myself that these extracts passed through the stomach without undergoing changes that impaired their therapeutic value, nor was there much assurance that they were absorbed by the organs they were intended to reach with the same pharmacological virtue that was claimed for them. It seems that the oral route of administration is far inferior to the intramuscular or intravenous. I always believed that the failure of organotherapy to remove or alleviate the symptoms of diabetes is the best possible argument to disprove the influence of an internal secretion as a cause of the disease.

Thyroid extracts, like pancreas extracts, exert no beneficial influence on the metabolism of carbohydrates; in point of fact it has been experimentally shown that this extract interferes with the secretions of the pancreas through inhibitory influence. Glycosuria may follow as a manifestation of a hyperthyroidism. Many a case of chronic glycosuria which passes as a frank case of diabetes is in reality a psychoneurosis of endocrine origin. I have not observed any radical improvement from thyroid medication. Others have got better results.

Adrenalin, the most frequently employed extract, is contraindicated in diabetes, for it reduces sugar tolerance so markedly that it actually may be said to bring on a glycosuria under certain conditions.

Recent study has been directed to the pituitary gland as a possible site of lesion of diabetes, it having been clinically demonstrated that the posterior lobe plays an important part in carbohydrate assimilation. However, evidence seems to in-

dicate that the secretion of this gland is very complex in its character and effects, while clinical data derived from experimental use of its extract are variable and diverse. At any rate I have found little justification for the employment of this extract in diabetes. The resort of pluriglandular therapy has not cleared the situation much. These random combinations of various extracts aim to supply the organism with a substance which favors sugar metabolism, being directed not against the diabetes but against the glycosuria. The whole subject of endocrine therapy is still under trial and judgment must be suspended until more clinical and histological data have been accumulated. It must be evident that the ductless glands are so intricately interrelated that often we cannot be sure which particular gland or set of glands is affected, nor have we means of determining in many instances in which glands or set of glands a disease originated.

Ranking in importance in the management of diabetes is a close study of the patient himself, the psychological factor largely predominating at times in the clinical picture. It is the recognition of this fact that enables one physician to get results where another has failed. The physician who views his patient as a psychological study will get further in relieving him than will he who religiously resorts to the druggist's shelf. There are few chronic diseases that are not accompanied by psychoses, and diabetes is by no means an exception to this rule. The psychoses following in the wake of diabetes depend upon the relation of the internal secretions to the nervous system, the more accentuated of these being mental depression and irritability of temper. These call for treatment as urgently as do objective symptoms. The indication would seem to be to encourage the patient by making light of the disease, and to urge him to seek entertainment with a view of occupying his mind. Denial of the presence of the disease often makes for improvement, and justifies the physician's motive. One frequently notes a rise in the glycosuric curve following fear or worry and I can with certainty state that suggestive therapeutics has been followed by lowering of the glycosuric curve at times.

Taking precedence over drugs is a due regard for hygienic requirements, for the diabetic is always below par as far as resistance to infections is concerned, and even at best he is a poor surgical risk.

Persons suffering from diabetes should keep teeth and gums in good condition; they must endeavor to avoid accidents that inflict bleeding trauma. Personal cleanliness is imperative; diabetics must insist on surgical cleanliness from dentists and chiropodists. Exercise such as walking, but never to the point of fatigue, serves a good purpose in securing combustion of sugar in the muscles, while passive exercise, such as is secured by massage, is helpful in elderly diabetics.

Dietetic treatment.—Experience has abundantly demonstrated the fact that by all odds diet is the mainstay of treatment; not the dietary method formerly in vogue, but one that conforms to our modern conception of food metabolism.

This comprehends a diet that allows a patient as much of carbohydrates as he can assimilate, one that

is satisfactory as to quantity and kind, and approaches the standard of a balanced ration. It is becoming more and more recognized as our experience grows that individualization is the keynote of successful dieting. Diabetes lends itself less than any other disease to generalization in treatment. Treatment is no longer one of dietary restriction but dietary regulation, that is, it means control of sugars, not total abstinence from sugars; in other words, a diet to fit the patient, not one to fit the diabetes. To illustrate the changed attitude of mind as to diet, let me cite the question of the use of bread. Whereas formerly diabetics were urged to adhere to the use of gluten bread to the exclusion of whole wheat bread, today we permit a certain measure of whole wheat bread under certain conditions, to the exclusion of gluten bread, knowing that we can thus better control the starch intake than we could by resorting to a dubious and unreliable product such as many of the gluten flours on the market.

In prescribing a diet we must bear in mind that there are clear limitations to dietotherapy beyond which it is not safe to venture. Among such the following stand out prominently:

First.—The danger involved in a continuous onesided diet.

Second.—The natural requirements and cravings of the economy for all food elements, not excepting water, salts and vitamins.

Third.—The dangers of a strictly starch free diet, continued over long periods.

Fourth.—The menace involved in strictly scientific feeding based upon ingenious theories.

Dangers of a onesided diet.—I refer to the frequency with which an acidosis is incited by a long period of starch free dieting, or to the intestinal toxemias which manifest themselves after a continuous overindulgence in proteins. Many diabetics present symptoms referable to overindulgence in animal foods rather than to a failure to burn up sugar. I have observed that a diabetic patient who assimilates meat poorly is worse off than one who assimilates starch poorly. His vicarious metabolism shows that a number of his organs are physiologically crippled. Such patients will run low sugar percentages, show marked symptoms of prostration, muscular weakness, especially in the calves, and intestinal derangements. Therapeutically, here the indication is to secure functional rest for their protein digesting organs and to allow a limited proportion of starches. The error of overindulgence in fats must not be overlooked, as there is a likelihood of acidosis; such overindulgence manifests itself in acetonuria, emaciation and fatty stools.

The natural requirements and cravings of the economy.—In health there should be a normal craving for all food elements. There may be individual predilection varying between total abstinence from one food element, as seen in vegetarians and frutarians, to the insatiable appetite for sweets or carnivorous longing for animal food, in others. Of course the ideal of a healthy metabolism is a so-called balanced ration, which has a due regard for the necessity of all food elements. The influence of age upon a choice of food must be considered. Infancy, manhood, middle age and old age each

have their own level of food necessity. Dietary measures in aged diabetics should never be rigid, otherwise the treatment inflicts more harm than the disease does. Alcoholic stimulation in aged diabetics is beneficial. In these cases cognac, brandy or whiskey has a distinct food value and materially enhances the digestion of fats. Persons engaged in sedentary occupations have food requirements quite distinct from those employed at hard labor.

The dangers of a strictly starch free diet.—We are on the wrong track if we allow ourselves to believe that a glycemia is the greatest source of danger, or that the gravity of a given case of diabetes can be measured in terms of sugar excretion. Many diabetics with high sugar percentages remain in better condition than do those with lower sugar percentages. It was formerly the custom to govern the intake of sugars by the degree of glycosuria and to estimate the severity of the disease by the amount of sugar excreted, but today we know this is a delusive guide. Individual tolerance for sugar is a variable quantity. It fluctuates within wide ranges in the same person, then again some persons exhibit a different tolerance for different carbohydrates. Some individuals can burn up, so to speak, potatoes better than other carbohydrates, others again can burn up oatmeal by preference.

The danger of acidosis in a prolonged starch free diet must be borne in mind. A pertinent question may arise here, namely, how long may a diabetic safely continue on a starch free diet? The answer is about four weeks. This answer suggests another question: how much carbohydrate food may be allowed a diabetic, the answer being, as much as he can assimilate. It may be two pints of milk or its carbohydrate equivalent, daily, or two potatoes or three slices of wheat bread.

The theory involved is strictly scientific feeding. I refer first to the universal custom of employing the calorie as a measure of food value. On more than one occasion I have endeavored to prove that the calorie cannot be employed as an index of nutrition or as a basis for computing the food requirements. I have also taken the stand that feeding based upon chemical and mathematical formulæ has too often proved to be a therapeutic fallacy. Something less arbitrary than weights and measures are needed to determine heat equivalents. Nature and the laboratory are often at odds where the human economy is concerned. As I stated in a previous publication, caloric feeding might have a place where the feeding of masses was concerned, as an army or in hospitals and prisons, but in an individual whose health balances are out of gear, caloric feeding leaves much to be desired.

Unless treatment is to become merely perfunctory a close clinical study of the patient's mental and physical condition must be made, his powers of assimilation for various foods must be gauged, and an exhaustive search for any source of infection should be a routine procedure. Fortified with such a survey of the patient, each case must be treated on its own merits.

In diabetes complicated by nephritis it is essential that the tolerance for carbohydrates should be established, for there may come a time, depending

upon the cardiac or renal function, when proteids must be discarded in favor of starches. When such patients show signs of cardiac decompensation, edema or cerebral symptoms, food rich in proteins should be discarded, substituting milk and cereals. A method I frequently adopt, if edema is marked, whether cardiac or nephritic, is to place the patient upon the so-called Karrell diet for some days. It is my custom to insist on a low diet for twenty-four hours once in three weeks; on this day the patient is instructed to rest up at home, he is placed on a rigid starch free diet, a saline laxative starting the day. I prepare a menu for each meal, totaling for the day between 800 to 1,000 calories divided between fats and proteins, say in the proportion one to three.

When a patient first presents himself and there are no urinary contraindications, I begin the treatment by a rigid starch free diet for about ten days, at the expiration of which, if he is aglycosuric, I gradually restore carbohydrates to the limit. A knowledge of the starch content of various articles of food is here essential for the intelligent control of the patient. In the very severe types of the disease, those that excrete glucose even from protein intake, our chief aim should be to avert acidosis and to ward off infections. When we consider how differently individuals react to carbohydrates, fats and proteins, it would seem that the disease which now is labeled diabetes is merely one phenomenon of a complex pathological entity yet to be identified.

The drugless therapy of diabetic coma should be considered under two divisions: First, that of the precomatose stage, and secondly, that of the comatose stage. The prophylaxis of diabetes calls for frequent uranalysis, for when ketonuria increases the diet should be relaxed. An exclusive diet of proteins and fats must be proscribed, while carbohydrates in the form of potatoes, wheat bread and milk and alcoholic beverages in limited quantities should be allowed. If coma is pending the patient should be put to bed, kept on a milk diet, and oxygen inhalations freely given.

Since two out of three diabetics die in coma, the avoidance of this terminal issue should be of greatest solicitude. Fortunately we have at our command a method of anticipating an acidosis long before drowsiness, dyspnea, nausea, and a quickened pulse appear on the scene, namely, through the estimation of the carbon dioxide and a tension of the alveolar air. It has been clinically demonstrated that if this normal tension of forty to forty-five mm. is considerably lower, say twenty-five to twenty mm., we can be reasonably sure coma is impending. The lower the index of tension, the greater the danger of coma becomes, and therefore the poorer the diabetic turns out as a surgical risk.

Blood chemistry likewise gives valuable information relative to the prognosis after operation. Besides the well known functional kidney test we now employ laboratory methods to determine the ratio between blood sugar and urine sugar. A comparison of these glucose curves often determines the issue of an operation.

1309 MADISON AVENUE.

THE LIMITATION OF STARVATION IN DIABETES MELLITUS.

BY THOMAS W. EDGAR, M. D.,
New York.

Ten years ago Guelpa, a French physician interested in metabolic research, read before the British Medical Association a paper on Starvation and Purification in the Relief of Disease. In 1914 Dr. F. M. Allen, then with the Rockefeller Hospital, advocated starvation as a therapeutic measure worthy of consideration and application in each and every case of diabetes.

Guelpa administered for the first three or four days a bottle of hunyadi janos water, twenty ounces of oleum ricini, followed by seven hundred and fifty cubic centimetres of warmed water. By instituting this régime he was able to alleviate the distressing symptoms of hunger, thirst and polyuria as well as disinfect to a certain degree the intestinal tract and render the patient sugar free. It was a case of all going out and nothing coming in.

Doctor Allen's modification of Guelpa's phenomenon was heralded as the greatest step yet accomplished in the treatment of the disease, for it was the quickest method to render the patient aglycosuric. The medical profession immediately adopted the treatment. Medical journals were flooded with reports and it seemed as if all treatment in the past had been in the wrong direction. A veritable revolution in therapeutics took place; old methods were discarded and starvation seemed to have come to stay. It has now been six years since its advent. During this time many patients have been treated and results obtained and charted, while little has been said regarding its limitations, contraindications and unfavorable features. The profession in general has accepted this hypothesis as being applicable in all cases of diabetes. Secondly, it has come to be accepted by the patients themselves as highly justifiable procedure, conducive to health and longevity. Tradition has taught all patients with diabetes that starvation is the only known treatment that will hold the disease in check.

There are diabetic patients who would rather starve than show one tenth per cent. of sugar in their urine. The slightest sugar reaction in these patients causes the greatest mental agony, yet they never worry about their caloric intake so long as they are aglycosuric. Starvation to them is much more acceptable than sugar. I have one patient who before coming to this office existed for one year on two eggs, three leaves of lettuce, three slices of bacon with eight ounces of alcohol daily, and she taught school five days a week. She wondered why she was losing weight and becoming weaker. She was told on her discharge, after receiving the starvation treatment in a hospital, that her tolerance for carbohydrate was so and so, and that she must measure and weigh her food accordingly, lest she have a return of the glycosuria. She was aglycosuric but a physical wreck suffering from inanition without any resistance.

The advocates of starvation believe in the education of the patient as to uranalysis and dietetics. They instruct the patient that no more food must

be eaten than can be assimilated and that glycemias and glycosuria should never exist. As a result the patient leaves the hospital with the cardinal thought, sugar free urine. He sacrifices all for the sake of being sugar free regardless of other manifestations of the disease which are just as important if not more so. This procedure is usually kept up by the individual until Nature asserts herself by initiating signs of emaciation, weakness, and fatigue.

Too much stress is being placed upon the sugar content of the urine, while other manifestations of the disease are neglected. We are treating diabetes (by starvation) in a manner that is neither actually nor relatively conducive to the health and economic status of our patients, to say nothing of the hardships inflicted.

According to the rule in all seemingly chronic progressive diseases, and diabetes is no exception, the general practitioner bases his treatment on the hypothesis set by the investigator or research worker, who is too often a laboratory enthusiast minus clinical experience. We have relegated the diabetic patient to the laboratory, where the inanimate test tube is considered equivalent to the human organism, and the reaction is considered applicable to the treatment of disease. This is well demonstrated by the fact that nearly all pharmaceutical houses are placing various pancreatic extracts on the market for the treatment of diabetes in view of the fact that it is generally supposed that the pancreas is the exciting factor in the production of the disease. The expressed juice of the gland plus muscle tissue will split starch in a test tube, therefore the laboratory worker argues it must in the body. In view of the fact that a definite lesion has not been demonstrated to exist in the islands of Langerhans, in each and every postmortem, no conclusive evidence will bear out this statement.

Unfortunately the practitioner who sees only a few cases of diabetes treats these individuals as a class, in other words *en masse*, paying no particular attention to their peculiarities and idiosyncrasies. At the present moment we are in the starvation era and each diabetic patient that calls upon us for treatment is starved regardless of the indication or contraindication. It is the only weapon of professional defense; not because it is profoundly believed in by the physician who is a keen observer, but because the patient has been so schooled regarding the sugar free urine that he is forced to apply this method to sustain his professional standing in the eyes of the patient. This is a broad statement but nevertheless a true one. If this physician is not well versed in the intricacies of metabolism starvation becomes a dangerous procedure likely to aggravate and accelerate existing conditions with critical complications or sequelae. It is not an uncommon occurrence to see a fatal ketonuria suddenly develop in a patient in twenty-four to thirty-six hours after a starvation period.

Some authors have endeavored to quote statistics regarding the reduction in mortality since the starvation treatment has gained a foothold. They have failed, however, to discuss the economic condition of their patients as well

as their dependents during their series of starvations. In other words, the days of starvation which, in the great majority of cases, are spent at home, or at least away from work, if enumerated would more than overbalance the stated increase in longevity. One moderately severe case in which the patient was a staunch adherent to the starvation theory starved 101 days out of a total of 240 at odd intervals with an ever decreasing tolerance.

Another interesting factor worthy of note, as quoted by a prominent author, is that by starvation, deaths in the first year of the disease have been reduced from 16.9 to 14.8 per cent. Doubtless these figures would be greatly increased or decreased if it were possible to ascertain the ages of the patients in the series of cases.

The question of whether or not starvation is a harmless procedure is best answered by those of us who have observed its unbiased application in numerous cases. Personally I feel that it is a dangerous procedure and should never be indulged in without the supervision of a competent physician, who is able to ascertain accurately its limitations. I have seen patients who had a two per cent. sugar content and acid free urine in whom there suddenly developed an intense progressive ketonuria which resulted in coma and death. These patients all responded to the initial fast in a fair manner, but I feel that subsequent periods of starvation so lowered their general resistance that what in other patients would be considered a slight acidosis in them became a profound one. Their intoxication threshold had been lowered.

Our prognosis in a case of diabetes, whether it is severe or mild, should not be based on the rapidity of sugar reduction but on the amount of food that can be ingested without the production of an excess of the lower fatty acids. Agreeing that diabetes is a disease characterized by faulty metabolism of carbohydrates and proteids, it would seem reasonable to assume that in order to spare body fat, some substance to spare fat must be introduced. What is more desirable than these two food elements? Any excess above the assimilation limit, and any proteid that may be broken down will be excreted as excess luggage, but before this is accomplished enough will be oxidized to maintain energy and body heat which are most essential for the animal organism. During starvation and for long periods after the initial fast, body heat is not maintained and the temperature is subnormal. Starvation is valueless unless it is accompanied by undernutrition. This invites infection which is often the cause of an early demise.

I have designated this acid saturation point as Edgar's acid threshold. The subjective symptoms displayed by the diabetic patient are always due to an excess of fatty acids, generally beta oxybutyric or diacetic acids. This acid content can be ascertained, and by keeping it low by limited diet (not starvation) we may carry our patients along indefinitely in a fit condition without undermining nutrition and general resistance.

Each and every diabetic patient has a very definite acid threshold or saturation point; if the acid

increases above this point or threshold symptoms begin to appear, their severity depending and being in definite proportion to the acid concentration. I am in the habit of calling urine containing two per cent. sugar the limit of safe sugar content. If it is below this point the chances are small that acid is present in any startling quantity. In aged patients, those above fifty years, it is most inadvisable to limit the sugar content by starvation. More attention should be given to the lower fatty acids and these patients will be unconditionally rewarded with renewed vigor and well being.

Although it is a fact that starvation followed by caloric feeding will increase the tolerance of a patient for a short time, an analysis of the after-effects are most interesting. Frequently starved patients, who have been schooled to starve on the appearance of sugar, become accustomed to the procedure. Their organism adjusts itself to the condition of all going out and nothing coming in, and as an aftermath they become more susceptible to any small indiscretion in diet than the patient who has never been subjected to starvation. As a result in these patients a sudden acidosis develops that is unheralded and difficult to curb. These patients seem to become sensitized. For the sake of safety conscientious followers of the starvation treatment must continue strictly to adhere to food measurement and caloric feeding in order that symptoms of intoxication be prevented. Once frequent starvation is begun, it must continue.

This fact may be easily demonstrated by taking two patients with diabetes of approximately the same tolerance. The diet should be increased gradually in both cases. Soon the patient who has been frequently starved in the past, on reaching his point of carbohydrate tolerance will show a marked diacidetic acid reaction, while the unstarved patient will continue to remain acid free or nearly so, with none of the subjective signs of intoxication. As coma invoked by acid saturation is the logical termination of diabetes, it should be our endeavor to stay this condition as long as possible, using any and all methods that will produce the required result. If it is possible to minimize the concentration of acid without undermining the general nutrition and without interfering with the metabolic equilibrium, then we have robbed the malady of its terror.

The followers of the starvation theory are divided in their opinions as to whether or not sodium bicarbonate is capable of influencing this acid condition. Some feel that it is detrimental in hindering gastric secretion, diluting the hydrochloric acid and secretion from the peptic glands. I think perhaps their opinions have been too hurriedly arrived at, either from the administration of too large a quantity or by not giving enough. Its beneficial action rests entirely on the correct quantity being given, the amount depending on the needs of the body to neutralize acid. I am using it in all cases presenting an increase of acid over the saturation point and feel that it is of direct benefit without producing any lasting deleterious effect on the patient. There is no question that the neutrality of the blood is maintained by an equilibrium established by the salts of the blood. The blood possesses

the property of being able to take up considerable quantities of acid without appreciable change in the hydrogen ion concentration. The plasma contains sodium bicarbonate. The normal ratio of carbonic acid sodium bicarbonate is one to twenty. When acid is added it reacts with the sodium bicarbonate to form a salt and carbonic acid. The hydrogen ion concentration resulting will not increase in proportion to the amount added in the acid for the reason that carbonic acid is but slightly dissociated, but the slight increase is promptly removed by the lungs as carbon dioxide, the removal of carbon dioxide permitting the hydrogen to react with the remaining atom of oxygen to form water and again restore the one to twenty ratio of carbonic acid sodium bicarbonate. When sodium bicarbonate is no longer sufficient in amount to maintain the neutrality, in case of continued addition of acid, the phosphates enter the reaction. If this mechanism is insufficient there may be an altered nitrogen metabolism and ammonia diverted for the neutralization of acid and excretion in the urine. So long as the one to twenty ratio is maintained the acidosis is compensated. Here the absolute value of the alkali may be diminished but the carbonic acid is also diminished. Only when this ratio is altered is it uncompensated.

From this it seems plausible that sodium bicarbonate does act as a neutralizing agent. An effort should be made to bring the alkali reserve to its normal value but never to exceed it. Just enough should be given to bring the reaction of the urine to normal. I have always felt that body weight should be preserved in the diabetic patient, unless the subject is above weight and obese. I have found that in a person whose body has a fair reserve of fat (not obese) symptoms of impending ketonuria are less likely to develop under trying conditions such as prolonged exertion and indiscretions in diet than in the patient who is poorly nourished, with a limited supply of body tissue. I feel that this reserve supply may be considered in terms of acid resistance which stands in good stead during an emergency.

A normal excess of body fat in the past has been considered as so much excess luggage, and the advocates of the Allen system have endeavored to remove it by starvation with the idea that fat limits oxidation. As starvation must be accompanied by undernutrition to produce any results, body weight is sacrificed by advocates of this system. As a result, their patients are almost always underweight, undernourished and underfed. I have never in my experience seen the diabetic patient who has been able to retrieve his previous body weight while undergoing the starvation treatment, either during the initial or subsequent fasts. I believe that body weight spells resistance, excepting of course in any dropsical condition that may be organic or due to osmotic changes in tissue concentration. It is the one reliable gauge we possess, aside from the amount of lower fatty acids as to the progress and prognosis in diabetes. A diabetic patient who is progressively losing weight regardless of his sugar content is going down hill. I have never had a patient succumb to acidosis

who was either gaining or holding his weight. I have noticed that impending ketonosis is always preceded with a loss of weight, which increases as the acid increases. It may be out of all proportion to the food intake. During actual coma the loss is greatly augmented, which may be explained by the splitting of the fat molecule. Thus 210 grams of fat yield seventy-two grams of beta oxybutyric acid, while from 120 grams of protein thirty-six grams of beta oxybutyric acid may be formed. As acidosis is the result of the products formed by the incomplete oxidation of fats, it becomes necessary to limit these elements and substitute a substance that will spare fat.

Just how much beta oxybutyric acid is necessary to produce coma is dependent on several factors which should be taken into consideration in arriving at conclusions.

Foremost of these is the age of the patient: Children are able to withstand acid intoxication much better than adults. Dehydration or depletion of the body of its normal water content invites ketonuria. The alkali which I have mentioned, stored in the body in the form of potassium, sodium, magnesium, and calcium acts during impending acidosis by changing the path of excretion from bowels to kidney in order that oxybutyric acid may be removed or eliminated. Much, however, depends on the cardiorenal system for the rapid and effective excretion of these bodies in order that concentration and accumulation do not take place.

Glycemia and glycosuria must not be reckoned with while other manifestations are neglected. Many patients with diabetes are worse off with a sugar free urine, than others whose sugar content is high. I have frequently seen sugar free diabetic patients display a greater tendency to intercurrent infection and gangrenous processes, than patients who were both markedly hyperglycemic and glycosuric. It is more important that we ascertain how much carbohydrate a patient can assimilate without producing an excess of acid than how much he can tolerate without the appearance of sugar.

It is plausible to believe that in order to insure carbohydrate metabolism, a larger amount of sugar in the blood is required, and any artificial reduction of the glycemia below this point must be attended with manifestations of disturbed carbohydrate metabolism. The fact that acetonuria appears in the normal subject upon restriction of carbohydrate intake, just as it does in the diabetic subject, would seem to support this subject. I may state that at the present time I am working on this theory. If diabetes is a symptom which is the result of a functional inability of the pancreas to secrete a full amount of its internal secretion, and I doubt very much whether the withdrawal of its normal activator, carbohydrate, is indicated. In other words, glandular activity ceases when the specific stimuli are removed in part or entirely. This is best portrayed by the fact that the simple act of starvation in a normal person will produce glycosuria. If an organ or group of organs are not called upon to exert their full influence in some form of resistance they will atrophy and in the course of time become rudimentary and inert.

Frequent starvation not only reduces the action of secretion to a minimum quantitatively during resistance, which in this case is carbohydrate, but drains the entire body of its glycogen content. This removes all available stimuli which otherwise might cause activity. Aside from this the caloric power of the organism is reduced in its production of heat and energy. Resistance is lessened; metabolism is weakened; undernutrition invites infection, and tolerance decreases progressively.

In conclusion I may state that I have been able to produce some rather startling results by the use of my serum, which is prepared from the blood of rabbits after they have undergone a series of manoeuvres capable of activating the various internal secretory glands to increased action. The serum contains the internal secretions in hormone form. I have been able to increase the carbohydrate tolerance of certain cases from twenty-five to sixty per cent., and in some patients cause an absolute arresting of the disease, as evidenced by loss of all subjective and objective symptoms as well as a gain in weight, which is progressive.

I shall be more than happy to mail to physicians a reprinted report of three cases treated by the Edgar serum, giving details as to blood, sugar urine, et cetera.

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ADVANTAGES OF CLASS INSTRUCTION IN THE TREATMENT OF DIABETES.*

BY N. W. JANNEY, M. D., Ph. D.,
 Santa Barbara, Cal.

The treatment of chronic disease must necessarily be carried out over years and sometimes during the entire duration of the life of the patient. Too little regard for this fact has been given by the medical profession, the members of which are prone to become unduly pessimistic in regard to this class of cases. Treatment may be careful and thorough as long as the patient is in a hospital or under the physician's daily observation; but when the patient is sufficiently improved to no longer need this close attention, he is but too frequently thrown upon his own resources with only meagre or even casual directions in regard to the future. It is scarcely justifiable to permit a chronic invalid to go home, unprepared to carry out intelligent self-treatment after so much thought and care have been expended upon him by his medical attendants. Objectively considered then, the reeducation of the patient in modifying his habits of life to conform to the limitations set by his disease, is perhaps the most important single aspect of the treatment of such patients.

This holds true in dealing with the eminently chronic metabolic diseases. Patients suffering from diabetes, nephritis, and like conditions frequently make unusual progress under first class medical control, only to return rapidly to a level of health

*From the Memorial Metabolic Clinic, Santa Barbara, California.

as low as, or even lower than, before the treatment was instituted. This leads to an unenviable state of mind on the part of the patient with regard to his ailment and the efficacy of treatment in general. Patients with diabetes are especially subject to frequent and sometimes dangerous relapses, even after judicious treatment in the hands of the most skilled physician. For the ignorant there seems to be no remedy for this lamentable state of affairs. A patient who is too untutored to be impressed by the necessity for eating exactly prescribed articles can not be expected to exhibit more than temporary improvement. However, the great majority of diabetic patients observed by the writer on the western coast exhibit sufficient intelligence to follow successfully their treatment in their own homes, if they are thoroughly instructed in knowledge essential to their safety. The real test of successful diabetic treatment lies in the return of the patient to his normal environment and activities with an ability to retain his general health and strength and lead a sugar free existence.

In order to accomplish this great desideratum in as great a proportion of cases as possible, it is essential that treatment in an institution or otherwise should be directed as much towards the patient's future as towards his immediate needs. To any thoughtful observer of the disease, it becomes apparent that the solution of this problem will be approached more nearly through intensive reeducation while under treatment. It has therefore become the custom in the few clinics in this country where numbers of diabetic patients are treated to emphasize the necessity of the patient's understanding and calculating his food values during this course of treatment. A number of recipes of approved diabetic dishes are also given to patients, who are thus taught to use them.

A step further in diabetic education is the formation of a diabetic class. For the successful development of the class idea of diabetic treatment we are indebted to Dr. Elliott P. Joslin, Dr. Herman O. Mosenthal, and Dr. H. Rawle Geyelin, who among others, have applied this method. In the work of the Santa Barbara Memorial Metabolic Clinic, an institution especially organized for the study and treatment of metabolic diseases, it has seemed very advisable to form a diabetic class for the special advantages accruing to the patients. The purposes of such a class include instruction as to the dangers of their disease, the peculiarities of individual reaction to it, diabetic dietetics, laboratory tests, and what to do in the event of emergencies. The class instruction at present has taken the form of a series of practical talks by various members of the staff, which have come to be of distinct value. The subjects include normal chemical processes of the body, diabetic chemical processes, fasting and low diabetic diet, and medium and high diabetic diets, chemical demonstrations of the more simple tests necessary for diabetic treatment, such as the acetone, diacetic, qualitative and quantitative sugar, and a discussion of acidosis. An important point of this class instruction is practical dietetic demonstrations of recipes, as good cooking in diabetic dietetics is very

important. Blackboard instruction in the method of translating dietetic prescriptions of a given number of grams of carbohydrates, protein and fat into a choice of a given daily series of dishes, and the permissible amounts of these dishes, we have likewise found to be of practical value. We have also observed a most salutary effect on patients with a high tolerance, who become more watchful of their own diet in observing the extreme reduction necessary for their less fortunate neighbors with low tolerance for carbohydrates.

It is remarkable how much a man's happiness depends upon his comfortable habits with regard to meals and the social pleasure connected with the table. A diabetic patient feels himself removed through his disease from this ordinary intercourse with his fellows. It is highly desirable, therefore, that such patients come into contact with those who must needs live under the same great dietetic restrictions. By free association with others suffering from the same condition, contrary to the experience in certain other diseases, diabetic patients increase their morale and their attitude toward treatment is bettered. This social element we have found to be one of the greatest advantages of the diabetic class. The patients show astonishing eagerness to benefit by the instruction, and it is believed that the fact that increasing numbers of diabetic patients are continuing to live sugar free over indefinite periods after a course of treatment in this clinic is due in large measure to systematized instruction.

THE HISTORY OF DIABETES MELLITUS.

BY PHILIP HOROWITZ, M. D.,
New York.

The history of diabetes is of more than passing interest, especially since, with our present improvement in diagnostic methods, the disease is shown to be more prevalent than it was ever considered to be. This disease is, however, not one of modern life or a result brought about by the advance in civilization. Hirsch, in his handbook on *Geographic and Historical Pathology* (1), states that the earliest account of sweet urine comes from India and is to be found in the Ayur Veda of Surusta (500 A. D.). In the papyrus of Ebers, which is a copy of an Egyptian medical compilation already old in the time of Moses, there is mention of a disease with polyuria.

It was evidently not known to Hippocrates (400 B. C.), as he makes no mention of it in his writings. Not until Aulus Cornelius Celsus (2), who lived 400 years later (30 B. C.-38 A. D.), is there any mention made of the subject. He did not call the disease diabetes, but described some of the chief symptoms, as polyuria and emaciation. He, however, did not give any hypothesis on the nature or cause of the disease.

Not until Aretaeus, the Cappadocian, (150 A. D.) is any mention made of diabetes, as he practically named the condition. Next to Hippocrates he was renowned as a very keen observer of disease. He states that the origin of the name was from the Greek word (*διабήτης*) signifying a syphon,

from the fact that the intake of water did not remain long in the body and flowed right through it. He emphasized the marked loss of flesh, polyuria, lassitude, marked thirst, and final collapse of the body. He considered diabetes a form of dropsy which differed only from the region of discharge.

Claudius Galenus (131 A. D.) considered diabetes a form of kidney disease, in which the kidneys had lost the power to retain water so that the water excreted was the same as was taken in.

Aribasius Von Pergamus and Aurlianus (326-403 or later in the fifth century) merely mention the disease.

Aetius von Amida (555 A. D.) like Galenus, considered diabetes a disease of the kidneys.

Alexander Trallianus (525-605) agreed with Galenus as to the nature of the disease but did not mention that water passes through unchanged.

Paulus Aegineta (670) mentioned diabetes but gave nothing original.

Rhazes (850-992) an Arabian physician, gave buttermilk and malt extract and advised the avoidance of physical and mental strain.

Avicenna (980-1037 A. D.), while a Galenist, was not sure of the nature of the disease.

Trincabella (1476-1568) disagreed with Galenus in that he believed the water was changed.

Silvanus (1478-1555) believed that diabetes was a disease of the blood.

Domatus Lusitanus (1562) reports two cases that he treated by strong purging which were cured in a short time.

Zanetus Lusitanus (first half of the sixteenth century) believed that the stomach was the seat of the trouble and compared the diabetic process to a chemical process.

Paracelsus (1493-1546) considered diabetes a condition in which there was an increased formation of salt in the blood, which irritated the kidneys.

Cardona (1505-1576) gave a detail of treatment and compiled a table of the quantity of intake and output of fluids.

Gatmaria-Dodonarus (1517-1586), Marcello-Donato (1600), Caralpino (1579-1603) mentioned nothing new about the condition.

Propper Albino (1553-1617) did not even mention the condition in his *Medicinas Argyptorium*, probably because the disease was rare then.

Deleboë (1672), founder of the chemiatic school, said that the weakness lay in the blood and not in the kidneys.

A résumé (3) of the earliest history of diabetes gives the following ideas:

Diabetes mellitus and insipidus were observed under the same name; a, the form associated with emaciation and hectic fever was always fatal; b, the form which did no harm to the constitution and gave tasteless urine. (Form of diabetes of Cardona.)

The hypotheses as to the character of the disease are as follows: 1, Aretaeus—a form of dropsy; 2, Galenus—a disease of the kidneys; 3, Paracelsus and the chemiatics—a constitutional disease, one of the blood.

The causes given are: 1, Specific poison; 2, remainder of an acute disease; 3, cold and wet,

temperature and little resistance power of the surface arteries; 4, strain of night watches, drinking large quantities of water, and 5, sexual excesses.

Aretaeus recognizes two stages, acute and chronic.

Symptoms: 1, Unquenchable thirst; 2, great urination (more than fluids taken in); 3, according to some the urine is an unchanged liquid; 4, according to others certain salts cause nervous pains in various parts of the body; 5, emaciation, and, 6, collapse. The prognosis is very bad. This is expressed by nearly all authors.

Treatment: 1, Massage in the sun; 2, hot and cold baths; 3, steam baths; 4, wine; 5, whey; 6, milk diet; 7, thoriok; 8, hiera; 9, iposix; 10, applications of mastics or nostrums on the stomach; 11, bleeding or venesection; 12, narcotics; 13, emetics; 4, astringents, and 15, acids. All known curing apparatus tried.

The disease was found in the East and West and surely in Germany, Holland, France, Spain, Italy, Greece and Egypt.

Middle period—(Diagnostic period.) Thomas Willis (1675), English; his chief contribution to diabetes was the fact that there was a sweet taste to the urine. This characteristic distinguished diabetes from all other diseases. He considered diabetes a common disease although it used to be rare (4) Michael Ettmüller (1683), German, recognized two forms: 1, Diabetes vera; 2, diabetes spuria. However, he offered little new on the subject. Johannas Dolaëus (1707) took the Galenian attitude. Thomas Sydenham (1621-1689), English, said that diabetes was a digestive disorder. Morton (1698), English, considered it a form of tabes, and classed it with phthisis. Mead does not consider it a disease of the kidneys, but a pathological change in the liver. De Sauvage (1697), described seven kinds of diabetes:

1, Diabetes legetimnus of Aretaeus, in which the output of urine is greater than the intake of fluids; 2, diabetes anglicus, in which the urine tastes of honey; 3, diabetes hystericus; 4, diabetes produced artificially (which Malpighi produced by ligation of the splenic vein); 5, diabetes vino; 6, diabetes arthriticus, and 7, diabetes fibricosus.

Robert Wyatt (1774) asserted that diabetic urine contained a sugarlake substance, which he obtained by evaporating the urine and which was not found in the kidneys but had already been found in the blood. He considered the cause of diabetes a defect in the assimilation of chylus. This also explained the emaciation.

Cullen (1700-1790) considered diabetes as a neurosis and the symptoms caused by spasm.

Franz Howe (second half of the eighteenth century), English, agreed with the hypothesis of Dobson and Cullen on the cause of diabetes. He found that the urine was fermented by yeast.

Thomas Cowley (second half of the eighteenth century) is credited by some as having been the first to isolate sugar from the urine.

E. Darwin (1780), English, stated that diabetes was the result of a retrograde movement of the lymph in which direct communication between stomach, intestines and bladder was set up by the

lymph vessels. He gave three kinds of diabetes: 1, Chylus—urine sweet and whey like in color; 2, watery—principally through skin absorption, and 3, slimy—slimy sediment in the urine.

Michael Troja (1827) Italian, described diabetes as a disease in which the urine was clear, seldom turbid or mixed with animal matter, polyuria, with unquenchable thirst, which lead to further drinking and this liquid in turn was speedily excreted. He described two forms of the disease, true and false.

Jacob Frederick Isenflaum (1786), German, agreed with the English that diabetes was due to faulty assimilation.

J. Peter Frank (1754-1836) gave a classification which he considered useful: 1, Diabetes insipidus (or spurious) in which there was no sugar in the urine, and 2, diabetes mellitus or vera or sugar form. He believed the disease to be one of the lymphatic system, with exaltation of the urinary function, which was caused by a virus formed in the body or introduced into the body.

Franz Marabelli (1790), Italian, examined urine by careful chemical analysis. The urine in spurious diabetes was almost normal. In true diabetes it was bright in color, no sediment was present, it was sweet and underwent wine fermentation, and on evaporation gave a syrup.

Joseph Frank (1771-1841) described two cases of diabetes. He believed diabetes to be a weakness of the whole body. His reasons for this belief were uncertain and shaky.

Modern History. (Scientific age).—John Rollo (1790), English, helped by the chemist Cruikshank, gave two causes. From his observation Rollo concluded that diabetes was a disease of the stomach, in which its activity was increased and increased excretion of an anomalous substance, whereby vegetable nutritive matter was transformed into sugar which was secreted. All the abnormalities noticed in the kidneys on autopsy he considered as effects, not causes, of the disease. The cure he prescribed was a meat diet and preparation of all food in such a manner as to reduce the activity of the stomach.

Nicolas and Guendeville supposed diabetes to be a *phthisurie sucrée* caused by a disease of the bowels.

Dupuytren Thenard described carefully characteristics of diabetic urine.

Chevreul (1815) showed that the sugar elimination in diabetic urine was identical with grape sugar.

Prout (1825) confirmed the findings of Chevreul. From this time on two forms are recognized: 1, Sweet and sugary diabetes, characterized by the presence of glucose in the urine, and 2, diabetes insipidus.

Von Stosch (1828) made a hypothesis that diabetes was of cerebral origin.

The great medical period of Leruniac and Bullard did not lead to any progress in the knowledge of diabetes.

Tiedman and Gmelin (1821) made the discovery that glucose was formed normally in the intestines at the expense of feculent substance. But the

medical minds were not yet prepared to recognize the connection between physiological and pathological actions. This theory was not used until a few years later by Bouchardat. Bouchardat (1835) returned to the stand of Prout and Aretæus and said that the seat of the disease was the stomach. He also said that the quantity of sugar in the urine was in constant ratio with the feculent or sugary foods. He forbade these foods and recommended alcohol to replace them and advised exercise. He also found that in many cases the pancreas was atrophied. Following Haller he tried to produce diabetes in dogs but the animals did not survive.

Mailhe discovered that the saliva contained diastase and fifteen days later Bouchardat and Sanders found a like substance in the pancreatic juice.

Mailhe looked for the seat of the trouble in the blood.

Ambrosiani (1835), Italian chemist, showed by means of yeast the presence of a fermentable sugar in the blood extract of a patient suffering from diabetes.

MacGregor also found sugar in the blood of diabetics but he added that he found traces of it in the blood of healthy animals in the digestion of starches. Magendie made the same statement.

Reynoso considered diabetes a defect in the destruction of sugar. He thought this defect arose from a diminution of the respiratory energy.

Pettenkofer and Voit agreed with Reynoso in believing there was a defect in the sugar destruction, but disagreed with him as they found that there was less oxygen absorption by the diabetic.

Nencki and Sieber showed later that oxidation was not reduced in diabetics.

In the early part of the nineteenth century it was believed that an animal in physiological condition could not form sugar like a plant. C. Bernard found, on the autopsy of a dog fed on meat, sugar in the blood from the right side of the heart. Also the serum from the blood of the portal vein showed sugar in greater quantities than from the right side of the heart. He made other experiments and found: 1, Blood of intestinal veins as well as intestinal matter did not contain sugar; 2, blood of spleen did not contain sugar; 3, blood in portal vein before entering liver showed enormous amount of sugar, and 4, sugar was found in the liver tissue. He believed that the formation of the sugar was influenced by the nervous system. He deduced the following points: 1, Plants do not alone make sugar; 2, the liver makes it normally, and 3, formation of sugar in the liver is under the influence of the nervous system; also that a blow to the floor of the fourth ventricle caused glycosuria.

Figuier showed that sugar existed in the blood of the general circulation as well as in the blood of the portal veins.

Lehman asserted that there was no true sugar in the portal vein, whereas Figuier stated there was but it was in a combined state. Up to 1855 there was no decisive proof of sugar in the liver but C. Bernard proved that by cutting out the liver of a

dog, washing it by putting a tube in the portal vein and receiving the outflow through the hepatic vein after forty minutes, the washings were sugar free. But the next day sugar was again found in the liver, proving that the sugar was formed from substance fixed in the liver.

Chauveau concluded from the amount of sugar in the serum of the blood as follows: 1, Sugar did not disappear from the general circulation even after long abstinence; 2, blood of hepatic vein contained the most sugar; 3, lymph contained sugar even after abstinence; 4, sugar of the lymph did not come from the tissues, and 5, that the blood in the veins of the general circulation contained less sugar than that of the arteries.

In 1855, C. Bernard isolated glycogen from the liver of a dog and called it *matière glycogène*.

Pavy in 1859, an Englishman and a student of Bernard's, denied glycogeny during life. The reason for this he concludes were as follows: 1, He did not find more sugar in the blood of the right ventricle than in that of the portal vein, and 2, he did not find any sugar in the liver from an animal, killed by section of the bulb, which was thrown into boiling water immediately on removal. According to Pavy glycogen is normally transformed into fat and only in abnormal conditions can it make sugar. Maissner and Ritter confirmed the findings of Pavy.

McDonnell found only traces of sugar in the blood of the right side of the heart. Tieffenbach and Lusk found only a slight difference between blood of the hepatic veins and that of the portal vein. Tscherninow concluded that the liver did not make sugar during life but changed it for storage.

Schiff said the liver did not make sugar, but differed from Pavy, in that the transformation of hepatic glycogen did not occur normally, but because the blood did not contain a diastatic ferment.

Rouget proved by the discovery of glycogenous material in many epithelia, embryonic tissue, in tumors, in inflamed tissues, that its presence did not have the significance Bernard claimed.

At that time Bernard also proved that by pricking the floor of the fourth ventricle glycosuria was produced, but if the bulb was first cut glycosuria did not arise. Somewhat later he also discovered *curari glycosuria*. He found that if the function of communicative life (*vie de relation*) was suppressed and at the same time the purely nutritive function of the animal remained intact, diabetes was produced in the animal.

Fourth period (1877-1889).—Mering published, under the direction of Ludwig, analyses which did not show the excess of sugar in the hepatic veins. Pflüger also denied the reality of hepatic glycogeny. Seegen fed dogs in different ways and found the increase of sugar in the portal over the hepatic veins. In his clinical works he described two forms of diabetes: Light form, probably of alimentary character, and glycosuria, produced without the introduction of carbohydrates.

Cantani believed that the sugar in diabetic urine was not glucose but an isomer less likely to be destroyed by the organism and whose production

was the result of chemical changes in the pancreatic cells. He did not think there were many different forms of diabetes. The only difference he distinguished was one of degree. He recognized two: Patients of the first degree lost the sugar on a meat diet, and patients of the second made sugar from the ingested meat.

Fasting proves this because then the glycosuria disappears.

Hypothesis of Schultzen.—According to C. Ludwig and Scheremetjewski the intravenous injection of glucose solution did not result in a corresponding increase in the carbon dioxide exhaled. They therefore concluded that glucose could not be oxidized in the blood unless it was first broken down.

Pawlinoff's theory is a variation of that of Schultzen. He stated that sugar could only be burned up when transformed by the muscles into a substance more easily oxidized.

Doctrines of Buchard, Zimmer, Goethgens and Ebstein.—Buchard said that diabetes consisted essentially of the nonutilization of sugar. Zimmer made the muscles play an important rôle. Goethgens, Lechorche and Ebstein said that hyperglycemia and the destruction of the nitrogen assimilation were due to too small a formation of carbon dioxide.

Frerichs (1884), in his book on diabetes, confined himself purely to personal observation and left out all theory. He, however, stated that the ingestion of large quantities of sugar did not produce glycosuria. But Schmidt, Becker, Mosler, Poggiale, Schiff, Vogel, Ludwig and others before 1884 had remarked that the ingestion of large quantities of sugar could be followed by glycosuria.

Cobrat thought that the disease came from cirrhosis of the liver. Robinson confirmed the work of Cobrat. In atrophic cirrhosis where the liver cells were changed, test for alimentary glycosuria gave a positive result. But with hypertrophic cirrhosis it gave a negative result.

Hofmeister claimed that for any subject, and every variety of sugar, there was a limit of assimilation above which point an excess was eliminated in the urine.

In 1895 Linossier and Rogue in their researches on saccharosuria and glycosuria concluded that instead of a limit of assimilation each subject had a personal coefficient, always very high in health.

Mering (1885) made known the fact that phloridzin in a sufficient dose could in a few hours produce infallibly glycosuria without hyperglycemia.

Period between 1889-1892. Bouchardat thought that lesions in the pancreas could produce diabetes. Popper thought that lack of pancreatic juice prevented glycogen from combining with the fatty acids, as a result of which the fatty acids were transformed into sugar, resulting in glycosuria and hyperglycemia.

Lancereaux discovered a particular form of diabetes which was dependent on a lesion of the pancreas. This form was usually of rapid onset marked by polydipsia, polyphagia and polyuria, marked emaciation, collapse and death. Baumel extended the theory to all forms of diabetes. At this time Von Mering and Minkowski performed

the classic experiment of extirpating the pancreas of a dog and producing diabetes. They, however, did not say in what way pancreatic ablation caused diabetes. Several months later Lépine announced that in the normal state, the pancreas contributed to the destruction of glucose. Hedon of Montpellier brought about attenuated diabetes following ablation of the pancreas. In 1892 Von Mering and Minkowski concluded that diabetes following ablation of the pancreas was due to interference with an unknown function of the pancreas. Theoloix thought it came from nervous traumatism. Minkowski at the same time announced that he succeeded in transplanting a fragment of pancreas outside the cavity of the stomach and in this manner prevented diabetes. If this was removed, diabetes occurred.

Lépine (1892) was the first to advance the view that diabetes in man was due to failure of the pancreatic ferment to produce a glycolytic ferment. Williamson (1894) suggested the implantation of a portion of the living pancreas to prevent the appearance of diabetes. Saundby (1894) suggested the injection of fresh pancreatic extract to produce the disease. Lépine again in 1894 put forth the theory that the pancreas secretes a glycolytic ferment which destroys the sugar. Letulle (1897) put forth the idea of contagion, giving conjugal diabetes as an example.

M. W. Charrin and Carnot claim that the glands may become affected by bacteria, ascending the excretory ducts of these glands and of the pancreas. The bacteria may have been *Bacillus coli*, streptococci or pyocyanus, but the method of infection is not discovered. Kaufman asserted that the pancreas exercised an influence on the liver.

Opie (1900) began a new epoch in our knowledge of the etiology of diabetes. In that year he published a pathological study on interstitial pancreatitis, in which he demonstrated the connection between disease of the islands of Langerhans and diabetes. Ssobelow (1901) working independently confirmed Opie's findings.

W. G. MacCallum found that if a portion of the pancreas was separated from the rest of the gland and its duct tied, it atrophied and left a tissue containing enlarged islands of Langerhans.

Zuelzer (1901), stated that tying off the veins of the adrenals prevented glycosuria in depancreatized animals.

Cohnheim (1903-1906) stated that expressed muscle juice when mixed with juice from the pancreas became active to sugar but would not do so alone. This was supported by Arnheim and Rosenbaum, Hirsch, De Witt and Hall.

Mingazzini and Peruni in 1904 noticed the appearance of severe diabetes together with the first symptoms of Friedreich's disease.

Von Noorden (1906) considered that the pancreas furnishes a ferment which favored the polymerisation of sugar into glycogen.

Various reports on the relation between diabetes and the destruction of the islands of Langerhans were published. In 1906 Herxheimer and others showed that there were conditions in which lesions

were present in the islands of Langerhans and in which diabetes did not exist.

Pflüger (1907-1908) asserts that the pancreas is under the influence of the nervous system and that the wall of the duodenum is an antidiabetic centre, rich in ganglion cells, which by nerves passing to the glands, controlled its antidiabetic power.

Gay in 1907 published a thesis on cysts of the pancreas and diabetes.

Meltzer in 1908 confirmed the findings of Mingazzini and Peruni.

Lépine believed that if diabetes developed after a severe shock or emotion it was a latent diabetes. In 1908 Roepke reported a similar case.

Eppinger (1908), Falta and Rudinger found that pilocarpine prevented glycosuria due to epinephrine.

Knowlton and Starling (1912) experimented on the rate in which the heart muscle used up the sugar in the blood. They proved that normal muscles used four times as much as those of a diabetic.

R. G. Pierce and MacLeod (1913) found little or no difference between normal and depancreatized heart.

McCurdy, Falta, and others found that extirpating the thyroid raises the tolerance of animals for sugar, so that alimentary glycosuria is produced with difficulty, provided the parathyroids are preserved. This was proved by MacCallum.

Folin, Dennis and Smithie (1914) showed that some students after an examination showed the definite traces of sugar.

Allen (1914) considered diabetes a weakened function of the pancreas.

Horowitz (1914) considered diabetes as caused by an intestinal toxemia and suggested cultures of *Bacillus bulgaricus* as an adjunct to proper dietary treatment.

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65 WEST SEVENTY-THIRD STREET.

A CASE OF DIABETES INSIPIDUS.

By TRUMAN G. SCHNABEL, M. D.,
Philadelphia.

AND

ARTHUR H. GERHARD, M. D.,
Philadelphia.

From the Medical Department of the Hospital of the
University of Pennsylvania.

In 1917 it was our privilege to have a case of marked polydipsia and polyuria showing no evidences of glycosuria. Within the last month we have been able to follow up this same patient when we found her free from all former subjective symptoms. It seemed worth while to report the history of this case in the intervening period.

CASE.—M. K., white, aged twenty-six years, single, housemaid, birthplace Ireland. Referred on January 11, 1917, to the Outpatient Department, Medical Section, Hospital of the University of Pennsylvania, by Dr. John Marshall.

Chief complaint.—Always thirsty and spitting up sour food.

Present illness.—During the summer of 1916 at the suggestion of friends the patient drank increased amounts of water. She had been a scanty water drinker when she was told that drinking large quantities of spring water would bring vigorous health. About October, 1916, she found herself compelled to drink many quarts of water and to void many quarts of urine daily. Her thirst became almost unquenchable. Frequent water drinking and nocturia made her nights restless and sleepless. Besides this, she complained of pyrosis and regurgitation of food. She reported an eight pound loss of weight since September, 1916, when she weighed 138 pounds. There was no history of headache, no symptoms referable to the special senses or nervous system. She had had some constipation with an occasional cathartic habit. There was no cough, expectoration or night sweats, no exertion dyspnea, no complaint of pain including the precordial variety, no palpitation, and there were no vertiginous attacks. The hands and feet were always cold. The urine was very pale in color and there was no ardor urinae.

Past medical history.—Here were included only the milder diseases of childhood and several attacks

of tonsillitis, the last one occurring two years ago; no scarlet fever.

Social history.—Drinks three to six cups of tea a day; no alcoholic indulgence; no unusual carbohydrate consumption. The menses were regular and normal with mild pain the first day. She migrated to this country from Ireland some years ago.

Family history.—Her father was accidentally killed. Her mother died from an unknown cause. She had two brothers and one sister living and well. There was no familial tendency to any particular type of disease.

Physical examination.—The patient was well nourished; no bony deformities; muscular system normal; skin clear and free of jaundice. Her station and gait were normal; skull and scalp normal; nose and ears normal with no unusual discharge from these organs. Her pupils were equal and reacted to light and accommodation; extraocular movements normal; no strabismus or nystagmus. The teeth were in good dental repair. There were no markedly palpable glands in cervical or other superficial groups; no undue neck pulsations. The chest expansion was good and symmetrical; lungs normally resonant and free from râles; breath sounds normal throughout. The heart outline was normal, good rhythm, no murmurs or undue accentuations of sounds. Cardiac dimensions: Right oblique twelve cm., right base one and five tenths cm., left oblique eleven and five tenths cm., left base ten cm., height eleven cm.

Abdomen.—The contour was rounded, no rigidity, no palpable organs, no masses, no tenderness, no dullness in flanks, active peristalsis.

Patellar and Achilles jerks were found to be exaggerated; no ankle clonus, no Babinski, no sensory changes, no edema.

Blood pressure.—Systolic, 110 mm.—70 mm.

Urinary examination showed an acid reaction, specific gravity 1003, no albumin nor sugar, and microscopically it was normal.

The pyrosis and regurgitation of food promptly abated upon antacid medication but no relief for the polyuria or polydipsia was secured in the outpatient department. She was admitted to the hospital ward on January 23, 1917. Here she presented much the same history and the physical findings showed no change. She remained in the hospital until February 7, 1917, when she was discharged without relief of her thirst or polyuria. During the first days of her hospital stay the patient failed to cooperate and therefore no accurate urine output figures were obtained while she was on an unlimited liquid and unrestricted salt diet. Records are given for four days upon which fairly accurate observations were made and on which the salt intake was fixed.

Date.	Diet.	Salt Chlor. Intake.	Water Intake.	Urine Output.	Sp. Gr.	Urine Chlor.
1/30/17	Salt free	7.5 gms.	3,150 c.c.	6,490 c.c.	1.005	0.42
1/31/17	Salt free	7.5 gms.	2,600 c.c.	5,750 c.c.	1.004	7.4
2/1/17	Salt free	17.5 gms.	6,850 c.c.	7,555 c.c.	1.005	13.51
2/2/17	Salt free	7.5 gms.	2,550 c.c.	6,160 c.c.	1.005	7.98

The water intake records are undoubtedly deficient, but the urine output is almost correct.

The highest specific gravity record for this hos-

*Read at a meeting of the Section in General Medicine, College of Physicians, Philadelphia, Pa., January 26, 1920.

pital stay was 1007 and it should be noted that some specific gravities as low as 1001 were recorded for other days. One of the routine examinations of the urine during the first hospital stay showed a slightly acid reaction, specific gravity 1005, faint trace of albumin and no sugar. Microscopically there were no casts or cylindroids, mucus positive, white blood cells three to five to the low power field, epithelium positive, no crystals.

A routine blood examination follows: Hemoglobin seventy-five per cent., red blood cells 4,720,000, white blood cells 7,800. The differential count was as follows: Polymorphonuclears fifty-nine per cent., small mononuclears twenty-nine per cent., large mononuclears seven per cent., transitionals five per cent.

The eye grounds were normal. An x ray report of the pituitary fossa was negative. The Wassermann was negative. After 100 gms. of glucose were given no glycosuria occurred in four hours' time.

During the last days of her hospital stay there developed a dull backache. This latter symptom persisted for the ensuing months together with the thirst and polyuria. On some days she voided from seven to ten quarts of urine during twenty-four hours. By May 7, 1917, her back pain became especially bad and seemed to be most intense between

uria and polydipsia were controlled for forty-eight hours after the injection of May 22, 1917, with their return during the twenty-four hours previous to this day. About 1500 c. c. of urine were voided during the days of thirst relief. One c. c. of pituitrin was again given.

On May 29, 1917, again there was an absolute relief of symptoms for about thirty-six hours after the injection of May 25, 1917. After these injections of pituitrin and others given subsequently the patient had abdominal pain with one or two loose movements of the bowel accompanied by nausea. On this day an extract of pituitary gland was prescribed to be taken by mouth and one c. c. of pituitrin given hypodermically.

On June 9, 1917, there was again the report of absolute control of symptoms after the injection of May 29, 1917. The symptoms of thirst and nocturia continued somewhat improved up to date but with no marked permanent change. One c. c. of sterile water was given hypodermically, the change being unknown to the patient.

On June 12, 1917, it was reported that there had not been the usual relief following the last injection. About 3000 c. c. of urine were voided in the twenty-four hours preceding. There was complaint made about backache, thirst and polyuria, although the notes show a nocturia of only three times on the

	June 20th	June 22rd.	June 25th.	July 24th.	August 10th.
Color	Pale amber.	Straw	Straw.	Light straw.	Light amber.
Sediment	Light flocculent.	0	0	0	0
Sp. Gr.	1009	1005	1005	1006	1011
Reaction	Acid.	Acid.	Neutral.	Neutral.	Acid.
Albumin	Faint trace.	0	0	0	0
Sugar	0	0	0	0	0
Casts	Occasional hyaline	0	0	0	0
Cylindroids	Few.	0	0	0	0
R. B. C.	0	0	0	0	0
W. B. C.	12 to low P. field.	3 to low P. field.	8 to low P. field.	3 to low P. field.	0
Crystals	0	0	0	Triple phosphates.	0
Epithelia	Much.	Much.	Much.	Much.	Small amount

the scapulae. The pain was accompanied by nausea, pyrosis and occasional vomiting spells. The water drinking and sleepless nights continued. Nocturia occurred ten to fifteen times each night. She weighed 138 pounds. On this date a powder containing bromide five tenths gram, magnesium oxide five tenths gram, calcium carbonate six tenths gram, and extract of belladonna one hundredth gram, was prescribed three times a day after meals.

On May 18, 1917, it was reported that the backache was relieved in twenty-four hours after using the prescription given May 7, 1917. There was no nausea, sleep had improved and nocturia occurred only about four or five times a night. There were no new features in the physical examination. The weight was 140 pounds. The blood pressure record was systolic 120 mm. to diastolic 100 mm. A powder prescription was given for sodium bromide twenty-seven hundredths gram, magnesium oxide eight tenths gram, calcium carbonate six tenths gram, and extract of belladonna one hundredth gram after meals. On this date one c. c. of pituitrin was given hypodermically.

On May 22, 1917, it was reported that after the injection of May 18, 1917, the thirst and urination were absolutely checked for two days. The same amount of pituitrin was given on this date.

On May 25, 1917, it was reported that the poly-

night of June 11, 1917. Two grains of pituitary substance, anterior lobe, was given by mouth and one cc. of extract of corpus luteum was given hypodermically.

On June 14, 1917, no effect was reported after the last injection. Nocturia had increased to five and six times during the night while the headache, backache and pains in the legs were emphasized as a complaint. Weight 142 pounds. Blood pressure 105 mm. and 80 mm. Six tenths c. c. adrenalin hydrochloride, one to one thousand solution, was given hyperdermically.

On June 18, 1917, three good nights were reported by the patient with about 2650 c. c. of urine as an average daily output. There was still no absolute relief for the thirst and no marked sudden effect after the adrenalin injection. One c. c. pituitrin was given subcutaneously. After returning home the patient had violent abdominal cramps with loose movements of the bowels, and she became unconscious.

On June 20, 1917, she was readmitted to the hospital ward. Her chief complaint now seemed to be pain in the back. Excessive thirst and urination were not so annoying. It was noted in addition that the thyroid was not palpable and a tender painful area was complained of just to the left of the ninth thoracic vertebra.

On August 31, 1917, she was discharged for the second time relieved of her thirst and polyuria, but still complaining of backache and much nervousness. While in the ward these notes were made at various times: Blood: Hemoglobin eighty-one per cent.; red blood cells 4,200,000, white blood cells 6,240. Differential count: Neutrophile polymorphonuclears sixty-eight per cent., small lymphocytes twenty-six per cent., large lymphocytes four per cent., transitionals one per cent., eosinophiles one per cent., Wassermann delayed negative.

The patient received daily injections of three tenth c. c. of pituitrin hypodermically from June 24, 1917, to July 27, 1917. From July 27, 1917, to August 1, 1917, she received a daily hypodermic injection of sterile water. During the period of pituitrin therapy the urine volume never exceeded 2965 c. c. a day when she took ten grams of sodium chloride and 2300 c. c. of water with a salt free diet. With the sterile water there was a rise in output of urine but never above 3750 c. c. and her backache and the pain in the legs were greatly increased. With the resumption of hypodermic injections of pituitrin on August 1, 1917, the urine elimination was cut down and all the symptoms abated. On August 8, 1917, the pituitrin injection was increased to eight minims and finally omitted on August 18, 1917. The five minim doses of pituitrin were never accompanied by the intestinal acceleration or abdominal pains such as followed the full one c. c. injections.

A single specimen of urine showed a specific gravity of 1011 during the second hospital stay, with a number of specimens recorded 1008 and 1009. No specific gravities were recorded under 1004 and for thirty-one specimens of urine the specific gravity averaged 1006.7 against an average of 1004 for the former hospital stay.

A second Wassermann test was negative. An examination of the eyes showed the media clear, discs oval, good color with clear edges, no fundus changes, slightly contracted form fields on the temporal side of each eye, not enough to be called abnormal or like the fields of pituitary tumor. Two hour phenol-sulphonephthalein elimination after the intramuscular injection was forty per cent. plus fifteen per cent. or fifty-five per cent.; after an intravenous injection the elimination was sixty per cent. for the first hour and ten per cent. for the second hour. The examination of the ear showed evidences of degeneration of both labyrinths, cochlear as well as static; the right more than the left. There was no evidence of an intracranial lesion.

Blood pressure systolic 95 mm., diastolic 70 mm.; carbon dioxide tension of the alveolar air thirty-five; blood urea nitrogen nine mg. to 100 c. c. of blood; plasma chlorides 5.74 grams to the litre; plasma carbon dioxide combining power sixty-four vols.; lumbar puncture yielded eight c. c. of a clear fluid under sixteen mm. pressure.

Examination of the spinal fluid was as follows: Wassermann negative; globulin negative; gold chloride reaction was not done; sugar .065 per cent.; blood sugar .08 per cent.; the urine sugar was negative.

The subsequent history of the patient showed that the general pains with backache continued through

the fall months of 1917. The thirst and polyuria, however, subsided after the patient was discharged from the hospital for the second time. In December, 1917, she sought out a certain member of the clergy who had received the lay credit of many and varied cures. About February, 1918, her symptoms ended. Since this time she insists that she has been perfectly well and has been entirely free of trouble. She married about June, 1919. Three recent specimens of urine showed specific gravities of 1011, 1013 and 1012 and nothing else abnormal. She no longer has nocturia and a single twenty-four hour specimen amounted to 1800 c. c. The patient refuses further studies with the protest that now being cured there is no need for further inquiry into her condition.

Briefly, then, a case in which the patient's disease was diagnosed as diabetes insipidus had the course of her disease materially altered after about fifteen months. Over three years have elapsed since the onset of the disease and two years since the cessation of symptoms. Pituitrin was given hypodermically with very immediate antidiuretic effect. The specific gravity while still fixed at a low figure is comparatively elevated now. Sterile water, corpus luteum and adrenalin hypodermically and extract of pituitary gland by the mouth were without appreciable effect.

Was the disease in this case functional, renal, or pituitary in origin? The partially alleviating effect of sodium bromide would suggest a functional basis. The beginning of the trouble seems to have been the result of suggestion and the end came after a single psychological interview with a clergyman. She herself attributes much to the hypodermic injections and her final cure is credited to the powers of the divine messenger who assured her of not having diabetes and that she would be well in eight months time.

For a renal origin we have some evidence for the probable fixation of the specific gravity at a low figure persisting even after the excessive polyuria has ended. These cases always do impress one as being the result of kidney inability to secrete a urine of higher concentration.

Hoppe (1) contended that a modification of the course of such a disease as diabetes insipidus by pituitrin proves its pituitary origin. This antidiuretic effect of pituitrin of course when it was first announced seemed to upset the original ideas attributing to the pituitary a diuretic effect. That we must abandon this idea is not certain by any means, for Abel and Pincoffs (2) found that our pituitary preparations are extracted mixtures of proteoses, possibly peptones with varying and unknown amounts of active and inactive substances. These same workers made extracts from gastric and intestinal tissues which exerted a pressor action on the circulation and an oxytocic one on the uterus, similar in every respect to pituitary extract effects. So that it may be a mistake to believe that the effect produced by pituitrin is a specific effect exerted by the internal secretion of this organ or its special parts. Rousey and Cannus have done work to show that the hypophysis is not responsible for diabetes insipidus, but that the region just back of this gland

in the gray matter of the third ventricle contains the centre for regulating the water content of the organism. Injury to this region without injury to the hypophysis in experimental dogs brought on polyuria and polydipsia. Motzfeldt (3) found that in normal individuals the urine output is cut down and its concentration increased by the use of pituitrin. Rees (4) obtained no effects on urinary output nor any marked influence on its specific gravity after the injection of pituitary extract in cats and rabbits. It did, however, delay diuresis obtained by drinking water for seven to eighteen hours. The delay in diuresis in this instance was probably due to a delay in absorption. These and other examples might be cited from the literature to illustrate the contradictions to be found concerning pituitary function and renal output.

Diabetes insipidus has always been an interesting and strange disease. It is more than likely that future textbooks will omit it as a disease entity and regard it as a polyuria or polydipsia of symptomatic origin.

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DIABETES IN ASSOCIATION WITH TOXIC GOITRE.

By J. CHRISTOPHER O'DAY, M. D.,
Honolulu, Hawaii.

That the function of the thyroid plays a part in the scheme of general metabolism is too well known to need any argument or demonstration. When we remember that diabetes is a perverted metabolism, it recalls how the drive of hyperthyroidism may so disturb the normal metabolic balance as to overthrow that portion of the balance which is classified under the term of carbohydrate tolerance.

On September, 1915, I reported two cases of diabetes in association with toxic goitre before the State Medical Society of Oregon. These patients were entirely cured by lobectomy (1). Within the following year two other patients with this syndrome had found their way to our clinic, and like the first two, had their carbohydrate tolerance restored following a subtotal thyroidectomy. For the two last cases we were indebted to Dr. Walter T. Williamson and Dr. Harry M. Hendershot, of Portland.

Our first patient, C. C., came to us primarily for the treatment of a toxic goitre with an extreme exophthalmos. He had been told by his family physician of the glycosuria, and his parents had been informed of the gravity of the whole situation. He showed an eight to ten per cent. sugar content urine, (polariscopic determination) voiding from 108 to 150 ounces in twenty-four hours. He was transferred to the clinic of Franklin C. McLean (2), who found that the blood also contained a very high sugar content.

Had it not been for our interest in the boiling water injection method of Professor Miles F. Porter the true cause of the diabetes in this case might have remained undiscovered. The merit of this method was well emphasized because a definite reduction of the sugar content kept pace with the piece meal cooking of the gland. This patient came to us August, 1914. In 1917 he entered the army. There has been some speculation concerning the most likely way diabetes could be related to hyperthyroidism. This particular case aroused my interest, and while a diligent search of the literature was made the gleanings proved most disappointing compared to what my own experience had made me feel they should be.

It was just a little bewildering to find able clinicians with discordant opinions as to whether a perverted thyroid was capable of dethroning the normal carbohydrate tolerance when we had had the evidence to prove that such was actually the case. Selling (3) declared that diabetes associated with hyperthyroidism is far more common than is usually supposed. After referring to my observations concerning diabetes and thyroid overactivity he says: "Now with regard to the typical cases of exophthalmic goitre, we find glycosuria to be of fairly common occurrence. Kocher reports it in two per cent., and Sattler in three per cent. of the cases. This of itself is too frequent to be a mere coincidence, and we know that some casual relationship must exist between hyperthyroidism and the glycosuria. Clinically the glycosuria may vary from the mildest to the most severe type; it may precede, be coincident with, or follow the development of the exophthalmic goitre symptoms.

Sattler's statistics were based on the experience of forty cases. In twenty-six of the forty the hyperthyroidism developed first. In six the diabetes developed first, and in the remaining eight the two conditions appeared simultaneously.

Sattler, so far as I was able to learn, did not state the ages of his patients, but from the tabulations of others, together with my own experience, we are led to believe the association of diabetes and hyperthyroidism is more inclined to occur during the years of adolescence and early adult life. Only one of our four patients was past the thirtieth year.

The degree of carbohydrate tolerance lost bears no definite relation to the severity of the overactivity of the thyroid. The great number of severe toxic goitres wherein no such disturbance takes place is proof enough of this, yet it is well to keep in mind the fact that symptoms such as tremor and tachycardia may become so intensified by a high sugar content of the blood as to lead one into the error of placing the whole responsibility upon the thyroid. Selling hints at this when he says: "And finally there may be all degrees of dependence of the diabetes upon the hyperthyroidism. There are undoubtedly many mild cases of glycosuria which cease with the cessation of the Basedow symptoms and there are some severe cases of diabetes, as O'Day pointed out, in which the cure of the hyperthyroidism resulted in the cure of the diabetes."

Crile (4) reported having restored the carbohy-

drate tolerance in a typical diabetic patient by: 1, Section of the right cervical sympathetic; 2, left suprarenalectomy, and 3, excision of the left cervical sympathetic with partial thyroidectomy. Discussing this case a year later, Doctor Crile told me the patient had had no return of his diabetes. It is our opinion that thyroidectomy alone would have accomplished the same results, although, in this particular case, Crile did not think so.

That there is an age of life when this combination of diseases is most likely to occur has not, so far as we could learn, been shown. From what we were able to gather it would seem that the carbohydrate tolerance is not completely restored after the thirtieth year, while below that age, and particularly within the years of adolescence, diabetes of hyperthyroidism is completely cured by the removal of the thyroid. In our own patient, aged forty, a tolerance compatible with ordinary living was restored, but sugar could be made to appear in the urine in small amount by the free indulgence of sweets while in younger subjects no amount of sugar intake would cause this to take place.

In his work Selling has exhibited a very keen interest in this feature of hyperthyroid glycosuria and no doubt had it in mind when he said, "Without going into a discussion of the various hypotheses which attempt to explain these phenomena, we wish merely to lay stress on the eminently practical fact, first, that where diabetes and Basedow's disease occur together, both may be cured by an operation for the relief of the hyperthyroidism; and, second, that far from the diabetes being a counter indication for the operation, it is actually an additional indication to operate. You will not cure the diabetes in every case; but you will cure it in some and help it in many. And that is offering a great deal when you consider the gloomy outlook given in the older statistics in these cases where hyperthyroidism and diabetes coexist."

Sainton reports a case of exophthalmic goitre associated with Addison's disease which showed temporary glycosuria. Eppinger, Falta, Rudinger, Hess, Krauss, Friedenthal and Crile have discussed the possibility of the participation of the adrenals in these glycosurias, but in so far as were able to judge, their belief, if belief they had, was based on the theory that a relation is supposed to exist in such a way between the thyroid, pancreas and chromaffin system that a hyperthyroidism would inhibit the action of the pancreas, until the disturbance of the function of the pancreas brought about a complete suppression of glycogenesis. The theory, however, fails utterly to meet the approval of my own understanding of a thyroid precipitated diabetes, for I am unable to see how the liver, pancreas or any other organ for that matter could be a factor in the cause.

Knowing that the last step of digestion and assimilation takes place within the various cells of the body's tissues, and also that metabolism is concerned with these cells with what is clearly understood of the influence of the thyroid on metabolism is it not within the scope of physiological reasoning to place the whole responsibility here? In other words, when selfcontrol of the cells has been lost

by an unusual thrust of thyroid activity, and chaos ensues, and the power of assimilation of the cell is reduced, that which was primarily intended for their appropriation must remain as an increasing content of the blood until the kidneys, acting as a safety valve, permit it to escape in the urine.

Gastaud (5) expresses a lack of faith in the theory, saying: "This theory is widely discussed. It has not been proved that an increase of adrenal secretion takes place in Basedow's disease; epinephrin is not constantly present in such cases; finally, the association of hyperthyroidism with Addison's disease is hardly in favor of this conception. Basedow cases do not show any constant change in the blood pressure. Asher has noticed that in certain subjects with thyrotoxicosis the injection of one quarter to one half mgm. of epinephrin leads to glycosuria. Further investigation is required, however, to confirm the validity of this test. Thus, on the whole, it is difficult to establish the responsibility of the adrenals in the production of diabetes among Basedow cases."

While I am convinced that the function of the individual ductless glands is in no way dependent upon others of the same chain, when I came to review all of the available opinions relative to hyperthyroid diabetes I found that an involvement of the pituitary was included by many careful observers, who evolved the theory from the fact that many cases of exophthalmic goitre in association with acromegaly and diabetes have been reported.

Discussing this point, Sainton says: "Clinically and experimentally, there is a considerable analogy between Basedowian diabetes and glycosuria, on the one hand, and pituitary diabetes and glycosuria on the other. From this it seems just to assume that in diabetes coupled with exophthalmic goitre two internally secreting glands may be tentatively held responsible, viz., the thyroid and the pituitary." After putting the question: "Can one conceive that these two influences are simultaneously operative in the production of Basedowian diabetes?" he continues, "Such a combination seems not unlikely, in view of the close functional synergism existing between the two organs named. As for the more precise mechanism of the glycolytic process taking place, the question arises whether the hypophysis and thyroid cause, through insufficiency of their functions, some disturbance in virtue of which the sugar is no longer retained in the liver. If they act through the pancreas, is this action exerted through the intermediation of the sympathetic system or through a hormone? These are further problems in general pathological physiology which the association of diabetes with exophthalmic goitre brings up for future solution."

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THE OBLIGATIONS OF MEDICINE IN RELATION TO GENERAL EDUCATION.*

BY WILLIAM C. BRAISTED, M. D.,
Washington, D. C.,

Surgeon General, U. S. Navy.

(Concluded from page 758)

ERAS OF MEDICAL TEACHING.

We have known in this country the era of strictly practical medical teaching. The physician jogged along from house to house, and the neophyte who accompanied him saw the patients and picked up what he could about them through the dissertations of the preceptor. It was followed by the era of cheap medical schools where men were shown at clinics the manifestations of disease: where they committed to memory prescriptions for fever or diarrhea or cough. These schools had short courses and the fees for diplomas were essential to their maintenance. We have, through the American Medical Association, rung the death knell of the medical diploma mill. But historical justice compels us to admit that there was much excuse, in our country's undeveloped period, for giving some kind of brevet to men willing to settle and supply what primitive rude aid they could in remote and sparsely settled sections that would never have attracted or adequately compensated those who had spent the time and money necessary for more complete training in the half a dozen high grade medical schools we possessed. Conditions are very different now, and there is a more equal distribution of wealth and education throughout the land: the standards and requirements of various geographical sections are more uniform.

Now let us not be led astray by the insistent demand that our improved schools shall turn out men able from the start to display a high degree of curative skill, for then we shall unconsciously develop a type of school that for our times and standards is little more than a glorified elaboration of the narrow, superficial institution of an earlier day. Let us each teach the science of medicine as far as we know it and superimpose on and combine with that, regardless of time and cost, the art of applying it. Let us not be afraid to weed out those candidates for admission to the schools who have neither the acquisitive nor constructive faculties which give promise of development. Let us be primarily concerned with what our graduates will do for American patients and American advance in medicine five and ten years after graduation.

I look forward to the time when we shall have in this country an even higher standard than now and uniform medical requirements with comprehensive courses of five and six years as in England, France and Italy. The small, ambitious and ill financed private medical schools of the past have made impossible for us the practice of giving medical degrees of different values representing different degrees of preparation such as prevails abroad because no school could expect to attract students if it

conferred a degree less pretentious than that of the others. That a need for something of this kind has been recognized by the profession in this country is shown by the rise of the American College of Surgeons and other American colleges, to be a fellow of which implies an advance in attainments beyond those of the ordinary graduate. This need is shown, too, by the existence today of the National Board of Medical Examiners, an incorporated but privately supported organization whose aim is to stamp the successful candidates coming before it as men of peculiarly liberal acquirements.

The gradual elevation of state requirements for license to practice and their constant approach to uniformity justify this board in looking forward to a time in the near future when we shall have a single standard for the whole country; when men who have by their actual work confirmed the justice of their title to practice in one locality shall not be under the painful necessity of undergoing examinations afresh if questions of health, family, finance, research, or specialization lead them to remove to another section; when we can as a nation have proper reciprocal medical relations with the great educational centres and the licensing bodies of Europe. It is in view of all this and because of the need of a good deal of reform in our actual conduct of examinations that the National Board of Medical Examiners was organized. It is in pursuance of our desire to secure from Europe proper recognition of American progress in medical education, to tighten the bonds which unite us with our foreign confreres and to enable us to profit by their greater experience, that this board invited to America as its guests the following distinguished gentlemen:

Sir Humphrey Rolleston, K. C. B., of the Royal College of Physicians; Col. H. J. Waring, Fellow of the Royal College of Surgeons; Dr. Norman Walker of Edinburgh, and Professors Grégoire and Roussy of the Faculty of Medicine of the University of Paris.

In practice and in our preparation for practice we swing pendulumlike from extreme to extreme, and it would almost seem as if real activity, earnestness and conviction are radical and exaggerated and that inevitably the effort to moderation and a rational conservatism involves inaction.

Galen in trying to stabilize medicine, to free it from wild speculation and the vagaries of individual schools and the excesses of individual teachers, bound it with iron bands and stopped all progress for thirteen hundred years. The Faculty of Paris, standing like a rock for a maximum of book learning, insisting that the physician must be a savant, holding to narrow conceptions of the dignity of the profession, despised the manual operations of surgery, exacted from aspirants for a license an oath to do no surgery and by cutting itself off from the opportunities for acquiring that knowledge of anatomy, physiology and pathology afforded by operative investigation made the practice of medicine in France as dead and as meaningless as the branch which it so effectively circumscribed for four centuries. But just here is

*President's address before the American Medical Association at the Seventy-first Annual Session, New Orleans, April, 1920.

a feature of the development of medicine that we are likely to overlook. It was not until the itinerant bone setters, the cutters for stone, the oculists, the herniotomists succeeded in being admitted to the schools that they exercised any vital effect on the profession. The schoolmen were narrow, as every one admits, but the practical men who had not been to school were butchers, and they had no real influence until surgery in the person of Felix cured Louis XIV of a fistula in ano which had never been benefited by salve or unguent. Maréchal, successor of Felix as court surgeon, influenced Louis XV to establish five chairs of surgical instruction and La Peyronie induced him to pass an ordinance making it obligatory for masters of surgery to qualify first as masters of art.

EVILS OF INSTRUCTION TOO PURELY ACADEMIC.

In recent years we have perceived with ever increasing intensity the evils of a too purely academic instruction, and in the inevitable reaction to practical methods we run the risk of going to an equally dangerous extreme the other way. It behoves us to find a way to teach so that the two lines shall have their proper proportion.

The Renaissance, which introduced a deeper and wider study of the classics, was at the same time the period of humanism, a term I like because it suggests in itself how with the revolt against dogma came a fuller recognition of the human side of life; of the rights, the claims, the needs of the individual and an increasingly general recognition of the fact that the study of mankind is man. The Renaissance marked also what may be called the resurrection of the human body from the grave of ignominy and contempt into which it had been cast by the early Christian and medieval church in its fight against the lusts of the flesh.

Through the stretch of the centuries men have sought in vain the anatomical seat of the soul. Samuel Johnson aptly remarked that "all power of fancy over reason is a degree of insanity." We waste no time today trying to locate the soul in pituitary body or pineal gland, and we insist that physical findings are the basis of diagnosis and treatment, but the physician's preliminary education must take into account the sentimental and imaginative side of life. What true and worthy practitioner fails to feel the appeal of the soul in the searching look, fastened on him as he enters the sickroom? The physician's principal function, as in the days of Hippocrates, is still to assist the healing power of nature. We know that with all our science much of our medicine is without efficacy so far as its direct ostensible purpose is concerned. The doctor's personality, his power to inspire hope and confidence, his understanding of human conduct, his analysis of character remain his chief asset at the bedside. All ages, whatever the attainments of science, have produced great healers, and the family physician of an earlier generation with his kindly sympathy, his unselfish devotion, his capacity for toil and vigils, must ever remain the ideal minister to the sick. It is the personality of the upright, big hearted man whom people trust to use what knowledge he possesses rather than abstract scientific qualifications that

counts in the long run. Can we expect men to qualify for the sacred function of receiving the confidences of sufferers in mind and body if we expunge poetry and philosophy and art from their preliminary education and wholly replace fairy tale and legend, Longfellow, Tennyson, Hawthorne and Shakespeare by so-called strictly scientific pre-medical work? We want a man broad in interests and understanding, not the recluse who finds more pleasure in dissecting a beetle than in viewing a sunset, who gets more soul satisfaction out of the hum of a machine just because it is a machine than in listening to a Patti singing the *Last Rose of Summer*. Dr. W. M. Beach of Pittsburgh well epitomized all this when he said at Atlantic City last year that "proficiency in the physician requires development in the direction of spiritual-ity; there is a curative force that is moral."

THE KIND OF MEN NEEDED.

We want the men who take up medicine in America to be big men; big in heart, big in brain, blessed with vigorous health. The possession of a store of facts is nothing as compared with evidence of native ability and sterling integrity of character. Before we permit a young man to matriculate in medicine we should have assurance that he is careful of his health and careful of his financial obligations; that he commands the respect of former classmates; that he has qualities that make for leadership: above all else that he understands and justly values and possesses that indefinable, exquisite, delicate something as intangible but as real as the bloom on the plum and the fragrance of a wild flower—the sense of honor. Our inquiry into the premedical career of a prospective physician will be of infinitely more value if it enlightens us on these points than if it merely establishes his ability to memorize a book and on admission we discover that the high marks and the multiplicity of diplomas were won by a physical and moral runt. When our schools generally, as one or two now do, come to view the premedical standing as one to be deeply investigated and carefully passed on, we shall have fewer graduates, perhaps, but a relatively larger number of real physicians in whose ranks there will be no fee-splitters, no men of shady reputation and questionable conduct to disgrace us and forfeit our title to the confidence of fathers and mothers.

It is time that the subject of examinations be very thoroughly gone over by professional educators and substitutes found for such methods of testing a candidate for promotion or honors as do not indicate reasonably lasting acquisition. The bulk of our examinations as at present conducted have but little to recommend them. Their only merit and the reason why the pedagogic world hesitates to discard them lie in the powerful stimulus they provide to the study of even the most difficult branches and the most obnoxious details. When, however, we stop to consider that the labor incited by examinations is usually not for the acquisition of knowledge but for the passing of the examination; when we admit that the modern examination determines, in the main, a very ephemeral form of attainment we may find that some-

thing better than the examination may not be so very difficult of accomplishment after all.

PRESENT METHODS OF EXAMINATION.

The present method is vicious for two reasons: first, it fails largely of its object because we do not get a correct idea of mental capacity and mental development, nor a proper appreciation of a student's grasp of the subject by examinations which he can undergo successfully by cramming. In the second place cramming is a devitalizing process and the very opposite of memory cultivation, because behind the effort to acquire is the deliberate conscious purpose of unloading the mind of the stores taken aboard as soon as a given contingency has passed. The willingness to forget and the deliberate effort to forget negative and weaken the retentive power.

Memory is still an essential, but written examinations often demonstrate only that facile and superficial memory which picks up and carries for a while under stress of need very much as a stream in freshet carries down rocks and earth, dropping the heaviest first and bearing the sand even to its own finish in the ocean.

For years, in our examinations at the Naval Medical School in Washington, we have allowed laboratory notes to be used by candidates in the chemistry and hygiene laboratories, considering that memory for the exact quantities in various solutions is not required, nay undesirable, where men are trying to do accurate work. What we demand are the principles involved, the meaning of the steps, the interpretation of the results. This is the method followed by the National Board of Medical Examiners. It is in the necropsy room, the laboratory and the hospital ward that we test the candidates in an endeavor to ascertain what they know by what they do, instead of judging entirely by what they say or write.

It is gratifying to observe that medical men are giving more and more thought to the subject of premedical education, and I consider this a most favorable augury for the future of American medicine. We may not yet be in absolute accord as to the means of obtaining the best type of medical student, but it is something to agree that we need in medicine the scientific investigator as well as the scientific practitioner, and that each is dependent on the other. We are agreed, too, that what we require in preparation for medicine is not scholarship but a process of training which shall develop a certain mental attitude as well as a certain degree of mental power. This unites us at once with the interests of the legal and other liberal professions, and a common platform as to our desires inevitably simplifies the problem of arranging a satisfactory high school course. If we wanted a strictly scientific course as a preparation for medical study we would be compelled to arrange for the paths of school and college education to diverge very early from those to be pursued by men looking to some other career, but I hope we realize today as never before that the true aim of preliminary education is not so much to fit men to study medicine or law or architecture as to help them achieve the fullest success in the pursuit of these callings.

BASIS FOR SCIENTIFIC STUDY.

We must concede the soundness of the contention of Bain of Aberdeen that: "In a right view of scientific education the first principles . . . of all the great sciences are the proper basis of the complete and exhaustive study of any single science."

Sir George Makins, President of the Royal College of Physicians, does not think that we should relegate the teaching of physics, chemistry and biology to the premedical period for fear that the medical student may not have a sufficiently thorough grasp of these subjects. On the other hand, Thomas Huxley held very emphatically to an opposite opinion. He said: "The great step toward a thorough medical education is to insist on the teaching of the elements of the physical sciences in all schools, so that medical students shall not go up to the medical colleges utterly ignorant of that with which they have to deal; to insist on the elements of chemistry and the elements of physics being taught in our ordinary and common schools so that there shall be some preparation for the discipline of the medical colleges."

I agree with both Makins and Huxley. My own view is that these subjects should be taught in the school and college course and in the medical school also. In the preliminary courses pupils should acquire a knowledge of the great fundamental principles involved and the methods employed in scientific work, because all this emphasizes the value of accurate observation and correct interpretation of facts and both of these mental processes are invaluable in every department of human activity. The future lawyer, doctor, business man needs this training. In the medical school chemistry, physiology and biology will be taught with reference to their bearing on medicine. But the premedical courses must be very different from those now pursued. The textbooks must be simpler and the courses be made general and then pupils must be compelled to master what they go over. There is far too much superficial teaching, too much smattering of knowledge at present. This leads to nothing and negatives the very object in view. Huxley appreciated this and usually preferred to teach the beginners himself, so as to be sure that they started with a proper comprehension of the fundamentals, and he left to colleagues and advanced students the subsequent conduct of the classes.

I should put biology and physiology or nature lessons among the earliest, since they go naturally with the health teaching and the hygiene by which all schooling should begin. Next would come physics, which will be attractive to the great majority of activeminded youngsters who are animated by a desire to do things, to make things, to understand electrical devices, automobiles, telephones, flying machines, and the like; but I would see to it that they did not waste their time in trifling manual accomplishments but were enabled to understand the principles involved—the development and transformation of energy, latent heat, expansion and contraction of gases, and gravitation. Chemistry would come later still. The col-

lege course would permit a resumption of the physics and chemistry, at least for medical students, while others would elect something more distinctly related to the careers they planned to embrace.

It will be impossible, I fear, to allow for more than two years of college for the intending student of medicine with five years of classroom and practical work still ahead of him. We want him to graduate while relatively young so that he may face the discouragements and trials of early practice and the long uphill climb to a financial competency while still possessed of the resiliency, the buoyancy, the freshness, the enthusiasm, the high courage, and the endurance of youth.

In enumerating these so-called scientific features of premedical education it is important to remember that a slightly greater familiarity with them prior to matriculating in medicine will not compensate for the dwarfing effect of a course restricted to them and unbalanced by studies of a complementary character, bearing always in mind that the object of premedical work is to develop, not to indoctrinate. Bain has well said that "the defect of the practical man is the limitation of his tests to his own sphere of working; he seldom learns to extend his method into other spheres." Now the sciences have a definite place in all education quite apart from the direct acquisition of useful facts. Observation, analysis of evidence, accuracy of statement and definition, the insistence on proof and demonstration are among the features that render scientific studies so useful in themselves, but are we not guilty of unpardonable onesidedness if we let only the physical part of the animal man occupy our pupil's attention in our enthusiasm for nature study?

It is many years since Mr. T. Davison wrote these significant words: "A man who has been trained to think upon one subject, or for one subject only, will never be a good judge in that one; whereas the enlargement of his circle gives him increased knowledge and power in a rapidly increasing ratio. So much do ideas act not as solitary units but by grouping and combination; and so clearly do all the things that fall within the proper province of the same faculty of the mind intertwine with and support each other. Judgment lives, as it were, by comparison and discrimination."

MISTAKES OF THE MIDDLE AGES.

Education, and as a part of it medical education in the Middle Ages, was distinctly scientific in character. The strong literary bias and the study of languages which became so marked in the seventeenth and eighteenth centuries did not develop until the Reformation and after. This is not commonly appreciated, but it is a fact. Mathematics, astronomy, chemistry—or, if you choose, astrology and alchemy—and even metaphysics, grammar and rhetoric, as they were taught, were not literary studies but distinctly along the lines of scientific training.

Now, then, when we consider that for four hundred years the premedical studies of Europe were grammar, rhetoric and dialectic, making the

trivium; and music, arithmetic, astronomy and geometry, making the quadrivium (called collectively the seven liberal arts, but really sciences not arts), and when we realize how absolutely sterile of results was the medical practice to which these premedical studies lead up, have we not some basis in history for questioning the extreme ground which some people take today in decrying the value of the humanities and insisting on purely technical preliminaries?

The Hon. A. J. Balfour, an Eton and Cambridge man, author of the Education Bill, one of the early champions of the higher education for women, an earnest advocate of technical training and of every form of practical instruction which might enable the British man of business to hold his own with foreign competitors, epitomized his thoughts on education in a speech delivered in 1899 at the Ley School. He admitted that a few years of Latin and Greek study do not suffice to accomplish the intended purpose of introducing the scholar to the beauties of ancient literature in the original, but he did insist on the importance of some form of literary education, nay regarded this as indispensable.

THE PLACE OF LATIN AND GREEK.

There is no question that we must give up Greek, and I believe that Homer, Sophocles and other ancient authors will give more pleasure through the good translation of ripe scholars than from the perspiring schoolboy's own efforts, but I consider that Latin, if ably taught, has a place in our schools. I do not offer in support of this study that it helps in acquiring scientific nomenclature, for that is as roundabout and difficult a way of doing the thing as Charles Lamb's roasting of a pig by burning down the place of his abode. I believe in three or four years of Latin because, along with other and indirect benefits, it is the easiest and surest way of teaching boys and girls to write and speak English correctly. I cannot take the time to marshal the arguments for this contention. Suffice it to say that the elasticity and simplicity of our construction, the practical lack of declension and conjugation inherent in our language, as well as many features of American life and thought, combine to make for careless and inaccurate writing and speaking. Latin is not an elastic, plastic vehicle of thought like Greek, English or French but an inflexible one cast in an iron mold. Properly taught to young people of reasonable intelligence the translation of Latin into English prose can be made as fascinating as a picture puzzle, once those forms have been mastered which are essential features of the organic structure of a sentence and give the clue to its meaning. The study of Latin is thus a powerful though indirect method, and, because indirect, the easiest way of teaching English grammar. It should be begun early when the necessary memorizing will be least laborious and continued beyond the time when the pupil would be put at English grammar, a study of great difficulty and universally obnoxious. Grammar can be taught, as it were, objectively and solely through Latin, which illustrates the rules of construction in a way that our own language does not.

NEED FOR MORE ATTENTION TO ENGLISH.

And if I am right in this idea I think the place of Latin is secure in the schools because the one thing that we must insist on is that our boys and girls, whatever their purpose and destiny in life, shall speak and write English correctly. Nowhere in the world is there such need for the teaching of the national language, because nowhere is the school population made up of such a variety of elements, and in the case of many their mother tongue is not English. With no pretension to a mastery of style and no great sympathy with the exaggerated purist, I am nevertheless frequently surprised by the laxness, the inaccuracy, the atrocious barbarisms of the language of daily conversation and even of the public press, the magazines and the books printed in this country. Long observation as examiner on Navy Boards has brought me to a realization of the sad fact that the young men of America can go through the high school and even obtain a baccalaureate degree, and yet be incapable of writing plain and simple English correctly. In this respect I submit that we are behind our parents and grandparents. What would have been an occasion for mortification and reproof fifty years ago is today a jest, and our young people are permitted a slovenliness of expression which surely reflects a decay of standards in more ways than one, encourages mental laziness and must have a depreciating effect on cerebration itself.

It is to deem knowledge of little value and to take a narrow, selfish and limited view of intellectual pursuits of any kind to deliberately despise and neglect language, the instrument by which we contribute to others and make them sharers of our work and its results. The crying need of pre-medical scholastic training in America, and of all school and college training at the present time, is for reform in the teaching of English. By this is not meant that boys and girls must write in learned or stilted or flowery style. Nothing of the kind. But accuracy and clarity of expression are valuable for all and essential for the professional man.

With all due respect to our capable, earnest and largely underpaid teachers, I must confess to a feeling that our public school courses are suffering from too large a variety of subjects to permit thoroughness. This is serious, because it is not so much what is taught that counts, as the permanence of the knowledge and the effect on the acquisitive mechanism produced by the way study is conducted. A superficial acquaintance, a smattering, a glossing over of a thing is pernicious in the extreme. Better no schooling than such a process. For some of this mistaken policy and for the idea that school must be a place of entertainment and amusement rather than of hard, grinding work, I hold the parents responsible. Too many of them, while contributing little enough toward education in the home, resent the pressure of the teacher, and yet desire their children to leave the high school with a large variety of showy accomplishments.

What is put before the student of any age must demand effort; must consider what he may be able

to attain by expansion and not what he starts with. For true progress education must be calculated, not from the standard of averages either of ideals or capacity, but with a conception of a maximum achievement and ability. It must give opportunity to all according to their talents, but provide always for the development of future leaders and thus insure a gradual heightening of standards and conceptions.

As we contemplate the anomalous developments of the past year, are we not bound to pause and consider whether we have not long been radically wrong in our whole system of education? The constant clamor of recent years to make education practical, to make the school courses adequate training for the real business of life, may have arisen from a mistaken conception of what the real business of life is. Have we been a little hasty in assuming that poetry and philosophy, and much of what the thoughtlessness of American youth regards as old fashioned and useless, are not beneficial enough to justify the time they take from the supposed practical studies? Have we unconsciously been encouraging courses of study that breed only money makers and worshippers of mammon? When our sons have been prepared for business and have made their money, and when our daughters have married men of wealth, the one thing needful, will it not be too late for them to acquire a taste for the highest and best things which money can procure; can we expect that a love of beauty in nature and art will spring into being, that our children will have proper standards of beauty if the seeds for such tastes and such love were not sown in youth?

The true object of government, whether it be that of state or of a university, is to broaden the vision of countless individuals as to the meaning of life, and to increase their capacity to add to the sum of human happiness, not only by some positive accomplishment, but by the development of those keen sympathies which recognize all that is good in others while supplementing their weaknesses and retrieving their failures.

Finally we have to recognize that in every field of endeavor the best men are largely selftaught. In the progress toward the predestined goal disclosed by the lifting mirage of the future each chooses his own path and has his own peculiar problems to solve. As he advances further and further into the kingdom of truth, he discards authority and flings off the fetters of tradition. It is only the mediocre man satisfied with a stereotyped career that can be fully equipped by any system of schooling for all the eventualities of his small and narrow life. What the school and college can do for all is to develop the capacity for true feeling and sound thinking. The medical profession must agitate in season and out of season for a high standard of physical capacity as a basis for intellectual achievement and for normal conduct. It must show its full appreciation of proper values by using every means to divert from its ranks those who have failed to demonstrate the possession of principle as well as of mental proficiency.

Editorial Notes and Comments

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DIABETES AND EXOPHTHALMIC GOITRE.

The combination of diabetes and Basedow's disease is probably infrequent, but when the two morbid processes are present in a patient the circumstance should not be regarded as fortuitous. In fact, in these cases an alternation of the attacks of Basedowism and paroxysms of the diabetes is observed, which gives a distinct impression of a true morbid association. In this association one may meet with all the types of severe diabetes, with more or less marked acidosis and also slight disturbances which can only be revealed by testing the patient by the production of alimentary glycosuria.

But the diabetes in exophthalmic goitre possesses an aspect peculiar to it. It would seem that the glycosuria is more persistent and resistant to treatment and more independent of diet than in ordinary diabetes. On the other hand, the relationship between the two types of paroxysms is varied, and one occasionally observes the outbursts of progress in the evolutions of the diabetes coinciding with those of the goitre, and the diabetes increases when the goitre begins to give rise to the symptoms of Basedowism or itself becomes more marked. It has been noted that the diabetes and exophthalmic goitre arise at times in the same family. The diabetes in Basedow's disease becomes complicated with acidosis with the greatest ease, and the drugs which act on the goitre—sodium salicylate, quinine, iodine—likewise act on the glycosuria. Dr.

Marcel Labbé is of the opinion that the diabetes of exophthalmic goitre is the result of a functional disturbance of the thyroid gland. In his opinion it is a thyroid diabetes. It has been pointed out by some observers that intensive thyroid opotherapy in obese or myxedematous subjects sometimes results in the appearance of a Basedow syndrome with glycosuria.

Garnier has communicated the results of some experiments along these lines to the *Société de Biologie* of Paris, in which he noted that following the exhibition of adrenalin and thyroid extract to animals, a more intense glycosuria developed than when adrenalin had been given alone. Linossier has corroborated Labbé's opinion and points out that in Basedow patients submitted to an intensive ingestion of glucose, an alimentary glycosuria is frequently observed. He is of the opinion that in utilizing sugar many organs come into play—the liver, pancreas, suprarenals, thyroid and hypophysis—and that it is this very complexity which makes the study of the pathogenesis of diabetes so difficult.

ACIDOSIS.

We have fashions in medicine as well as in millinery. Just now acidosis is the fashionable complaint of the day, and we read much about it which is frequently misleading. The term acidosis is an unfortunate one, since it does not correctly indicate the condition to which it has been applied. As a matter of fact, the term alkali starvation, which was used by Emerson, or *hypalkaliätät*, used by Naunyn in 1906, more clearly expresses the condition than does the term acidosis. What is meant is an impoverishment of the blood and of the other tissues in the fixed bases or in substances which readily give rise to fixed bases. The term absolute acidosis, which has been applied to the condition which appears in diabetes, relative acidosis, as in Asiatic cholera, and compensated acidosis are all even more inaccurate and more misleading than is the general term acidosis itself, for, as pointed out by Sellard in his admirable monograph, all normal persons present a state of compensated acidosis. Normal metabolism produces an excess of acid radicals which must be neutralized or excreted. In extreme acidosis this neutralization or compensation goes on so long as the tissues can supply the necessary amount of alkali. This fact is indicated by the continued alkalinity of the blood even in the extreme types of the disease.

We have also a local acidosis produced in a bacterial focus or by some localized disease. Since the term acidosis has become so firmly established even in spite of its inaccuracy it would be well to confine it to a definite syndrome involving systemic changes throughout the body as a whole.

The question of how the presence of this condition can be determined seems to have been satisfactorily settled by the experiments made by Sellard with Asiatic cholera in Manila; that is, by the quantity of sodium bicarbonate which can be administered to the patient without rendering the urine alkaline.

In chronic nephritis there is a gradual depletion of bicarbonate in the system which gives rise to well defined groups of clinical syndromes. The deficit of sodium bicarbonate may amount to as much as forty or fifty grams daily, that is, forty or fifty grams of sodium bicarbonate may be required to render the urine alkaline, before any positive clinical signs of acidosis will develop in a patient who is not taking active exercise. With a deficit of seventy-five to one hundred grams, distinct dyspnea is observed after moderate exercise, and where the deficit rises to one hundred and ten grams mental confusion begins. Where the system will tolerate one hundred and fifty to two hundred grams of sodium bicarbonate uremia occurs, with definite air hunger and coma. A deficit of more than two hundred grams is usually followed by death.

The treatment should not only be directed to the symptoms but to the cause. Whatever the origin of the disease the symptoms are certainly relieved by alkali treatment. In view of the satisfactory results obtained by the administration of sodium bicarbonate and of the ordinarily uncertain results obtained by the examination of the dioxide contents of the blood and alveolar air and of studies of the hydrogen ion and the titratable alkalinity of the blood, it would seem that the more complicated laboratory methods might be dispensed with. The application of the bicarbonate test should be carried out by the administration of five grams of sodium bicarbonate by mouth in a moderate amount of water at intervals of two or three hours. The urine should be voided before each administration and unless the urine is distinctly acid it should be boiled thoroughly in order to convert the bicarbonate into carbonate so that it will react readily to litmus.

In pronounced acidosis intravenous injections of bicarbonate may be given, the ordinary dose for each intravenous injection being half a litre of a four or five per cent. solution. This dose

should be repeated every four to six hours until an alkaline reaction is observed, and reduced as the point of alkali reaction approaches. The massive injection should be given very slowly, half a metre requiring three quarters of an hour to an hour for injection by gravity. Great care must be taken to avoid the change of the bicarbonate into carbonate in the course of sterilization, as this change occurs rapidly. Trouble from this cause may be obviated by boiling the sodium bicarbonate solution, cooling it, and then passing a stream of carbon dioxide through the solution.

A typical and often fatal form of acidosis develops into some of the so-called food intoxications of children. It also occurs in several types of kidney disease. It develops only in the later stages of the chronic interstitial and arteriosclerotic types and is pronounced in the stage of uremia. In fact, as pointed out by Sellard, it usually precedes the development of uremia in chronic diffuse nephritis and in acute disease of the kidney. It may, therefore, be looked for in any case of infectious disease in which a severe inflammation of the kidneys develops. The clinical signs of acidosis, namely, difficulty in respiration, the change in color of the mucous membranes, and mental confusion, also occur in the advanced stages of diseases of the liver, more especially in atrophic cirrhosis. Mild forms of acidosis also occur in acute rheumatic fever, in advanced cachexias, and in severe anemias, occurring in about twenty per cent. of the cases. The acidosis here is not pronounced, there being a tolerance of only twenty to thirty grains of bicarbonate.

The injection of massive doses of sodium bicarbonate in anuria decreases the tension of the pulse, lowers the blood pressure, and the induced flow of the urine often causes polyuria. Injections from 160 to 1,440 grains have been given by Rogers and Shorten in the treatment of Asiatic cholera, reducing the death rate from uremia from eleven per cent. to two and seven tenths per cent. The coma is diminished, the air hunger is partially relieved, the mental condition generally clears, and even in fatal uremia alkali therapy is of value, as it relieves the air hunger and is more effective than morphine in controlling restlessness.

While complete data are lacking it seems possible that early attention to acidosis may have a favorable influence upon chronic nephritis. It seems reasonable to expect good results from giving sufficient alkali by mouth to bring the urine down to a neutral or alkaline reaction, though it would probably be inadvisable to keep the urine constantly alkaline. In frankly par-

enchymatous kidney disease the urine usually becomes alkaline after a small dose of alkali. Therefore, one is safe in adopting the suggestion of Fischer that the administration of bicarbonate be continued only until the urine becomes persistently neutral to litmus. Care must be taken to exclude the frankly parenchymatous types of disease from this alkali treatment, since patients suffering from this complaint react rather violently to small doses of ten grams of bicarbonate. This danger can be avoided, however, by administering five grams by mouth, repeating the dose every two or three hours until the urine becomes alkaline. Unfortunately the relief afforded in advanced stages is frequently only temporary, and it has been suggested that in cases of long standing calcium salts should be administered as well as sodium salts.

DIABETES AMONG THE HINDUS.

It has long been known to observers in India that diabetes, while rare among Mohammedans, is common among Hindus, particularly of the better class, and that the cases run a longer course than in temperate climes. The *Indian Medical Journal* (March, 1920) makes editorial mention of the conclusions of McCay and his collaborators, who have found that the carbohydrate diet of the vegetarian Hindu is far too one sided, being excessive in quantity and lamentably deficient in quality. It makes too great a demand on the stomach and intestines, with the result that the gastrointestinal tract becomes organically affected. The gastric juice becomes deficient in hydrochloric acid, and when the undigested material reaches the bowel it undergoes rapid decomposition that gives rise to oxaluria, phosphaturia and glycosuria. There is present a chronic inflammatory condition extending from the duodenum to the pancreatic duct, and later change in the pancreas itself takes place.

A preglycosuric stage of the disease may be distinguished among well fed, lazy Hindus who have passed the energetic period of youth. The diabetes of Hindus is found to resemble that of dogs in whom seven eighths of the pancreas has been extirpated. It tends only slightly to become so grave that glycosuria persists when carbohydrates are withheld.

They conclude that for purposes of prognosis and treatment it is not enough to estimate the urea content of the blood. One tenth per cent. urea concentration may give rise to uremia, but the concentration must be ten times this amount for a fatal issue to be brought about through urea alone. Of far greater importance than albumin in the urine

is the residual nitrogen in the blood. An estimation of the concentration of the residual nitrogen is not sufficient, since various constituents of the urine may be held up in the tissues when fluids are retained, as in anasarca; they rely upon the ratio of the nonprotein nitrogen to the total nitrogen of the blood as a valuable indication of the condition of the kidneys. They insist that the simple benign albuminuria which often accompanies glycosuria is not a negligible phenomenon. "In India the presence of albumin is of far greater prognostic significance than the presence or the percentage of sugar."

THE AUTONOMIC BASIS OF PERSONALITY.

More and more forcibly is the physician of today becoming convinced that he cannot and may not view any one medical problem as a thing in itself. While on the one hand it may seem that each specialty grows more distinct and important, on the other hand there is the broader fact which throws each specialty into higher relief. Each division of medicine or of the patient's condition and health is only a part of a complex but closely interrelated functional whole. Attention has been called before to Edward J. Kempf's conception of disease in a comprehension of its psychic and physiological aspects considered together and of his scheme for a classification which shall be practical and flexible rather than merely intellectual. He has spoken again with a more convincing directness and simplicity in *The Tonus of Autonomic Segments as Causes of Abnormal Behavior* (*Journal of Nervous and Mental Disease*, January, 1920.)

The text for his discourse might be found in a statement he has modestly slipped into a parenthesis somewhere among his pages. "It is most misleading to assume that 'the brain is the organ of the mind.'" But in order to mitigate the shock of this statement to orthodox minds he hastens to add: "The cerebrum is the chief ganglion developed upon the distance receptors and the cerebellum is the chief ganglion of the proprioceptive apparatus." (Sherrington, Hughlings Jackson). This word of explanation leads into the far wider scope of his working conception in which all the segments of the body assume the importance of organs of the mind. He eliminates any such loose general term, believing that it conceals rather than explains. His statement is much more explicit and is capable of being referred quite plainly and simply to the particular stress, effort, satisfaction, or discomfort of any autonomic segment at any given time. This has the advantage of a useful interpretation of any

such condition effectively applicable to maintaining and encouraging a state of well being and interpreting as well as altering one of disadvantage and menace.

The misleading distinctions between mental and physical are left out and every division of the personality is seen to play its part, as he defines in this way the processes and activities of a living personality. The gradual evolutionary elaboration of an originally simple organism into that of man has developed a complete autonomic apparatus with its various organs and ganglionic nervous systems to regulate the assimilation, conservation, transformation, distribution, and use of the energetic products which the organism requires and the elimination of its waste. Next there is the proficient apparatus with its exteroceptors turned toward the environment, its intermuscular proprioceptors, the skeletal and striped muscles themselves and their cerebrospinal nervous systems. This proficient apparatus must itself be read in its functional activity as the interpretation of the autonomic needs and cravings of the personality, since its function is to acquire the gratification for these and it has been developed by the older autonomic apparatus to this purpose.

Kempf's conception of disease, including those forms usually called mental, is that of maladaptation of the personality to the environment or the overcoming of the correlation and integrity of the ego by the cravings of some one particular segment. Therefore, clinical understanding must be grasped through investigation into these fundamental autonomic needs and cravings and the mechanism by which they exercise their power, or on the other hand excite a defensive suppression or repression from the field of conscious activity. Just as the once mysterious germ had to be laid bare as an agency in disease which could no longer be neglected, so he believes that modern science can no longer neglect such hidden factors in the health of the individual.

The postural tensions of these autonomic segments, pertaining respectively to the digestive, circulatory, urinary, respiratory systems, to the sexual apparatus, to the glands of external and internal secretion, and to the autonomic ganglia of the nervous system act upon the proprioceptors found in their tissues and upon the exteroceptors in the mucous membranes and thus give rise to those afferent streams of feeling which as cravings and wishes are the determinants of thought and behavior. In such a fundamental groundwork for the affective life it becomes possible to discover meaning to the various forms of behavior, in its successful types of activity, the interferences and hindrances

that become manifest in impairments of conduct of bodily health or of personal well being. It is also possible to undertake a conditioning of the child's life toward a more successful personal life and to recondition the mature life where inharmonious functioning already exists.

For the varied activity of this diversified autonomic apparatus depends for its health and completeness upon its proper adjustment of the allied and antagonistic cravings. Both physiological and psychic behavior, whether considered in respect to physiological disturbance or in regard to the wider functioning or disturbance of functioning of the entire personality, is reduced thus to exceedingly simple terms. The usefulness of these in the study and treatment of mental disturbances is amply illustrated in a number of typical cases.

CONGRESS AND THE DISABLED VETERAN.

Mr. John Jacob Rogers, a representative from Massachusetts in the national Congress, introduced on April 1, 1920, a bill to transfer to the bureau of war risk insurance of the Treasury Department, the care of the discharged sick and disabled soldiers, sailors and marines, provided by the U. S. Public Health Service, and to transfer the vocational rehabilitation of disabled persons discharged from the military or naval forces of the United States from the federal board for vocational education to the bureau of war risk insurance of the Treasury Department. This measure is the direct antithesis of the movement which is being fathered by Senator Smoot of Utah, whereby the various functions of the bureau of war risk insurance would be disseminated throughout the various departments of the government.

Both measures are wrong in principle. It is the consensus of opinion among those who have given thought to the rehabilitation of the sick and disabled ex-service man or woman, that there should be a greater cohesion between the bureau, the public health service and the federal board, since these three governmental agencies serve the same clientele. The bureau and the public health service now have the same cabinet officer. The federal board operates directly under the President. Undoubtedly the collection of these three agencies under one cabinet officer would be productive of great good. At the present time the federal board is paying the compensation of war veterans who are training, the bureau paying the compensation at other times. This results in confusion and administrative difficulties. It would appear wise for Congress to consider placing this function in the hands of one bureau.

The Public Health Service is furnishing medical and surgical services and supplies to the claimants of both bureaus, thus making it necessary for the wards of the government to establish the single contact for anything medical which they may require. This seems to be a sound business arrange-

ment. Would it not be wise for Congress to vest all matters having to do with insurance and compensation in the bureau of war risk insurance; all things having to do with the reeducation of the disabled veteran in the hands of the federal board for vocational education; and all things having to do with medical relief for war cripples in the hands of the Public Health Service? By this arrangement and the placing of the three agencies under a single cabinet officer, not only will an economical administration be obtained, but an increased and more specialized service to the beneficiary as well. The bureau is no more capable of undertaking the medical work in its largest phase than is the vocational board able to handle compensation insurance in the broadest way.

News Items.

Doctor Ferguson on Education Board.—Dr. John A. Ferguson, of Brooklyn, has been appointed a member of the Board of Education of New York City.

Medical Society of New Jersey.—The one hundred fifty-fourth annual meeting of the Medical Society of New Jersey will be held June 15th to 17th at Spring Lake.

Post-Graduate Fund.—On May 1st the \$2,000,-000 endowment fund which is being sought by the New York Post-Graduate Hospital had reached the amount of \$1,203,200.

Italian Doctors Strike.—A press report from Italy states that 350 doctors, 350 midwives, and numerous workers in other lines are on strike in Milan and throughout that province.

Successor to Sir William Osler.—The appointment is announced of Sir Archibald E. Garrod, K.C.M.G., M.D., F.R.S., to the Regius chair of medicine at Oxford, to succeed the late Sir William Osler. Sir Archibald Garrod is one of the examiners in medicine in the University of Glasgow.

Typhus in Serbia.—Typhus is again spreading rapidly in Serbia, having been brought by the flying remnants of Denikin's beaten army. Group after group of refugees have reached Serbia within the past two months, spreading contagion through scores of towns.

Alienists to Study Dead Criminal's Brain.—The body of James J. Harrigan, "gentleman crook" of practically every known branch of crime, will be turned over in about thirty days to the Chicago Demonstrators' Association for dissection. This is the first criminal brain to come to the hands of the association, and the dissection is expected to reveal facts of value to criminal science.

Government May Buy Baltimore Quarantine Station.—Purchase of the quarantine station in Baltimore is contemplated by the federal government, and an appropriation of \$176,775 for that purpose has been reported to the House of Representatives. Hearing was also given to the proposal to appropriate \$572,000 for improvements to the Marine Hospital in that city.

Clinics for Baltimore Tuberculous.—Clinics for tuberculous patients will be held twice weekly in Baltimore by the city health department. Dr. John E. O'Neill and Dr. B. T. Baggott will be in charge.

American Gift to French University.—Mr. Douglas Flattery, a *philanthrope américain*, has made a gift of 100,000 francs to the Institut bactériologique de Lyon, France, the interest of which fund is to permit annually one student of the University of Lyon to devote his time to laboratory work on the infectious diseases.

Influenza in Messina.—Five thousand deaths from a virulent form of influenza have recently been reported in and around Messina, which has suffered for hundreds of years from pestilence, earthquake, and famine. In addition to the deaths, hundreds have been seriously afflicted. There is a great scarcity of physicians in the poverty stricken city.

Spanish Doctors May Strike.—At a meeting held for the purpose of forming a union, physicians and surgeons of Madrid adopted a resolution expressing determination to refuse to serve in hospitals unless persons of good position were forbidden to take advantage of free consultations, as is now frequent. They declared their readiness to treat the poor free at hospital and dispensary consultations.

Fat Women's Class in Chicago Health Department.—Dr. John Dill Robertson, Chicago's health commissioner, has started a reducing class for fat women. The average weight of the twenty-four entries was 201.66 pounds when they started. On April 29th an interested reporter stated that in the first week the average weight dropped to 197.76. The class has since jumped from twenty-four to nearly two hundred.

Women Admitted to Edinburgh College of Surgeons.—The Royal College of Surgeons of Edinburgh recently resolved to admit women to the Fellowship, after examination, on the same conditions and with the same privileges as men. The Fellowship of the Royal Faculty of Physicians and Surgeons, Glasgow, was opened to women several years ago, but so far only one has sought examination and has been duly admitted.

Death of Doctor Chalmers.—Word has been received of the death of Dr. Albert J. Chalmers, joint author with Dr. Aldo Castellani of that valuable work *A Manual of Tropical Medicine*. Doctor Chalmers was director of the Wellcome Research Laboratories under the Soudan Government. The attack which resulted in his death early in April was shown postmortem to have been infective jaundice. He was fifty years of age.

Doctor Copeland to Make Tour.—Health Commissioner Royal S. Copeland, of New York, has planned to sail May 8th to represent this city at the Congress of the Royal Institute of Public Health, which opens in Brussels on May 19th. The Board of Health has designated Commissioner Copeland to make a tour of European ports to study public health conditions, for the purpose of protecting New York against epidemics. He expects to be abroad about two months.

Award of Straits Settlement Medal.—The Straits Settlement gold medal, which is given periodically by the University of Glasgow to a graduate in medicine of the Scottish universities for a thesis on a subject of tropical medicine, has been awarded to Professor R. T. Leiper, reader in helminthology in the University of London.

Johns Hopkins Hospital Report.—The annual report of the Johns Hopkins Hospital, which has just been made public, shows that the cost of operation for the last fiscal year increased more than \$100,000 over the preceding year. The gross cost was \$861,341.27, as compared with \$743,232.06 in 1918. The deficit faced this year is estimated to be \$30,000. The report states that the greatest need of Johns Hopkins Hospital at the present moment is at least \$1,000,000 additional endowment, for general hospital purposes.

Commission of School Hygiene of France.—The ministry of public instruction of France has appointed a commission of school hygiene and physical education, which will study means of bettering sanitary conditions in the public schools, of combating diseases among teachers and pupils—particularly tuberculosis—of assuring methodical physical development, and of encouraging physical exercises and games in the open air. Dr. Léon Bernard and Dr. Langlois, professors of the Faculty of Medicine of Paris, and Dr. Philipps, professor at the Arago School, have been appointed to the commission.

Cancer Week for New York.—The last week in May has been designated cancer week in New York City by the American Medical Society for the Control of Cancer. Arrangements for cooperation have been made with the New York Academy of Medicine, the New York County Medical Society, and the Kings County Medical Society. In addition to professional meetings, most of which will be open to the public, a large number of lay meetings will be addressed by medical men equipped to present the subject in popular terms. Dr. Frederick T. van Beuren, Jr., a director of the society, is getting together a group of approximately twenty-five physicians for this purpose. As a result of this beginning it is hoped that there may be organized a strong New York City Cancer Control Committee of the society.

Meetings of Local Medical Societies.—The following local medical societies will meet during the coming week:

MONDAY, May 10th.—Society of Medical Jurisprudence, New York Ophthalmological Society, Yorkville Medical Society, Williamsburg Medical Society.

TUESDAY, May 11th.—New York Academy of Medicine (Section in Neurology and Psychiatry), Manhattan Dermatological Society, New York Obstetrical Society, Clinical Society of the Hospital and Dispensary for Deformities and Joint Diseases.

WEDNESDAY, May 12th.—Medical Society of the Borough of the Bronx, New York Pathological Society, New York Surgical Society, Alumni Association of Norwegian Hospital, Brooklyn Medical Association.

THURSDAY, May 13th.—New York Academy of Medicine (Section in Pediatrics), West End Clinical Society, Brooklyn Pathological Society (annual).

FRIDAY, May 14th.—New York Academy of Medicine (Section in Otolary), Eastern Medical Society, Flatbush Medical Society (annual).

International Eugenics Council.—Plans are being considered for the holding of an international congress of eugenics in New York City in September, 1921, by a committee appointed by the National Research Council.

Strange Disease Among Sahara Children.—A reported rendered to the American Red Cross states that thousands of Arabian children in the oasis towns of the Sahara desert are victims of a strange plague of blindness which so far has baffled medical skill. Eight out of every ten children are declared to have been stricken. Doctor Toulant, of the Pasteur Institute of Ophthalmology, is conducting experiments in an effort to isolate the germ.

Epidemic of Granular Trachoma in Algiers.—The White Nuns of the Sahara are treating the eyes of hundreds of children who have been blinded by the plague that is sweeping the oasis towns of the Sahara desert. With Biskra, the *Garden of Allah* oasis, as their headquarters, they travel on camels from oasis to oasis. The services of the French military doctors are required to prevent the spread of the disease among the French colonial army, and they are unable to care for the natives. Doctor Toulant, of the Pasteur Institute of Ophthalmology, who has been conducting experiments on a herd of monkeys in an effort to isolate the bacillus, has informed the American Red Cross that eight of every ten children in the Sahara are affected. The Pasteur researches have unfortunately been brought to a standstill by the scarcity of monkeys for experimental purposes. The natives of Kabylie who hitherto furnished the institutes with monkeys declare that the little animals are rapidly disappearing from the Chiffa gorge and other parts of Kabylie.

Changes in Insanity Laws Asked.—Changes in the laws governing the care of the insane and the trial of insane criminals are urged by the April additional grand jury as a result of the killing of Doctor Markoe. The grand jury recommends that the New York Legislature amend the law to provide that "an escaped lunatic who has been lawfully committed by the laws of a sister state to an institution for the insane, be judged presumptively insane, if apprehended in this state, until the escaped lunatic can show by competent and legal testimony that he is sane according to the laws of New York." It is urged that institutions show greater care in guarding their inmates and that none be discharged as cured until after an adequate examination. It is also suggested that a drastic and uniform law in all the states regulating the sale of firearms would be "a step forward in the prevention of similar acts of murder." The presentment criticizes the present procedure whereby an insane criminal is found "not guilty, but insane," and it is recommended that the verdict in such cases be "guilty, but insane." Another recommendation is that the insanity laws be amended so that neurologists, certified to the court by competent medical authorities, be "the only ones which can be commissioners in lunacy." The grand jury asks the District Attorney to discuss its recommendations with the New York County Medical Society, with a view toward laying them before the Legislature and the Governor.

Book Reviews

TEXTBOOK OF PHYSIOLOGY.

A Textbook of Human Physiology. Including a Section on Physiological Apparatus. By ALBERT P. BRUBAKER, A.M., M.D., LL.D., Professor of Physiology and Medical Jurisprudence in the Jefferson Medical College; Formerly Professor of Physiology in the Pennsylvania College of Dental Surgery, etc. Sixth Edition, Revised and Enlarged. With 356 Illustrations. Philadelphia: P. Blakiston's Son & Co., 1919. Pp. xii-794.

Merely because a book has reached a sixth edition and has been a standard textbook for a number of years is not enough to make it commendable to the medical profession. If it were not for the recognition given to the changes which have taken place and the cognizance given to the important developments in the fields of endocrinology and the autonomic nervous system, the old standard textbooks could well be relegated to the rubbish heap. It is the linking together of these important discoveries with the fundamental knowledge of the past that makes the new edition of a textbook valuable. The changes which have taken place in physiology are important and it has been more important to find a textbook in which these changes have been recognized and incorporated. The chapters dealing with electrical currents of the heart, animal heat, internal secretion, and the autonomic nervous system have been revised and revisions have also been made regarding the mechanism of carbohydrate metabolism, physiological actions of the spinal cord and nerves, and a new theory has been presented in relation to the physiological actions of cranial nerves.

The book has a significant pragmatic value and findings useful to the practitioner have been set forth in a most logical and painstaking fashion.

TROPICAL MEDICINE.

Manual of Tropical Medicine. By ALDO CASTELLANI, C.M.G., M.D., M.R.C.P., Lecturer at the London School of Tropical Medicine, and ALBERT J. CHALMERS, M.D., F.R.C.S., D.P.H., Director, Wellcome Tropical Research Laboratories. Third Edition. Illustrated. New York: William Wood & Co. Pp. iii-2436.

In the third edition of their work Castellani and Chalmers have presented a veritable encyclopedia on tropical diseases. We know of no workers who are more capable of handling this subject from a practical point of view. The book is arranged in such a manner that it can be used as a reference book for diagnosis as well as a guide for treatment. The products and findings of these men represent their life work. The use of the book should not be limited to the tropics for frequently in a large metropolitan practice an obscure malady is encountered, the origin of which is puzzling, and on careful examination it will be found to be a tropical disease. At times these diseases may be contracted abroad and after a dormant period break out in a more or less marked degree. Again, a patient will appear to be suffering from one of the many little known tropical diseases and give no history of having visited the tropics. On closer examination it may be found that the disease was acquired in the hold of a ship which had recently arrived from some foreign port. These diseases when they do occur and

are found in practice or when they are encountered in the hospital will tend to confuse the practitioner who has seldom seen a like condition outside the pages of a textbook. Many such errors have occurred. A small handbook is too sketchy to furnish proper information and is of little aid. It is most necessary to have a complete work of this type.

For the medical man in the tropics a book of this character is as essential as a textbook on general medicine. Many changes have been made in this new and revised edition. Some of the less essential material has been left out in order to keep the book in one volume. The book as it stands is somewhat unwieldy and it seems as though it would have been more convenient if it had been made into two volumes, but the authors are of the opinion that in the tropics one volume is more convenient to handle. The judgment of these men, who have spent many years in tropical countries, should be of value.

HENRY MILLS HURD.

Henry Mills Hurd, The First Superintendent of Johns Hopkins Hospital. By THOMAS STEPHEN CULLEN. Illustrated. Baltimore: The Johns Hopkins Press, 1920. Pp. iii-147.

There are so many ways of looking at a man. His friends, his enemies, his doctor, lawyer, clients, parents, all have different views, and it is an undisputed fact that a man may differ essentially in his public and private life. There are also epochs of judging, one, before death, when judgment is more free because the man can answer for himself, and one after death, when faults dwindle to failings and vices appear but lapses from rectitude.

Meanwhile, if worth anything, the man has been erecting his own memorial in scientific or artistic work, in philanthropic or literary deeds, and by them he is largely judged. Dr. Thomas S. Cullen, realizing all these unnecessary details which must be brought out at a postmortem and writing of his living friends, points chiefly to what Dr. Henry Hurd has done and written, while the latter, in his few personal reminiscences, makes us remember that a man is not notable because of adverse early circumstances but in spite of them.

What are his works? The usual student career, then work with his stepfather until his graduation from the University of Michigan in 1866. While practising in Chicago he was given the post of assistant in Kalamazoo Insane Asylum and was afterwards superintendent of the Eastern Michigan Asylum for eleven years, finally accepting an invitation to be director of Johns Hopkins Hospital in Baltimore, in 1889.

He was not only superintendent but attendant, seeing that his views were carried out, his long work with the insane giving him quick insight into the value of his coworkers, how much he might humanely expect from those under him, and what they could do in a moment of temporary sanity.

The first part of the book deals with all that Doctor Hurd meant to the well acting of Johns Hopkins Hospital, but it shows also what the hospital meant to Doctor Hurd. He was a born organ-

izer—a human one—and each one working there was an individual whose public work was kindly criticized or praised and whose private griefs were quickly seen and assuaged, while the nursing staff had his vigorous oversight and his sympathy at all times. As for writing, he made reports live; those of early date are interesting even now. The book will be a delight to his friends, a rebuke to his enemies, and must have been a source of pleasure to his colleague Dr. Thomas S. Cullen, as he gathered together all the facts of his friend's life and so ably wove from them such shining vesture for the man of American and European fame.

LIVE ASHES.

The Amethyst Ring. By ANATOLE FRANCE. A Translation by B. DRILLIEN. Second Edition. New York: John Lane & Co., 1920. Pp. iii-304.

Some ashes may be warmer than live coals; it all depends on their source. To some of us it may be boresome to read this masterly tale, because it is built around, yet not too closely, the supposedly forgotten Dreyfus trial. So cleverly are the faint illusions made to the famous trial that they do not depend on the local situation. It would at times seem that important material with a direct bearing on the case could have been incorporated, while a great deal of the material which M. Bergeret digs out from old myths and legends and ancient historical references could well have been omitted. But let us examine these passages with care. Why does he suddenly insist on telling the tale of Hercules at a moment when he has whetted our anticipation to an unresolved climax? It is accused that Bergeret, the old professor, has no right to take sides in any controversy dealing with present day topics. So he proves his point in a well told tale of the life of Hercules, the child of a mythological god and man, and how this tale of wish fulfilment can be set down alongside of present day events and how the wish fulfilments of today coincide with those of modern antiquity.

In this book France makes use of a homeless dog, and we see how his admirer, W. L. George, at a later day makes use of a similar symbol, a cat, in his book *Blind Alley*. He shows how the dog reacts in a more simple way than does man. He shows how his fears are made manifest. Civilization has made man and dog more cowardly; the dog shows his fear, while man, prompted by his ego, covers his civilization won fear by assuming a compensatory boldness. The dog when punished thinks some kindly act has been done to him and licks the hand that chastised him. Man in following the instincts of the herd, follows in sheeplike fashion the bellowings of the mob, and seven Frenchmen who convicted Dreyfus could not be mistaken, not seven Frenchmen of the army.

And so we go in a dizzy spiral. Delicately he takes us through a maze of intrigue and before we have time to digest a juicy morsel he plunges us into a lilting story less intrigued but wholly unexpected.

We have a refreshing exposition on work. We are told that work takes a man's mind away from his own life and keeps him from contemplating his

real self. Work panders to our vanity, hides from us our importance, and flatters us with the anticipation of something good to follow. It gives us illusory determination, strength, independence, and we appear as so many heroes, genii, demons, gods, even as God himself, for has not man always conceived of God as a worker? We take issue with little that France tells us but here we pause to ask: "Just what does he mean to convey by work? Does he mean the work to be a retreat? Will aimless work suffice? Or does he mean that the driving libido or urge of man is to be intelligently transferred into some productive occupation? Is the work to be the child, the created child of the man who finds a limited outlet for his love life?"

At times, following the symbols, we are tempted to believe that the hatred of the Jews is promoted by a suppressed sadistic impulse. We see the Duke and the General smitten with a burning desire to kill when they pass some pheasants in the clearing; the priest is an inveterate sportsman who thinks only of shooting and the halls of the chateaux are adorned with trophies of the hunt.

An incestuous desire is shown in the anticipation of the old scholar Bergeret who anxiously awaits the coming of his grown daughter who is to make her home with him after his faithless wife has gone away. "He looked forward to a happy life with his daughter, who resembled him in certain turns of mind and speech, so that it flattered his vanity when people praised her." This may have been the old man's rationalization of a more deeply rooted fixation which he could not in his conscious mind determine.

A very interesting observation is made by this same old Bergeret, in referring to the metamorphosis of the ships of Æneas ". . . A legend both pretty and popular, but perhaps a trifle too simple in itself for expression in such noble language. . . . He knew that the nursery tales have furnished material for nearly all epics, and Virgil had carefully collected together in his poem the riddles, the puns, the uncouth stories, and the puerile imaginings of his forefathers; that Homer, his master and master of all the bards, told over again what the good wives of Ionia and the fishermen of the islands had been narrating for more than a thousand years before him." And we find the kindly old man trying to trace back these epics to the ancient simple folk tales which were in turn dreams and desires. He searches the past in order to find the weaknesses and causative factors of the present. Here we find him bringing the contrast to his friend Riquet. Riquet is the friendless dog. "The little creature lived in the present, with no thought of time that had run its course; not that he was wanting in memory, inasmuch as he could remember, not his own past alone, but the far off past of his ancestors, and his little head was a rich storehouse of useful knowledge; but he took no pleasure in remembrance, and memory was not for him, as it was for H. Bergeret, a divine muse." A good student is Anatole France of animal psychology, including that of man.

Referring again to the myth he states that "scientific truths are not acceptable to the public. Nations live on mythology . . . from legends they draw all the ideas necessary for their existence . . . a few simple fables suffice to gild millions of lives. . . . truth has no hold on mankind, and it would be a pity if she had, for her ways are contrary to nature, as well as to their interests." He is convinced that Macbeth was much maligned by the legend and by Shakespeare. They made of him a criminal, while in truth he protected the people and the clergy against the violence of the nobles. History showed him to be a thrifty king, a just judge, and a friend of the working classes. His wife was not wicked and he did not murder King Duncan. But public opinion could not be altered even if these proofs were published. And while he is occupied with these thoughts the mob shouts, "*Mort a Zola! Mort aux juifs!*" He goes on to say that popular enthusiasm is never constructive but always essentially destructive.

The doctor in the book, Ferveral, tells why he is a spiritualist. The discourse is very amusing and his belief is based on the desire of his patients. The conclusions are somewhat involved but iconoclastic.

The Spanish-American War and its effects in regard to solidifying the bond of church and State in the event of the victory of Spain is also rather amusing, for it shows the far-reaching possibilities of a victory of the country governed by a king over a country of bacon merchants, sewing machine manufacturers, and heretics. A nation without kings, without princes, without a history; without national traditions, and without an army.

Perhaps we can sum up best by making use of his own words: "I believe . . . that the Jews are particularly assimilable, and have the most plastic and malleable natures in the world. With the same readiness that the niece of Mardocheus entered the harem of Ahasuerus in bygone days, so the daughters of our Jewish financiers marry nowadays the heirs to the greatest names in Christian France. After marriages such as these, it is rather late in the day to speak of incompatibility of race. Then I think it is a bad thing to make a distinction of any race in any country; it is not the race that makes the nation, and there is not a single country in Europe that has not been founded on a multitude of mixed and different races. When Cæsar entered Gaul it was peopled by Celts, Gauls, Iberians, all different in origin and religion. The tribes that set up the cromlechs were not of the same blood as those who honored the bards and druids. Into this human mixture the different invasions poured Germans, Romans, Saracens, and out of the whole a nation arose, the grave and lovable people of France, who not so very long ago were the teachers of justice, liberty and philosophy of the entire world." He then quotes Renan. "What makes a nation is the memory of the great things its people have done together, and the will they have to accomplish others."

Some comment might be made because no mention has been made of the amethyst ring, and the story is supposed to be about an amethyst ring.

This ring is the one worn by a bishop and in order to attain his ends the weakling son of a rich financier, a Jew, must create a bishop. His ends are very childlike, he wants to be admitted to the Brece hunt, a fashionable gathering. The material of which he must make a bishop is an out of the way alibi. The interesting part of all this is the round-about way in which it is done. A very unsavory state of affairs is revealed, both as regards French politics, petticoats, and the moving force behind it all, money. If we follow the peregrinations of the poor ring—well the last we hear it is lost under circumstances which the more reserved would be pleased to call shady.

Finally, the bishop is made but he too succumbs to a great driving urge of his ego. He becomes not the spokesman of the creator of his new post, but defends the church from the abuse which he feels it is receiving at the hands of the State. We suppose that in order to do justice to the book these things must be told, but it seems as though more important things fill the pages of this wonderful work of Anatole France.

WADE IN, SANITARY!

Wade In, Sanitary! The Story of a Division Surgeon in France. By Lieutenant Colonel RICHARD DERRY, M. C., U. S. A. Illustrated. G. P. Putnam's Sons, New York and London, 1919. Pp. 260.

EASTER ON THE BATTLEFIELDS.—Book now for Captain POYNTEZ'S SEVEN DAY TOUR of the whole British Front. FIRST CLASS THROUGHOUT. Conducted by ex-officers. INCLUSIVE charge, 30 gns. Call or write. 12 Regent Street, London, S. W.

This advertisement was sent to us by a young ex-officer, disabled for service by wounds, who, after wearily waiting for work, had been taken on to show tourists over the fields where he had been some five years exposed to all the dangers of war. There are many motives for the tour: curiosity, respect, a love of the horrible, a wish to gather historical facts, a wish to stand where a father, husband or son fought and died.

War books have been written to meet all these desires and have frequently been judged by soldiers themselves. Among those which will live when others are languishing is *Wade In, Sanitary!*

Why? Because, avoiding any effort to be entertaining at the cost of veracity, any attempt to belittle European surgeons, any adverse comparisons between the spent Allies and the newly arrived Americans, he reports for duty at Headquarters of the Second Division, on December 7, 1917, in the village of Bourmont, Haute Marne, and, right on to the last page, certainly does his duty in giving a lucid account of the country, friends and foes, hospitals, operations, treatments, battlefields. The clear stating of names and ranks will make the book useful to those medical men who like to refresh their memory, and also to historians. The medical and surgical side of war is adhered to and the reader sees operations, hospitals and convalescents, but is allowed to see enough of the country, its people and severe fighting to form some idea of all that the American medical officers and men saw and did while in Europe; above all, he rightly emphasizes the conditions under which the doctors worked.

He has strong things to say in the final chapter, *Wise In Time*: "Our men have been demobilized with commendable speed, but the crying shame is that no provision has been made to perpetuate the organization of the divisions who fought so gallantly in France. . . . There are those high up in our Government who are no more impressed now by the need of true preparedness than they were on August 1, 1914.

"In the face of what we have learned during the past five years, it would be but the merest tyro who would oppose the sane system of training our young men in times of peace to fulfill their obligations of citizenship in times of war." The advantages of six months in camp, as regards health and discipline, are well put. Certainly, the whole book is worth reading and keeping.

TREATMENT OF SYPHILIS.

The Treatment of Syphilis. By H. SHERIDAN BAKETEL, A. M., M. D., Fellow of the American College of Physicians, etc. Illustrated. New York: The Macmillan Company, 1920. Pp. i-167.

The author has written this book for those physicians who wish to treat syphilis, but who have not heretofore employed the intravenous method of injection, or whose acquaintance therewith is limited. He believes that the physician who wishes to treat syphilis today should be the master of intravenous medication. Hence this book.

While at first sight it seems to be elementary in character, it becomes evident on second thought that this is an essential feature of any book which aims to teach the elements of intravenous medication as applied to syphilis, to those with little or no experience in this comparatively new method.

From this point of view it is a very good book and will prove useful in the hands of those for whom it is intended. The Wassermann reaction is fully discussed in the opening chapter, because, we assume, of its importance as an aid in the therapeutic progress of the disease. Considerable space is likewise devoted to the history and chemistry of arsphenamine and to the chemotherapy of the arsenical compounds. All of which contributes to the usefulness of the work, but adds little that cannot be found elsewhere if one will take the trouble to look for it. The publishers have provided a fine quality of paper—something unusual in these trying days, and the printing is excellent.

New Publications Received

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

The Thunderbolt. By G. COLMORE. New York: Thomas Seltzer, 1920. Pp. i-353.

Tatterdemalion. By JOHN GALSWORTHY. New York: Charles Scribner's Sons, 1920. Pp. i-305.

The Happy End. By JOSEPH HERGESHEIMER. New York: Alfred A. Knopf, 1919. Pp. xi-315.

Linda Condon. By JOSEPH HERGESHEIMER. New York: Alfred A. Knopf, 1919. Pp. ix-304.

Sexual Impotence. By VICTOR G. VECKI, M. D. Sixth Edition, revised. Philadelphia: W. B. Saunders Company, 1920. Pp. 3-424.

The Amabe Living in Man. By CLIFFORD DOBELL, M. A., F. R. S. Illustrated. New York: William Wood & Co., 1919. Pp. 1-155.

Report from the Department of Pathology and the Department of Clinical Psychiatry, Central Indiana Hospital for the Insane. Volume VII. Indianapolis, 1919.

A Textbook of Physiology. By RUSSELL BURTON-OPITZ, S. M., M. D., Ph. D. Illustrated. Philadelphia: W. B. Saunders Company, 1920. Pp. 5-1185.

The Treatment of Syphilis. By H. SHERIDAN BAKETEL, A. M., M. D. Fellow of the American College of Physicians, etc. Illustrated. New York: The Macmillan Company, 1920. Pp. i-167.

Physiological Principles in Treatment. By W. LANGDON BROWN, M. A., M. D., Cantab., F. R. C. P. Fourth Edition. Illustrated. New York: William Wood & Co., 1920. Pp. 1-427.

Transactions of the American Surgical Association. Edited by JOHN H. JOPSON, M. D., Recorder of the Association. Illustrated. Volume Thirty-Seven. Philadelphia: William J. Dorman, 1919. Pp. i-519.

Otorhinolaryngology. By Dr. GEORGES LAURENS. Authorized English translation of the Second Revised French Edition by H. CLAYTON FOX, F. R. C. S. (Ireland). Illustrated. New York: William Wood & Co., 1919. Pp. 1-339.

General and Dental Pathology. With Special Reference to Etiology and Pathological Anatomy. By JULIO ENDELMAN, M. S., D. D. S., and A. F. WAGNER, A. M., M. D., Illustrated. St. Louis: C. V. Mosby Company, 1920. Pp. 1-593.

Diseases of the Throat, Nose, and Ear. By W. G. PORTER, M. B., B. S., F. R. C. S. (Edin.). Third Edition, fully revised under the editorship of A. LOGAN TURNER, M. D., Ed., F. R. C. S. (Edin.). Illustrated. New York: William Wood & Co., 1919. Pp. 1-300.

Diseases of the Chest and the Principles of Physical Diagnosis. By GEORGE WILLIAM NORRIS, A. B., M. D., and HENRY R. M. LANDIS, A. B., M. D. With a chapter on the Electrocardiograph in Heart Disease by EDWARD B. KRUMBHAAR, Ph. D., M. D. Second Edition, revised. Illustrated. Philadelphia: W. B. Saunders Company, 1920. Pp. 7-844.

Pasteur. The History of a Mind. By EMILE DUCLAUX, Late Member of the Institute of France. Professor at the Sorbonne and Director of the Pasteur Institute. Translated by ERWIN F. SMITH and FLORENCE HEDGES, Pathologists of the U. S. Department of Agriculture. Illustrated. Philadelphia: W. B. Saunders Company, 1920. Pp. 1-363.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

RECENT GLEANINGS IN DIPHTHERIA PROPHYLAXIS.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

(Continued from page 739)

Treatment of diphtheria carriers for the purpose of ridding them of their virulent bacilli has been frequently attempted. Usually, antiseptic agents applied to the mucous membranes of the mouth or nasal cavities have been availed of. Apart from irrigation and gargling with saline or antiseptic solutions, the procedure of having nascent iodine liberated directly upon the infected mucous surfaces has been recommended by Citron and others. Citron's plan was to give each carrier one tablespoonful of a five per cent. solution of potassium iodide by mouth one to three times a day and have him gargle with a solution of hydrogen peroxide acidulated with hydrochloric acid. The iodide, coming in contact with peroxide over the mucous surfaces, set free iodine which, it was asserted, soon overcame the local diphtheria germ infection. The results from the procedure were, however, hardly encouraging, and Münchmeyer and Nast, 1919, who tried out the treatment, were likewise disappointed. With the thought that their lack of success might have been due to the existence of tissue cavities hindering penetration of the hydrogen peroxide solution, these observers substituted ozone gas for the liquid peroxide. Even then the treatment did not prove satisfactory, in spite of the known disinfecting property of this gas and the ease with which it enters all recesses.

Better results have been reported by Lomry, 1919, from simple local irrigations with peroxide or iodine iodide solution. Preliminary experiments showed that of all antiseptic agents available for use in the pharynx, hydrogen peroxide in one in nine dilution and a two and one half or three per cent. solution of iodine and potassium iodide in normal saline solution, ox serum, or glycerin, are the only agents which, while of sufficient germicidal power, do not coagulate mucus and are not unduly irritating to the mucous membranes. Clinical trial convinced Lomry that actual lavage or syringing out of the infected surfaces is the only efficacious means of eliminating the diphtheria bacilli. In some carriers iodine proved more effectual than hydrogen peroxide, while in others the opposite condition obtained; at times the two agents employed in combination proved successful where but one alone had failed. Treatment of the nose and throat should be carried out two or three times a day, and between treatments the patient should gargle frequently with the iodine or the peroxide solution. The length of time required to subdue the infection depends, according to Lomry, upon the anatomical conformation of the pharynx and neighboring structures. As a rule not over two

weeks is required. In these readily disinfected carriers the infection would often have subsided spontaneously; nevertheless the treatment is advantageous because it reduces the risk of transmission of the infection to other individuals, shortens the period elapsing until disappearance of the bacilli, and prevents a considerable number of acute carriers from becoming chronic ones. In about four or five per cent. of cases, on the other hand, removal of infection requires more than two weeks' time. These more persistent carriers should preferably be turned over to the nose and throat specialist, for in the majority of instances some corrective surgical procedure is indicated, such as removal of polypi, of adenoid growths, of the palatal tonsil, or of an enlarged turbinate, or a submucous resection of the nasal septum. Lomry requires three negative cultures, with the first and last at least one week apart, before dismissing a case as free from virulent infection.

Likewise of some significance in this connection, though not dealing directly with carriers of diphtheria organisms, are the experiences of Morley Fletcher, 1918, with antiseptic inhalations in the prophylaxis of secondary cases of contagious diseases in schools. Gordon, in 1915, had recommended disinfection of germ carriers by inhalation of vapors charged with chloramine-T or zinc sulphate, together with nasal irrigation and gargling with a one in 4,000 solution of potassium permanganate in normal saline solution. Originally applied in meningococcus carriers, this procedure had also been used with apparent success in the prevention of an epidemic of scarlet fever on board a transport. Fletcher first employed the method in a hospital ward in which a case of scarlet fever had developed; no secondary case appeared except in a nurse—the only person in the ward who had not carried out the prophylactic measures. Subsequent similar experiences in hospitals seemed uniformly favorable to the method. Applying it next in a school, Fletcher secured complete elimination of secondary cases following primary instances of scarlet fever, measles, and chickenpox among the pupils. He advises that in schools in which it is not feasible to provide a zinc sulphate inhalation apparatus, at least the nasal douching and gargling with the potassium permanganate solution above mentioned should be practised, as he has a definite impression that even this measure alone is of marked prophylactic value.

Aside from the use of antiseptic agents in the attempt to eliminate the diphtheritic infection in diphtheria carriers, various preparations of serum, and cultures of germs other than the diphtheria bacillus, have also been employed. According to Labbé and Canat, 1917, local serum treatment is the most rapidly acting means available for causing disappearance of the bacilli.

(To be continued)

Infectious Meteorism.—Max Einhorn (*Southern Medical Journal*, February 1920) describes a variety of meteorism in which no obstruction of the bowel can be discovered, and in which a general paralysis of the bowel is present, a condition he ascribes to an infection. The prominent features are as follows:

Subjective Symptoms.—There is from the start more or less increased tension present in the abdomen, noticed by the patient experiencing a sensation of fullness and difficulty in passing gas either by mouth or rectum. Appetite is lacking. Some vomiting appears, first at greater intervals, consisting merely of chyme and mucus, later of duodenal contents with bile. As the disease process progresses there soon appears vomiting of bad smelling intestinal contents, which later assume a fecal odor. Defecation takes place under great difficulty (by artificial help) and incompletely. Flatus is seldom passed, and if so without much relief to the patient. There is a general restless condition accompanied by headache and sleeplessness. A feeling of extreme weakness always exists which at times is associated with shortness of breath.

Objective Signs.—There exist rapid pulse, increased respiration, flushed face, usually fever of a mild type, coated tongue, anorexia, and constipation. The abdomen is swollen, showing increased tension and marked tenderness on pressure. Percussion gives in the horizontal position a tympanitic sound on the upper part of the abdomen, while in the lower parts of the flanks there is dullness, which disappears on change of position. Fluctuation is, likewise, present in the lower parts of the abdomen to a small extent. Liver and spleen are somewhat enlarged. The blood shows a moderate leucocytosis or no increase of the white cells.

The main features of the disease process may be summed up as follows: There is a bacterial invasion of the peritoneal covering of the digestive tract, which leads to inflammation and interference with the regular functions of this organ. Absorption is disturbed from the start, then ensues deficient peristalsis, culminating in paralysis of the intestines. Infectious meteorism appears as a disease by itself, idiopathic, or in association with other diseases as a secondary, but, nevertheless, very important event.

Treatment.—The objects of treatment are, 1, to combat the infection; 2, to relieve the bowel difficulty. Absolute rest, flushing of the system with water, relieving the digestive tract of accumulated gas and stagnant contents are the main aims to be accomplished. The patient is kept in bed at absolute rest. No food is given, except small quantities of barley water, very weak tea, chicken broth, and ice pills. The stomach is washed once or twice a day and the bowels irrigated once in twenty-four hours. For the pains, opium and atropine are administered in sufficiently large doses to give relief. A rectal tube is inserted into the rectum five to eight inches and left there for ten or fifteen minutes in order to allow some flatus to escape. This can be accomplished in a more efficient manner if the tube is moved up and down every two or three minutes. An enema of olive oil (five to eight

ounces) to be retained a number of hours will at times bring relief. Magnesium sulphate, one ounce dissolved in five ounces of water, injected into the bowel at blood temperature and retained for a while is at times efficacious. Two quarts or more a day of saline should be given by the rectum by the Murphy drip. Should the rectum be intolerant, saline will have to be administered subcutaneously or intravenously. Large doses of atropine (one sixtieth of a grain) every two hours may be repeated three to six times until there is a bowel movement. When everything fails and the vomiting assumes a fecal odor, an exploratory incision and a colostomy should be done, even if no obstruction is found. This applies especially to the idiopathic form of infectious meteorism. The secondary form seemingly offers a somewhat better prognosis. Here a laparotomy will seldom be required. These patients recover in about fifty per cent. of the cases without surgical intervention and they are as a rule weakened too much by their primary disease to stand the hardships of an operation. However, no hard and fast rule can be given and each case must be judged by its own merits.

Vaccines in Furunculosis.—A. Matté (*Presse médicale*, January 24, 1920) uses stock vaccines for curative purposes and autogenous vaccines subsequently to prevent return of the trouble. Sterilizations of vaccines by addition of 0.5 per cent. of phenol—without heat—is recommended. In the curative treatment, specialized stock vaccines for different types of cases are used, viz., separate vaccines for cases of carbuncle, furunculosis of the eye, folliculitis of the nose, tuberculous abscess, etc. Each of these special vaccines contains a number of strains of staphylococci from cases of the corresponding clinical type. Where prompt results are required, as in carbuncle, painful furuncle, or furuncle with a large, doughy surrounding zone of hyperemia, Mauté begins with an intravenous injection of ten million staphylococci, which causes no systemic reaction, but reduces pain, induration and progress of the lesion within one day. Next day, fifteen million, and on the third day, twenty million, are similarly given, followed after two more days by another twenty million. This concludes the curative treatment, and three days later the prophylactic treatment is begun. In cases in which intravenous administration is not required, subcutaneous injections of the specialized stock vaccines in doses of 250 and 500 millions are given on alternate days. Prophylactic vaccination consists in giving subcutaneously an autogenous vaccine containing 500 million germs to the mil. The first injection consists of one half mil. Three days later, one mil is given; four days later, 1.5 mils; five days later, two mils; five days later, two mils, and seven days later, two mils. If, during the process, a large, painful furuncle appears, one or two intravenous injections of ten millions are given and two supplementary subcutaneous injections of two mils each are given at ten day intervals. While dieting, even strict, fails to benefit in some cases, in other diminution of bread and interdiction of starches and chocolate has seemed useful. Giving six to eight drops of

hydrochloric acid during meals, and one gram of powdered charcoal, with 0.01 gram of ipecacuanha. at the end of the meals, also appears serviceable. In chronic furunculosis patients are often fatigued and depressed. Even in these cases vaccines apparently constitute the best remedy. Tonic medication may be added, but arsenic should not be used. Locally, little save protective treatment is required. To prevent extension of infection, a powder consisting of two or three parts of copper sulphate to fifty parts of zinc carbonate, to be thoroughly rubbed into the surrounding skin with a compress, is best. Incision and cauterization are painful as well as useless. In lesions in the later stages, puncture with a fine galvanocautery point is sufficient and gives relief, even in carbuncle. The vaccine eliminates the need for crucial incisions in carbuncles, except in certain diffuse, rapidly spreading lesions. Extension is generally arrested much more quickly by the vaccine than by surgical treatment.

Delbet's Vaccines in Pyogenic Infections.—Delbet (*Presse médicale*, February 7, 1920) holds that in pyogenic infections the defensive tissue reaction awakened is purely local, general reactions being but slightly marked or absent. A true vaccination of the system does not occur, for the toxins alone enter the circulation. Entrance of the germs themselves, which might induce such a vaccination, rapidly proves fatal. Surgical bacillemiæ are very serious and vaccine therapy is impotent in such cases. In infections with local reaction, such treatment would seem highly advantageous. In order to be able to inject the germs in an absorbable form, Delbet combines the Pasteur method of ageing cultures with the modern procedure of sterilization of cultures by heat. Much larger doses—billions—of germs can thus be injected, without producing any "negative phase." On the other hand, severe reactions similar to Widal's "hemoclastic attacks" often result; though manifestations of toxicity, these reactions are often a favorable indication. In one case an injection of twenty billions of germs in a case of very grave phlegmon of the hand was followed even by dyspnea, asphyxial attacks, and cyanosis; but within twenty-four hours the local condition improved and recovery very rapidly followed. Experience has shown that the best dose of the vaccine is four mils, containing about thirteen billions of bacteria. The vaccine used is a stock preparation containing streptococci, staphylococci and pyocyanous germs—the latter in large number, eight billions. Delbet does not believe in an essential specificity of vaccines; Wright has, himself, given up autogenous vaccines, and has even expressed a suspicion that vaccine prepared with a germ different from that causing an infection gives better clinical results. The pyocyanous germ is chosen because it plays a useful rôle in relation to the streptococcus, hindering its development and attenuating its effects. In the last six years no case of carbuncle has been incised in Delbet's service. Recovery from boils, lymphangitis, and erysipelas is rapid under the vaccine treatment. Lymphangitic abscesses are given combined incision and vaccine treatment. Once sterilization has been

secured, the wound margins are brought together with plaster strips to accelerate healing. Adenitis disappears in a few days under the treatment, or else softens very rapidly, so that after evacuation through an incision the parietes promptly come together again. This method is frequently indicated in abscesses of the wisdom teeth, in which the relative degree of the glandular and the periosteal involvements is difficult to define. In subacute osteomyelitis, the procedure gave successful results in three out of six cases. Good results were likewise obtained in acute salpingitis and even in a case of hematocoele. Recently definite improvement was noted in cases of purely gonococcal arthritis, although specific serum had already completely failed.

Results of Protective Inoculation against Influenza.—W. B. Leishman (*British Medical Journal*, February 14, 1920) tabulates the results of inoculation of a large number of British troops in home camps during the latter part of the influenza epidemic of 1918. The vaccine used was of the following formula: *Bacillus influenzae*, 60 millions per c. c.; streptococci, 80 millions per c. c.; pneumococci, 200 millions per c. c.

Several strains of each organism were used and the cultures were comparatively freshly prepared from cases of the disease. Two doses, the first .5 c. c. and the second 1. c. c., ten days later, were used. The records are not complete, nor are they as accurate as would be those of cases under the observation of one head, but they are in the main to be depended upon.

The results may be summarized as follows:

	Inoculated	Noninoculated
Strength of units observed—average	15,625	43,520
Incidence of attack, per 1,000.....	14.1	47.3
Incidence of pulmonary complications, per 1,000.....	1.0	13.3
Deaths, per 1,000.....	0.12	2.25

Treatment of Bronchial Asthma with Vaccines.—J. M. Hutcheson and S. W. Budd (*Virginia Medical Monthly*, February 1920) state that the conception of asthma as a manifestation of protein sensitization requires no further explanation or argument to establish its soundness. In certain asthmatics, however, the occurrence of seizures identical in character, but induced by widely different circumstances, suggests that either sensitization is not strictly specific or the offending protein is contained in a variety of substances. Cases relieved by vaccines often include those apparently due to substances other than bacteria. In view of these and other facts, the offending protein in asthma probably exists in the patient's bronchial secretions; it is also probably a product of bacterial action. Certain irritants, such as dust, bring on attacks by stirring up the residual bronchial contents and causing contact with more susceptible surfaces. When bronchial drainage is interfered with, enough of the protein accumulates to produce asthma, while free drainage lessens the tendency to paroxysms. Hence the benefit following removal of infectious foci or the use of expectorants, particularly the iodides. In a series of eighty-one cases treated with mixed autogenous vaccines, most of the patients had suffered from asthma over a considerable period, while in many instances operations on the nose, throat,

or sinuses had failed to give relief. Where the first series of vaccine injections was ineffective, a second vaccine was, if possible, prepared and given; this was also done in a number of cases after relapse had occurred. Communication by letter with patients treated a number of months or years before showed that, of the seventy-one patients answering, fifty-three had noted either complete freedom from asthma or a definite decrease in the frequency and severity of the attacks. The longest duration of complete relief was three years, and the longest period of relative relief, four years and two months. In the eighteen cases in which no definite benefit followed the treatment had been repeated after the first series of injections had failed.

Neosphenamine in Prurigo and Asthmatic Bronchitis.—Milian and Blum (*Presse médicale*, January 14, 1920) report the case of a man aged seventy-four years, who had been suffering from asthmatic bronchitis for four years and was brought to a hospital on account of a prurigo with papulovesicular lesions and severe itching. The Wassermann reaction was negative in both the blood and the cerebrospinal fluid. The itching had been partly controlled with tar ointment but increase of the dyspnea and asthmatic attacks had followed. Injections of neosphenamine at intervals of five days in doses of 0.15, 0.20, and 0.30 gram were uniformly followed by marked diminution of the dyspnea and finally by lasting recovery.

Treatment of Tuberculous Abscess by Aspiration.—Z. P. Fernandez (*Lancet*, December 27, 1919) discusses the relative value of incision and aspiration of abscesses resulting from tuberculous disease of the spine, joints, peritoneum or chest wall. In his series of about fifty cases, in which the two methods were used about equally, aspiration gave considerably better results as regards course and cure. Repeated aspirations were the rule, in some cases no injections being used while in others diluents, such as trypsin, lactic acid, bipp, cinnamic acid, essential oils, saline, iodine, colloidal solutions, ether, camphor, or thymol, were tried. The selection must be made by experience rather than by rule. It is concluded that sinus formation is common after incision and rare after aspiration. The mortality and time of healing are also better in cases where aspiration is used.

Bronchoscopic Treatment of Bronchiectasis and Pulmonary Abscess.—Henry Lowndes Lynah (*Medical Record*, February 7, 1920) finds that the "sponge soaking" of the lung from varying causes, such as obstruction of the lumen of an intubating tube, or the reaction from peanut or other food particles, yields rapidly and readily to bronchoscopic evacuation of the secretion. When a foreign body lodges in a small branch bronchus beyond the range of the bronchoscope a lung abscess is the inevitable result. Circumscribed lung abscess may be extremely difficult to cure, especially when the abscess is attached by its stalk at a right angle to a bronchus into which it pour its contents. Pulmonary drainage is difficult in all cases of circumscribed abscess, but the conservative bronchoscopic measures of treatment should be given a thorough trial first, before radical major surgery is attempted.

Masks for Influenza.—Arnold Josefson (*Hygiea*, February 29, 1920) studying the influenza epidemic of 1918-19, reports favorable results from the wearing of closely fitting gauze masks by those engaged in caring for influenza patients in the wards of the Maria Hospital of Stockholm and substantiates his findings by statistics. Thus of eighteen mask wearing persons who had come more or less in contact with the sick in one ward only two became infected (a third had not worn the mask faithfully), while in an adjoining ward, where no masks were worn, many cases of influenza among the nurses occurred. The theory of immunity against influenza he rejects. One attending physician who remained well in the fall epidemic while wearing a mask, promptly became infected in the spring epidemic, when he had left off the mask. While urging the wearing of masks in influenza, the author favors trying this protective measure in pertussis, diphtheria, scarlet fever, and parotitis. Lastly he emphasizes the importance of the strict isolation of pregnant women, sick or well, during the epidemic of influenza.

Treatment of Colds.—H. Laveson (*Indianapolis Medical Journal*, March, 1920) considers the following the most effective general remedy.

Liquor potassii citratis,	}ãã 3vi
Liquor ammonii acetatis,		
Spiritus ætheris nitrosi,		
Sodii benzoatis,		
Syrupii acidi citrici,	q. s. 3iij

Misce.

Signa: A teaspoonful in water every two hours.

Antipyrine, phenacetine, and other drugs of this class are often useful and may be employed with greater freedom than in infectious diseases. When, however, there is any feebleness care must be exercised in their use. If the temperature remains above 103° F. there should be no hesitancy in the external use of coldsponging.

The proper treatment of cough involves the understanding of the value and object of cough. This act is necessary for the relief of the lungs from mucous exudations. Cough may be produced by a nervous or an inflammatory irritation of the mucous membrane at a time when there is nothing to be coughed up, or if there be exudation to be expelled the amount of cough present may be in excess of what is needful. In either of these cases the cough becomes an evil to be done away with or checked as far as practicable. On the other hand, when there is excessive exudation, and especially if there be at the same time great weakness of the patient the cough may not be sufficient to bring about relief, in which case it must, if possible, be increased or replaced in some way. It is plain that the amount of cough which the patient has is in itself not a sufficient guide as to whether the cough is excessive or not. It is the relation between the cough and the work to be accomplished which must be considered by the practitioner. Cough can sometimes be allayed by the use of inhalations of vapor or fumes of medicated sprays which lessen the irritation of the mucous membrane. Counterirritation by means of mustard plasters over the whole chest is something serviceable.

Gross Pathology of Influenzal Pneumonia in France.—Harry Bakwin (*American Journal of the Medical Sciences*, March, 1920) discusses an epidemic of severe lobular pneumonia accompanied by jaundice, cloudy swelling of the parenchymatous organs and heart muscle, and hemorrhages into the pericardium, renal pelvis, and other viscera. Changes in the rectus muscle were observed in thirty-three per cent. of the cases. Empyema was rare, occurring in less than four per cent. Acute laryngitis occurred in only six out of thirty-eight larynges examined. Sphenoid sinusitis was found in twenty out of twenty-two cases examined. Seven out of thirty-five pre-mortem blood cultures showed pneumococci; the rest were sterile with the exception of one, which showed a meningococcus. The bacteria found in the organs at autopsy were varied, including in order of frequency the *Streptococcus hemolyticus*, pneumococcus, staphylococcus, nonhemolytic streptococcus, *Bacillus influenzae*, and gram negative cocci.

Pathology of Influenzal Pneumonia.—Frank P. McNamara (*Boston Medical and Surgical Journal*, February 12, 1920) says that in this we have a disease of unknown origin but one which, undoubtedly, affects the upper respiratory tract and which may be primary in the lung itself. Acute laryngitis and tracheobronchitis result. Because of the injured trachea, the mouth organisms gain access to the lung, perhaps already injured, and there set up a diffuse pneumonia. The latter is characterized at first by edema, congestion, hemorrhage and hyaline necrosis of the bronchiolar and alveolar walls. Later the process tends to localize, and necrosis of the lung, varying in degree from miliary abscesses to actual gangrene, results. If the patient survives, organization of the interstitial, bronchiolar and alveolar exudates results in fibrosis of the lung, obliterating bronchiolitis and in the formation of bronchiectatic cavities. The bronchiolar epithelium proliferates in this disease as in no other and has the histological characteristics of an epithelial neoplasm.

Influenza in Infants.—C. Ashard (*British Journal of Children's Diseases* April-June, 1919), reports thirty-two cases of influenza in infants under two years. In the series are uncomplicated cases and cases complicated by bronchitis, pulmonary congestion, and bronchopneumonia. Eight deaths occurred, chiefly in bronchopneumonia. The prodromal symptoms were restlessness, feverishness, vomiting or diarrhea, and refusal of the breast; temperature up to 102.2° F. in uncomplicated cases and up to 104° F. at times. On the third or fourth day the cough began almost invariably. Onset of bronchopneumonia was with the usual symptoms, but the fever did not bear any apparent relationship to the gravity of the disease. In four cases tuberculosis was the sequel. In most of the cases the mother was attacked with influenza before the child, but in four cases the child was the only one to fall ill in the family. It is concluded that the infant does not possess any true immunity to influenza but is less exposed to contagion from without, usually becoming infected from the mother.

Artificial Pneumothorax in Pulmonary Tuberculosis.—Frank G. Simmons (*Virginia Medical Monthly*, January, 1920) states that cases of remarkable recoveries from artificial pneumothorax are a part of the records of every sanatorium using it. At the Mt. Regis Sanatorium it has been the rule to establish pneumothorax only in the unfavorable cases, unresponsive to thorough sanatorium treatment. Other cases, however, have likewise shown most gratifying improvement from the procedure. Compression is justified and frequently beneficial in cases with infiltration of all or part of one lung and a moderately diseased area in the other, if there are no complications. Conditions are not the same in all patients as regards the degree of compression required. One patient may stand comfortably only a—2 or 0 pressure—in centimetres of water, while another can submit to +20 or +30—used to break adhesions—without material discomfort. At first 200 or 300 mls of gas are injected, and this amount repeated on the following day. The intervals are then gradually lengthened by skipping one, two, three days, etc.—just slowly compressing until full collapse is attained. To maintain uniform pressure, a close watch is kept over the patient. The fluoroscope permits of judging more accurately the needs in individual cases, the effects of pressure on the mediastinum, the presence and location of adhesions and fluid accumulations, the effects on the free lung, and the meaning of obscure auscultatory signs. Careful surgical technic is essential to success. The site of puncture should be over healthy lung tissue, if possible.

Births, Marriages, and Deaths.

Died.

BARBAT.—In San Francisco, Cal., on Thursday, April 22nd, Dr. John Henry Barbat, aged fifty-eight years.

BOXLEY.—In Richmond, Va., on Friday, April 23rd, Dr. James Garland Boxley, aged seventy-seven years.

CANAVAN.—In Bridgeport, Conn., on Tuesday, April 20th, Dr. John Francis Canavan, aged thirty-two years.

CLOCK.—In Walsenburg, Col., on Friday, April 23rd, Dr. Kire Le Clare Clock, aged fifty-seven years.

DA COSTA.—In Philadelphia, Pa., on Monday, April 26th, Dr. John C. Da Costa, Jr., aged forty-nine years.

GOODWIN.—In Malden, Mass., on Monday, April 19th, Dr. Richard James Plummer Goodwin, aged eighty-three years.

HAGAN.—In Cleveland, Ohio, on Tuesday, April 20th, Dr. Arthur S. Hagan, of Uniontown, Pa., aged forty-two years.

HAGERTY.—In Arlington, N. J., on Wednesday, April 28th, Dr. Leidy Shimer Hagerty, aged forty-three years.

KELLEY.—In Brookston, Ind., on Saturday, April 17th, Dr. Donald M. Kelley, aged sixty-five years.

KIRSCHNER.—In Philadelphia, Pa., on Tuesday, April 20th, Dr. Carl Kirschner, aged forty-two years.

SPIESS.—In Philadelphia, Pa., on Friday, April 23rd, Dr. Walter G. Spiess, aged forty-one years.

STONE.—In Pittsburgh, Pa., on Wednesday, April 21st, Dr. William L. Stone, aged sixty-two years.

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Original Communications

INFLUENZA AS A PULMONARY NECROTIC ALVEOLITIS INVOLVING THE ENDOCRINES.*

A New Horizon for the Study of Influenza; Its Prophylaxis and Treatment.

BY CHARLES E. DE M. SAJOUS, M. D.,
LL.D., Sc. D., F. A. C. P.,
Philadelphia.

One of the most striking features of the prevailing interpretation of influenza is the uncertainty attending every subdivision of the subject notwithstanding the immense clinical material garnered in recent years, and the labor devoted to its study by clinicians, pathologists, and sanitarians. The bacteriology of the subject is, to say the least, in a confused state. Formerly, the Pfeiffer bacillus was thought to be the legitimate pathogenic organism; but many factors have invalidated its standing as such and the primary pathogenic agent has not been found.

The results of preventive vaccines have been quite as inconclusive. While the Pfeiffer bacillus itself does not provide a vaccine which prevents the disease, it produces, when injected, symptoms other than those of influenza—leucocytosis instead of leucopenia for example, as emphasized by V. C. Vaughan (1). Commissioner Robertson, of Chicago (2), states that the leucocytosis lasts ten to twelve days, thus indicating the absence of specificity. A survey of the literature, and the reports of various health departments leaves the whole question quite unsettled, the favorable reports being at least opposed by the unfavorable ones. William H. Park (3), of the New York City Health Department, writes: "It does not seem possible at present to prevent the primary disease by vaccination with known organisms."

Need I say that the therapeutics of the disease is unsatisfactory? Formerly the coal tars, the salicylates, and quinine were sheet anchors. Not only have they been discarded by most internists, owing to their tendency to promote cyanosis, but they have not been replaced by remedies enjoying the same confidence. About all that has stood the test of time, in fact, is the importance of absolute rest in bed. On the whole, it is apparent that we have come to a standstill with nothing promising in sight

—an estimate which applies equally well to several of our most destructive diseases. This is due to the fact that, as I have long urged, the functions of the endocrines are overlooked in the pathogenesis of these diseases and in the defensive processes through which they are antagonized.

In 1907 (4) I urged that the Pfeiffer toxin, the only pathogenic agent considered at the time, caused influenza by inducing a more or less marked paresis of the sympathetic system, also termed, about that time, the chromaffine system, owing to the presence in its nerves and ganglia of suprarenal substance. This paresis, in turn, by causing relaxation of the arterioles, permitted an excess of blood to flood the structures to which they were distributed, thus causing congestion on all sides. This explained the marked congestion and swelling of the nasal mucosa and coryza; the passive sinusitis causing the frontal headache; the conjunctival hyperemia with lachrymation and suffusion; the swelling and intense redness or vermilion hue of the tongue, oral cavity, pharynx, larynx, and bronchi; the cutaneous redness or erythematous blush and the supposed high fever.

I say supposed high fever because a rise of peripheral temperature may occur without the presence of actual fever, owing to the fact that the normal internal temperature is considerably higher than the peripheral; in the liver and lungs, for instance, it is 106.5° F.; in the carotid artery 105.4° F., etc. When the peripheral arterioles are sufficiently relaxed to allow arterial blood to flow through the peripheral capillaries, it is the internal temperature of the blood, transferred mechanically to the surface, which conveys the false impression that fever exists. The familiar slow pulse, which shows no parallelism with the temperature of influenza *per se*, further emphasizes this fact.

Yet additional studies in the clinical field imposed the need of some biochemical factor capable of affecting directly the blood itself. Thus, the characteristic leucopenia bespoke a distinct impairment of metabolism which a circulatory disturbance alone hardly explained. The white cell count is usually lowest about the second day. In a case observed by Synnott and Clark (5) it was as low as 1200. Staehelin (6) found it most constant in severe cases.

Another phenomenon which failed to be met by dilatation of the arterioles alone was the deficient oxygenation of the blood. The face, upper chest

*Read by invitation before the Medical Society of the County of Kings, Brooklyn, N. Y., March 16, 1920.

and even the extremities at times are not only hyperemic, but dusky and often cyanotic. "The cyanosis is so striking," writes Morris Manges (7), "that it cannot escape notice." Referring to 3,000 cases seen while in the Navy, Judson Daland (8) writes: "Cyanosis was a frequent striking and serious complication of the epidemic. In mild cases the lips, ears and fingernails were slightly bluish; in ordinary cases the cyanosis of the lips and ears increased and also extended to the cheeks and hands; the color became more distinctly blue. In severe toxic influenza, cyanosis may extend all over the body and include the mucous membrane of the mouth, and the color may deepen to a bluish black."

How are these and other characteristic symptoms—which so far have remained unexplained—produced?

Researches have led me to conclude that true influenza is due to the Pfeiffer bacillus, but that its mode of action differed from that of other pathogenic organisms and had thus misled bacteriologists. This action may be briefly summarized in that if it is able to reach the pulmonary alveoli, or air vesicles, it finds therein all conditions favorable to its cultural development. The Pfeiffer bacillus, as everyone knows, is markedly aerobic, growing only in the presence of oxygen, and best when the blood agar is well smeared with a solution of blood corpuscles and hemoglobin. We know also that while the usual incubating temperature is 98.6° F., colonies may develop up to 107.6° F. Pfeiffer having been able to cause influenzalike symptoms in monkeys only by introducing the bacteria directly into the lungs, or cultures through the nose, there is good ground for the prevailing belief that it is by invasion of the respiratory tract that the *Bacillus influenzae* provokes the disease. Blake and Cecil (9) have recently confirmed these findings by injecting into the nose of monkeys a strain of influenza bacillus isolated from a man suffering from influenzal pneumonia, which caused in these animals a disorder "identical with influenza in man in its course, symptomatology, complications and pathology."

If now we recall, 1, that there are about 725 millions of alveoli in our lungs aggregating a surface of about ninety square metres; 2, that the internal temperature of the lungs, 105.5° F., is within that at which the Pfeiffer bacillus develops colonies; 3, that the hemoglobin and the red blood corpuscles are necessarily exposed to the air and, if the air is contaminated with pathogenic germs, also to the morbid effects of these germs, it becomes evident that each pulmonary alveolus invaded by the Pfeiffer bacillus offers all the conditions required, including an ample supply of renewed oxygen, for the development therein of colonies of that organism.

How is the morbid process developed in the alveoli? In the laboratory colonies begin to appear in about eighteen hours, each colony being about the size of a small pinhead, one sixteenth inch in diameter. When we recall that the actual diameter of an alveolus is one sixtieth inch on an average, we can surmise what lesions a colony of one sixteenth inch in diameter, appropriating all local functional agents—oxygen, hemoglobin, blood cells,

and others—to sustain itself, will provoke. These are, briefly, local necroses involving not only the alveoli themselves, but also their capillaries, the vascular supply of the bronchioles, besides arresting the respiratory process itself—all lesions actually found. Thus autopsies have shown innumerable bacilli upon and within the mucosa of the bronchioles (10), i. e., where they are not able to develop colonies. In fifteen necropsies performed by Symmers (11) lesions were found which he deems so distinctive as to render possible a diagnosis of what he terms influenzal lobular pneumonia by the eye alone. These "are attended," he writes, "by changes in the vascular structures, marked by the escape in the alveoli of variable numbers of red cells and quantities of blood serum, either independently of one another or in combination." In a recent article F. P. McNamara (12), reporting ninety-five autopsies by Professor Winternitz, of Yale, at the U. S. General Hospital No. 16, of what he also terms influenzal pneumonia, states that "the alveolar capillaries are engorged and sometimes, due to rupture, the alveoli are filled with red blood cells. Such hemorrhages may involve large portions of the lung." Again: "The most striking picture and one that is peculiar to this disease, is the hyaline neurosis involving only the terminal bronchioles and alveolar walls," sometimes involving only the epithelium, but often involving all the structures of the wall." Rosenberger (13) also found small abscesses around the bronchioles. Stengel (14) states that bronchiectasis follows influenza more frequently than any other disease and that this complication always coincides with the presence of the Pfeiffer bacillus. This is readily accounted for if, as I believe, a necrotic process, beginning at the alveoli and involving the peripheral structures, blood vessels, and other tissues, prevails. Indeed, gangrenous areas are frequently found. On the whole and in keeping with the views of many of the older French clinicians many symptoms now credited to bronchitis or pneumonia are features of a true influenzal process.

The presence of many concurrent organisms does not invalidate this view, for a necrotic process with efforts at local repair, which means local inflammatory areas, may explain the presence, besides the ubiquitous pneumonial organisms, of streptococci and diplococci, the *Streptococcus hemolyticus*, and other organisms. Nor does the fact that the Pfeiffer bacillus is not always found prove that it may not have been present, for phagocytosis may have cleared the field of its presence, the purulent masses often voided attesting to this possibility. Again, many observers have recently attested to the presence of the *Bacillus influenzae* in practically every case of pneumonia; a conclusion reached, for instance, by Wohlbach, of Johns Hopkins Hospital (15), while Roos (16), Duval and Harris (17), and others hold that in epidemic influenza the *Bacillus influenzae* can be found in every case, provided sufficient care, suitable specimens, and proper selective culture media be employed.

The seriousness of the morbid process as a whole

³ The italics are my own.

only becomes apparent, however, when we realize the vicious circle that the alveolar invasion initiates. The early elevated temperature, as I have pointed out, is not a true fever—the pulse, in fact, being slow—but instead the result of relaxation of the arterioles. This relaxation now finds its explanation in the general asphyxia due to the alveolar invasion, the adrenals along with all other organs being functionally impaired through deficient oxygenation, the adrenal secretion, as is well known, sustaining the contractile tone of the arterioles. But this functional impairment of adrenal functions in itself lowers general oxygenation and metabolism in the light of a function I have attributed to the adrenals, and which has since been confirmed by others: that of supplying to the hemoglobin a catalytic enzyme which enables it to become converted into oxyhemoglobin—the function, we know, which causes venous blood to become converted into arterial blood. Indeed, the fact observed by Pfeiffer that even boiling of the hemoglobin did not prevent entirely the development of the influenza colonies shows that it is an oxidizing enzyme (which alone can stand the boiling point) in the hemoglobin—the enzyme I have termed adrenoxidase that the Pfeiffer bacillus utilizes or destroys while developing its colonies in the alveoli. That it is not hemoglobin itself that *Bacillus influenzae* utilizes, as is generally believed, is also shown by the fact that Cantani (18) found that it could also be cultivated with spermatic fluid which, though containing no hemoglobin, also contains an oxidizing ferment, as shown by Poehl, possessing catalytic properties. Such being the case, and recalling the emphasis I have laid on the catalytic properties of the adrenal enzyme in hemoglobin which enables it to crowd oxygen upon the tissues without being itself destroyed, even cyanotic or venous blood may show normal values in oxygen, as observed by Harrop (19), and yet be totally inadequate to sustain tissue oxygenation.

Ample clinical and pathological evidence is available showing that the adrenals are involved in the morbid process. Many French clinicians—Josué (20), Netter (21), Sergent (22), Rénon and Floreant (23), Voison and Benhamon (24), Renaud (25), Lesné (26), Wanner (27), Lyon and others, either to counteract the low blood pressure or adrenal insufficiency, used adrenalin, obtaining good effects. The Swiss internist, Eichhorst (28), also obtained excellent results with it, his mortality in two thousand four hundred and eleven cases having been but fourteen: i. e., less than six tenths of one per cent. In this country Diner (29), using it when the blood pressure was below 110, found it helpful, while Reilly (30) reports good results from a combination including three grains of suprarenal gland. Conversely, Rood (31) found both adrenalin and pituitary extract practically useless. Cowie and Beaven (32) likewise found adrenalin useless, but having satisfied themselves that the prostration in influenza was not due, as generally believed, to cardiovascular disease, concluded that it was due to adrenal deficiency, having obtained a prolonged blood sugar curve after injecting adrenalin, and also after the ingestion of glucose.

Seven autopsies also showed that hypoplasia and dysfunction of the adrenals were present. F. P. McNamara, alluding to the ninety-five autopsies by Professor Winternitz of Yale, writes that among "other extrapulmonary lesions that were more or less constantly found were hemorrhages in the adrenal bodies." Judson Daland also wrote recently in this connection (33), referring to three thousand cases—sixty-two per cent. of which showed the *Bacillus influenzae*—treated while he was in the navy: "Hypoadrenalism was suggested because of the frequency of low systolic and diastolic and large pulse pressures with adynamia." The latter closely simulated, he thought, that of advanced Addison's disease. In a series of thirty-seven autopsies he also found "marked disease of the adrenals," which were "a deep bronze color, enlarged, very friable and extremely congested." Daland also refers to the report of thirty-seven autopsies by Major O. L. Pothier at Camp Lee, who stated that "with the exception of the lungs no other internal organ suffered as much as did the adrenals."

The influence of the interference with the respiratory function by blocking and, in severe cases, necrosis of the alveoli, coupled with the adrenal insufficiency, on the symptomatology of the disease, manifests itself in many directions. Striking in this connection are the cases which show the opposite of a febrile process. Thus, Samuel West (34) of St. Bartholomew's, London, refers to this type as "by no means uncommon," remarking that "Many patients have complained of feeling so cold and chilly that nothing would warm them—not a roasting fire by day nor blankets galore and hot-water bottles at night—they still feel cold and miserable. The cause seems to be internal, as if they could not produce heat enough even to keep them warm in bed." This last sentence strikes the keynote of the process, i. e., deficient oxidation.

The asphyxia also explains the somnolence or prolonged sleep, of which many cases have been observed in the recent epidemic, sufficient in some subjects to suggest sleeping sickness or lethargic encephalitis. The dyspnea, the weak heart with tendency to syncope, the myalgias and neuralgias, the latter of the form long attributed to "nerves crying for blood"; the intense and lasting prostration, all point not only to asphyxia but also to a correspondingly depressed metabolism in all organs, including the leucocytogenic tissues, thus explaining the leucopenia, and the resulting impairment of defensive functions.

Another feature of the defensive process impaired by the asphyxia is that carried out by the thyroid. In 1903-07 (35) I held that the thyroid apparatus, including the parathyroids, formed part of our immunizing mechanism, the thyroid secretion fulfilling therein the rôle of sensitizing agent, corresponding with that of Wright's opsonin, which, acting on pathogenic organisms, facilitated their proteolytic destruction by phagocytes and antibodies. This has been confirmed by several European investigators. Clinicians in practically every country have also confirmed the participation of the thyroid in the defensive processes of various dis-

eases. When we recall also the important rôle of the thyroid in metabolism, the influence of asphyctic paresis of their functions as a gateway for complications is obvious.

Manges, in the paper previously referred to, stated that explanation of the reducing action which made it possible for the hemoglobin to be converted into methemoglobin might lead to the discovery of the real cause of influenza. The process submitted, also explains this phenomenon: The hemoglobin, failing to take up oxygen on passing the obstructed edematous or broken down alveoli, returns to the arterial channels either unaltered or without an adequate supply of oxygen. On reaching the tissues, whose avidity for oxygen has been more or less increased steadily as the oxygenizing power of the blood has diminished, while its carbon dioxide has accumulated, the hemoglobin is increasingly reduced by the tissues, a process which eventually converts it into methemoglobin.

PROPHYLAXIS.

In this connection, I will not burden you with familiar methods, but limit myself to some of the preventive features suggested by the newer interpretation of the disease submitted:

The multiplicity of obscure points which the asphyctic rôle of the influenza bacillus elucidates suggests that in the prevention of the disease the intensity of the influenzal process, all intrinsic factors being equal, is proportionate with the number of influenza bacilli which penetrate to the alveoli. This postulate explains several obscure characteristics of recent epidemics: the fact, for instance, that vigorous young adults, such as our soldiers in camp, were the chosen victims of the disease, while the weak and elderly were comparatively spared. This is accounted for by the fact that their respiratory mechanism, the inspiratory muscles of the chest in particular, was correspondingly more energetic and caused a far greater volume of contaminated air to reach their alveoli than could that of weaker individuals. In the vigorous, the inspired air, particularly during exertion, travels with greater speed over the defensive barriers that the nose, nasopharynx, tonsils, trachea, bronchi and bronchioles interpose between the exterior and the alveoli to rid the air of all noxious substances including bacteria. Such an air column carries a bountiful supply of influenza bacilli to the alveolar surfaces—all admirably prepared as culture fields with rapidly renewed hemoglobin, red corpuscles and oxygen to develop numberless colonies.

Another dilemma finds itself solved normally: the frequently observed fact that a patient suffering from a light form, if he leaves his bed too early, has a relapse, usually far more severe than the first attack. In the light of the above facts the slow breathing carried on during repose make it possible for the defenses of the respiratory passages to sterilize the inspired air of bacilli derived from the alveolar colonies in his lungs—as the many carriers prove—while as soon as, on resuming normal exertion, his respiratory mechanism becomes more active, many bacteria are enabled to reach normal alveoli and to start a new attack of the disease.

The postulate also accounts for the fact that the

severe types of the disease occur most frequently among people who live in crowded districts and quarters, tenements, several perhaps in one room. Indeed, it was from this class that in the emergency hospital with which I was connected during the epidemic of 1918, the most severe cases, those of the fulminant type, were often brought in practically purplish black, heliotrope cyanosis, as Dutch physicians call it.

In a comprehensive study of the more recent observations on the prophylaxis of influenza, my son, Dr. Louis T. de M. Sajous (36), collected much evidence showing that although infection might be transmitted by the hands, unwashed cooking utensils and other objects recently contaminated by buccal and nasal secretions, infection through the air by moisture harboring the virus, particularly if it is exhaled in talking, coughing or sneezing, is paramount. He quotes the observations of Vincent and Lochon in 1918, showing that agar plates held ten to twenty centimetres before the mouth of an infected individual but two minutes, averaged 209 colonies, while after three or four coughing or sneezing paroxysms they showed 250 to 300 colonies. The contaminating effects of close aggregation in a single sleeping room, even if large and well ventilated, are shown by the mortality in certain students' army training corps, and enlisted men of the army proper so quartered. The constantly changing occupants of street cars, subways, and other conveyances causing multiple exposures, the prolonged proximity to some infected individual in places of amusement, shops, schools, and other places of assembly are but a few of the multitude of opportunities for direct exposure during an epidemic which, as we well know, daily life imposes.

Yet, in view of these very adverse conditions, is it not remarkable that inhabitants of large cities are not all stricken by influenza whenever an epidemic occurs? Not only is this not the case, but in a very large proportion of people the disease only develops in its mild form and they recover. Even the great mortality of the 1918 epidemic in the United States represented but four and five tenths persons to the thousand. This shows how relatively few inhale a sufficient number of the *Bacillus influenzae* to cause the fatal form of the disease. It cannot be due to the fact that unaffected individuals inhale no influenza germs; not only have they been found in the nasal mucus and sputum of thirty-five per cent. of normal individuals examined, but also in connection with a variety of diseases other than influenza.

This suggests that the margin of safety in influenza is greater in reality than has generally been supposed, and that Nature herself does much to protect us. The manner in which she does it at once suggests itself when we recall that the very structures through which the bacilli laden air conveys infection are those of the respiratory tract, and that this tract throughout its entire length is so constructed as to protect the lungs from infection. The temperature of the air is raised; its moisture is adjusted to prevent undue viscosity of the mucus, and insure free activity of the glands and the ciliated epithelium and also that of the entire mucous

membrane lining the upper and lower respiratory tracts. As to the destruction of pathogenic organisms, those that enter the nose, when not in excessive quantities and during normal respiration, are practically all drawn and made to adhere to the moist mucus covered and irregular passages of the nose and nasopharynx. Tyndall, in fact, found that the filtering function of the nose was practically perfect. In the nasopharynx pathogenic germs then encounter the ring of lymphoid tissue; lower down, especially in the young, the tonsils, which contribute lymphocytes and epithelial cells that assume phagocytic properties, ingest and destroy any germ that the mucus, forced to pass over them by the contractions of the palatopharyngeal muscles, brings within their reach. To the same area, traveling upward, is brought from the entire bronchial tree beginning with the minute bronchioles, but not including the alveoli, with the ciliated epithelium as propelling agent, any dust or germs that may have been inhaled, mucus and phagocytes doing the trapping and killing, and finally appearing as sputum to be ejected.

On the whole, it is plain that if not every one becomes a prey to influenza, it is mainly because we have in the defensive functions of the respiratory tract a potent ally. Prophylaxis being thus in great part carried out by Nature, it is the margin between her powers and complete protection that we must fill. In other words, Nature's contribution to the protective process being say sixty per cent., how can we supply the remaining forty per cent.?

Antiseptics to enhance the defensive functions of the respiratory tract suggest themselves, but the great war has shown that when in sufficiently strong solution to destroy bacteria these agents also killed tissues subjected to their influence. This applied also to the Dakin-Carrel solution and other modern antiseptics. Moreover, they destroyed all free phagocytes. There was, however, one prominent exception, iodine. Lambert (37) studied the comparative resistance of bacteria and human tissue cells to many antiseptics by subjecting mixtures of staphylococci and living tissue cells to various dilutions of these agents and then attempting to cultivate the cells by his plasma method. He found that in every instance, excepting where iodine was used, the tissue cells were killed along with the bacteria. Not only did an iodine solution, one in 2000, prove sufficient to sterilize the tissue, but a good cell growth of the latter occurred after exposure for one hour to this solution. Harry Schütze (38), of the Lister Institute of Preventive Medicine of London, found, moreover, that while a one and three quarters per cent. half water and half serum solution of phenol took eight minutes to kill fourteen and one fifth million staphylococci, to the c. c. at 22° C., the same pathogenic germs under the same conditions were killed in two minutes by a one fifth to the thousand solution of iodine. This evidence, to which much could be added, indicates that iodine, which in effective strength is nontoxic and nonirritating, is in all ways our most efficient bactericidal agent.

The reason for this becomes selfevident when the functions I have ascribed to the thyroid apparatus,

which includes the parathyroids, are taken into account, besides its powerful influence on general metabolism. Briefly, iodine is a physiological constituent of and an active factor in the systemic defense against infection which acts, we have seen, by sensitizing, as do Wright's opsonins, pathogenic bacteria to phagocytosis. Moreover, as recently suggested by the investigations of Jobling and Petersen (39), it facilitates the proteolytic activity of the enzymes which serve to destroy or rather digest bacteria—a process which harmonizes perfectly with the sensitizing property I have attributed to the thyroid hormone.

It now becomes a question whether the *Bacillus influenzae* is itself susceptible to antiseptics. In truth, when not supplied with hemoglobin, the Pfeiffer bacillus is a sensitive microorganism. Its powers of resistance are so feeble that it cannot live in soil or water any length of time. It dies also within one or two hours in dried sputum. It is exceedingly sensitive to disinfectants, being, according to Kruse (40), easily killed by the weaker antiseptics. This, of course, suggests the use of other agents of this class, particularly the generally employed menthol, thymol, eucalyptus, and others. But conditions other than the above prevail in the nasal cavity which must not be overlooked. While the nasal mucus is an efficient adhesive upon which the bacilli are caught and into which they sink in groups when inhaled in moderate amounts, it is unfortunately a good culture medium, although this does not apply to the influenza bacillus, which requires hemoglobin. Yet this organism is not killed by the nasal mucus. It is only when influenza germs are driven by the ciliated epithelium to the lymphoid tissues of the vault and pharynx that their active destruction by phagocytosis occurs. And it is precisely this function that antiseptics other than iodine impair; if strong enough to affect the germs buried in the mucus, they also kill the phagocytes. Iodine, conversely, greatly favors phagocytic activity by sensitizing the influenza germs while enhancing the germicidal efficiency of the phagocytes themselves.

In iodine, therefore, we possess one of the factors capable of reducing the margin of exposure—estimated at forty per cent. we have seen—to a certain extent. How could it be used?

Our aim being to destroy as many influenza bacilli as we can, both directly and indirectly, by enhancing phagocytic activity, we must not overlook the fact that phagocytosis is a prominent defensive factor of the entire bronchial system down to the alveoli, in addition to the lymphoid barrier about the pharyngeal cavity. While we have seen that a one in two thousand solution of iodine proves actively bactericidal, even the intralaryngeal use of such a solution in the form of spray would not insure penetration much beyond the trachea unless special apparatus be used. What is needed is a method requiring no dexterity and within the reach of anyone; rich and poor, intelligent and otherwise.

Nascent iodine, generated by exposing the crystals in a receptacle to heat, was found too severe, as personal tests showed, when applied directly to

the upper respiratory tract, the fumes causing an intense burning, peppery sensation which precluded the use of this method. This applied also to solutions as weak as one to 2,000. Fumes that iodine crystals give off normally and which can be increased sufficiently by the heat of the hand, were, however, found to serve all purposes, as indicated by the starch test, without causing unpleasant after-effects. I use as inhaler a small glass tube enlarged sufficiently at one end, in the shape of a bulb, to occlude one nostril. Between two wads of absorbent cotton filling loosely the whole tube (in the middle of the latter, therefore) are placed three grains of iodine crystals through which the air current passes during inhalation. By placing the tube in each nostril in turn, and inhaling the fumes while taking a deep breath, the fumes will be felt to penetrate far down. Various pocket inhalers available in shops may be disposed for the same purpose, but not more than three grains of iodine crystals should be placed therein, and absorbent cotton should always be interposed between the crystal and the nose to avoid the inhalation of fragments of iodine which, on reaching the larynx especially, might prove troublesome. To insure penetration of the fumes as close as possible to the alveoli, a few deep, slow, and prolonged inhalations of the fumes are taken; then the nose is closed with the fingers and efforts to blow the iodine out are made. The intrapulmonary iodine is thus forced by the contracting walls of the chest to penetrate into the smaller ramifications of the bronchial tree. The slight warmth and pricking sensation experienced disappears in a few minutes.

The use of the iodine inhaler is particularly useful where the air is likely to be contaminated. It should be used before leaving home and every three hours to keep the nasal mucosa on the defensive. At present, coughing and sneezing individuals are urged to cover their faces, nose, and mouth with their handkerchiefs; but everyone exposed should likewise protect himself with his handkerchief. A small inhaler hidden in it and used materially reduces the danger of infection. A few whiffs suffice. Again, many bacteria inhaled are present at first in the anterior nasal cavities; if the inhaler is used again on reaching home, and the nose freely blown, additional protection is afforded.

Can inhalations actually prevent infection? Study of this question revealed that a chloramine-T two per cent. solution in chlorinated eucalyptol and paraffin oil had been recommended by Dunham and Dakin (41) as spray for the nasal cavities in carrier cases in various diseases, after irrigation with salt water; that W. H. Haskins (42) had used a two per cent. solution of dichloramine-T alone as prophylactic spray against influenza in 400 men who came to the service from civil life, none of these developing the disease, although neighboring troops not so treated suffered in the same proportion as elsewhere. Voorhees (43) had likewise found a similar solution in chlorococane oil very efficient for the same purpose, the solution being dropped into the nasopharynx, the patient lying down with his head overhanging the edge of the couch. The prophylactic efficiency of various agents inhaled had

also asserted itself incidentally in industries employing chemicals. During an epidemic in Frankfurt, Germany (44), workmen exposed to heated and evaporating turpentine proved invulnerable to the disease. The same freedom was noted at the Edgemont Arsenal, where thousands of men were employed, according to F. Tweddell (45), during the epidemic of 1918, from the inhalation of chlorine gas manufactured there, although hundreds of cases of the disease existed in the neighborhood. Shuffelbotham (46), having investigated in twenty different and widely separated districts in England, that workers in poison gas were less susceptible to influenza than others, and that they did enjoy a very high degree of immunity from infection, with the exception of workers in phosgene. A. Gregor (47) studied the question bacteriologically and found that in workers exposed to sulphur dioxide and nitrous oxide fumes, concentrated insufficiently to produce any ill effects, there was a marked decrease in the pharyngeal bacterial flora even twenty-four hours after exposure to the fumes. On the whole, ample evidence was available to show that prophylaxis through inhaled agents was possible.

Selection of the best antiseptic to sterilize the pre-lymphoid area of the anterior nasal cavities when exposed to deeply contaminated air in public places, conveyances and the sickroom, was next in order. Personal tests showed that dichloramine-T could not be used satisfactorily for the purpose either in oily or aqueous solution, owing to its marked instability. Chloramine-T, is quite stable in a one to 250 aqueous solution if kept in a dark bottle, but it proved also too irritating. I was always brought back to iodine which, besides being actively germicidal as stated by Pouchet (48), is "a specific excitant of lymphoid tissues" and therefore of phagocytosis. Used in the form of fumes as specified, but not excessively, lest it produce local irritation, iodine could probably prevent the development of the severe form of the disease in every one.

Public places, stores, places of amusement, schools, hotel lobbies, factories, restaurants, railroad stations, waiting rooms, and also cars, subways, railroad coaches and other vehicles, besides the usual precautions taken, should be supplied with portable heaters, numerous in proportion to the size of the area to be filled, capable of emitting iodine fumes in sufficient quantities to impregnate the air distinctly.

Internal medication to enhance the autoprotective resources of the body would further decrease the chances of infection. The adrenals and the thyroid, owing to their powerful influence on oxidation, metabolism, and immunity, acting in conjunction with trypsin—Abercalden's defensive ferment—all of which acting collectively which I have (1903-1907) termed autoantitoxin, constitute our logical foundation for this purpose. Stimulation of these organs, to endow them with exceptional activity during an epidemic, and thus enhance the efficiency of the defensive reaction throughout the entire respiratory tract, is thus indicated. The adrenals are directly stimulated by strychnine. This fact, which I urged in 1903 and

several times since (49), has recently been confirmed by Stewart and Rogoff (50), who found, after an elaborate pharmacological study that therapeutic doses of strychnine caused a marked and lasting increase in the production of the adrenal secretory product.

If the subject treated prophylactically uses iodine inhalations faithfully, a morning and evening therapeutic dose of strychnine, adjusted according to the age of the person, will suffice. If he is careless or forgetful as regards the iodine, he should receive small doses of thyroid gland, not more than a grain twice daily for an adult, to increase general opsonic and phagocytic activity, and quinine hydrochlorate in similar doses, small quantities of this salt likewise exciting phagocytic efficiency.

The use of the mask in the sickroom has been pretty generally regarded as useless, but Louis T. de M. Sajous (51), after a searching inquiry into the subject, concludes that condemnation of the mask because of seemingly unreliable results was unwarranted. He recalled the experiments of Vincent and Lochon in 1918, which showed that uncovered Petri dishes at a distance of about ten inches from coughing patients showed 312 colonies; when covered with one layer of gauze, 100 colonies; with two layers, twenty-six colonies; with three layers, ten colonies; with four layers, three colonies; with five layers, one colony. The experiments of Doust and Lyon also showed that droplets were projected four feet or more during loud speaking and ten feet during coughing. This indicates plainly that with a suitable mask (the one now in general use is more dangerous than useful) with the additional active defense afforded by the respiratory tract, droplets numerous enough to initiate the disease should never reach the alveoli.

A suitable mask, from my viewpoint, should be absolutely impermeable over the nose and mouth, the air being inhaled and exhaled without discomfort from the sides only, within the reach of any one as to cost. The mask I use is a boatlike hood made of impermeable canvas which covers the nose and mouth, though not in contact with them, thus avoiding all stifling and suction of germs, a defect which is easily demonstrated by placing coal dust or snuff on the outside of a four ply gauze mask of the usual type and wearing the mask a few minutes during exertion.

Each side is extended to the ear by flaps made of two ply cheese cloth provided with tapes. Such a mask prevents all direct access of droplets to the nose or throat even if they are coughed directly into the face. Those striking the sides having to travel a circuitous route beginning with the cheese cloth would never reach the nasal cavities, even aided by the inspiratory suction, with sufficient velocity to reach beyond the nasopharyngeal barriers. Briefly, such a mask would prevent air sufficiently contaminated to reach the lungs with the inspired current from causing the disease.

An important feature of recent epidemics was the recognition of carriers, estimated at about thirty-six per cent. of persons who have had the disease, lasting in such several weeks, in some

months and years, and sometimes in apparently well individuals. It is to such, in fact, that various sporadic outbreaks, and also those occurring on the high seas, in isolated regions, and other remote places, can be attributed. In a recent instance many young soldiers lost their lives on a Portuguese army transport through a single passenger from an infected area. A suitable agar plate held before the mouth a few minutes while the tested individual spoke and coughed, controlled by smears from the nose and pharynx, would make it possible, if not positive, to rid him of his infectivity by inhalations of iodine and internal medications during isolation. Such a plan could find many applications for the protection of municipalities and perhaps of the country in general for the detection of carriers, particularly aboard ships from Europe or Asia, whence pandemics usually reach the United States.

A few other features of practical interest that have suggested themselves also seem worth mentioning. We have seen that young adults are the principal victims because of their correspondingly more vigorous inspirations, the influenza germ reaching the alveoli more readily. This suggests the advisability of prohibiting, during an epidemic, dancing, skating in enclosed rinks, drilling, setting up exercises and other sources of violent exertion. Again, fatigue predisposes to infection by reducing the activity of the defensive functions, including the oxygenizing activity of the adrenals and the opsonic efficiency of the thyroid.

Cold quarters, apartments and rooms favor infection by decreasing the defensive activity of the mucous membranes of the upper air tract and of the body at large. The defensive ferments with which phagocytes carry on their bactericidal activity are active in proportion to the heat to which they are exposed up to a certain limit. Living quarters should not be allowed to be below 65° F. during an epidemic though well ventilated.

TREATMENT.

The foregoing study will fortunately make it possible to place before you in a relatively few statements the remedial measures it has suggested.

Any one showing a rise of temperature and other symptoms of influenza during an epidemic should at once be kept in bed, isolated, reported and the room at least placarded. Agar plates and smears of the nasopharyngeal mucus should then determine the presence or absence of the disease. In the meantime a calomel purge, a grain in divided doses, followed by a mild saline aperient, should be given. I have pointed out (52) that mercury is probably our most energetic stimulant of endocrine glands and of the leucocytogenic organs. It was, in fact, regarded as capable of aborting influenza many years ago, and has been recommended in recent years by Nammack (53) and Mann (54), the latter following up the purgative dose with one tenth grain doses four times a day for three or four days.

Any degree of probability that influenza is present, and of course a confirmatory diagnosis also, impose the duty of at once initiating iodine inhalations and absolute rest in bed—a step which the

asphyctic nature of the disorder imposes. The small inhaler should be used every hour during waking hours, taking a couple of whiffs through each nostril and inhaling deeply. The room, preferably a small one, should be saturated (though not sufficiently to prove irritating to the eyes) with iodine fumes generated near the patient's bed by placing ten grains of crystals of iodine on a metallic plate over a flame or alcohol lamp to insure its slow but steady vaporization, renewing the crystals as needed. The aim should be to check the formation of colonies in the alveoli and to destroy the influenza bacilli in the respiratory tract at the earliest possible moment, the bacilli from the alveolar colonies serving to infect other alveoli. For children and patients too ill to use the inhaler a compress kept moistened with tincture of iodine and placed within a few feet of the pillow will add enough to the fumes from the heated crystals to keep the air of the respiratory passages charged with the halogen, at least sufficiently to afford partial protection. The fumes from the heated crystals would also protect the nurse since they readily penetrate under and through the sides of the mask, which should always be worn in the patient's room. She would also be prevented from becoming a carrier.

A bed tent made out of a large sheet held up in the middle with a rope, the upper part of which would reach above a window, with the upper sash somewhat lowered, would serve to concentrate the fumes in a small area and increase their efficiency. The patient, however, should be kept warm, though well supplied with fresh air.

There is at least one commonly employed household remedy that should be ostracized in influenza; it is the sweet spirit of nitre. All nitrites are antagonistic to the action of the adrenals, while their effects on the arterioles are precisely those brought about indirectly by the influenza bacillus. Cold baths merit equal condemnation owing to the asphyctic tendency of the disease.

Conversely, the salicylates have wrongly been abandoned on the plea that they caused cyanosis—a criticism which applies only to excessive doses—whereas this symptom, we have seen, is due to the disease itself. In 1907 (55) I urged that in small therapeutic doses the salicylates caused constriction of the arterioles and reduced the volume of blood supplied to all tissues, including the painful areas. It is precisely through this action that they reduce the so-called fever of influenza, due, we have seen, to flooding of the cutaneous capillaries resulting from the influenzal dilatation of these arterioles. It is because of this action that they relieve the racking headache and the so-called temperature, the myalgia, and other characteristic discomforts, by causing the capillaries to resume more or less their normal calibre. This applies to all organs which are the seat, as necropsies show, of marked congestion, including particularly those that suffer most, the lungs (assailed directly by the *Bacillus influenzae* in their alveoli and indirectly by the passive congestion of their immense capillary system) and the adrenals, which by their hormone sustain the respiratory process. Indeed, interpreted in the light of my

views, it would be difficult to find a more perfect specific than the salicylates.

An essential feature of these agents, however, is that they should be used in small doses, since large doses by exaggerating the constriction of the arterioles, produce effects resembling those due to influenza through the general ischemia, with possibility of cardiac arrest. Moreover, overconstricted arterioles tend to overdilate secondarily. The sweating attending the use of small doses of salicylates is not pathological; it indicates merely resumption of the functions of the sweat glands; the sweating caused by large doses, however, is colliquative and therefore harmful.

The ammonium salicylate is the best salt, since it tends also to reduce the acidosis; ten grains at one dose, followed by five grains every two hours, has given me the best results. Or, salicin, in ten grain doses every hour, four times, then every two hours, is equally helpful. The reduction of the so-called fever is promptly effected and the suffering is controlled even more rapidly by injecting intravenously, but slowly, five to seven grains of sodium salicylate dissolved in thirty minims of sterile water, twice in the twenty-four hours.

Of the coal tars, which have the same effect on the arterioles but are more fleeting, antipyrin and acetanilid are treacherous, acting well, perhaps, for a while, then suddenly even in small doses, causing at times threatening cardiac depression. Acetphenetidin five grains, with sodium bicarbonate ten grains, every three hours, does not seem to possess these defects and is very helpful when the salicylates cannot be obtained. Heroine, which includes peripheral vasoconstriction among its effects, is very useful when the suffering, including the dyspnea and edema, resists the foregoing agents.

When the circulatory equilibrium has been reestablished by the use of the salicylates or their congeners, i. e., when the peripheral hyperemia, or so called fever, has abated, thus indicating that the adrenals are no longer the seat of paretic passive congestion, strychnine, which, we have seen, stimulates the adrenals, should be used to keep the arterioles contracted, a function of those organs. One of my pupils and former laboratory assistant, Dr. V. P. Jourdan, of Bristol, Pa., found in a series of 750 cases, including forty-six with marked pulmonary complications, and a total mortality of but eight cases, that small doses were futile (a logical conclusion in view of the torpor of all centres due to the general asphyctic trend) and that one thirtieth grain doses increased to one twentieth grain four times a day, or one fifteenth grain twice daily, were necessary to obtain good results. When pulmonary edema is present, strychnine is contraindicated, the resulting rise of blood pressure tending to aggravate it.

The adrenal insufficiency upon which French clinicians first laid considerable stress and which several American internists have now confirmed, we have seen, has led to the use of adrenalin, in most instances with excellent results, but in a few with no benefit. Its use, ten to fifteen minims of the one to one thousand solution in thirty minims of saline solution, injected slowly intramuscularly,

is subject to the same rule as for the use of strychnine in so far as peripheral hyperthermia (fever) is concerned, when it should not be given; but it does not tend, with the small doses employed, like strychnine, to increase pulmonary edema, and may then be helpful.

An auxiliary measure of material help in these cases, calculated to offset both the marked acidosis and also the viscosity of the blood, is a pleasant beverage composed of half each of milk and saline solution and one dram of sodium bicarbonate to the pint. One tumblerful every four hours, besides promoting general osmosis, insures free renal action, thus facilitating the elimination of toxic wastes. Rectal injections of warm saline solution are preferable to cathartics to keep the bowels open.

No patient should be allowed to leave his bed until agar plates and smears of his nasopharyngeal and tracheal mucus demonstrate that no active colonies exist in his alveoli.

Summarizing these various phases of the question, the following conclusions seem to me in keeping with the object of this paper, to open a new horizon for the study of influenza, its prophylaxis and treatment:

1. True influenza is due primarily to the Pfeiffer bacillus, but this organism does not provoke its pathogenic effects in the classic manner, i. e., in accord with Koch's postulates.

2. When permitted by the defensive mechanism of the respiratory tract to reach the pulmonary alveoli, the Pfeiffer bacillus, finding all suitable conditions for its growth—hemoglobin, oxygen and temperature—therein, develops colonies which arrest the function of these alveoli in the respiratory process, and besides cause necrosis of the alveolar walls, of the capillary network underlying the latter, and of the neighboring structures, bronchioles, and others by interfering with their oxygenation and nutrition.

3. The alveolar lesions interfere also with the respiratory process of the system at large, thus causing asphyxia of all organs including the adrenals, whose hormone enables the hemoglobin to be converted into oxyhemoglobin, and also sustains the tone of the arterioles. The latter being dilated as a result, the general asphyxia is aggravated, while congestion and hemorrhagic foci occur in all organs including the lungs.

4. This pulmonary congestion with its attending edema and hemorrhages, supplemented by the alveolar and neighboring lesions, unitedly give rise to a symptom complex which has been attributed to bronchitis, bronchopneumonia, and lobar pneumonia, but which in reality constitutes in most instances the symptom complex of advanced influenza.

5. This advanced influenza occurs only when, as a result of repeated exposure to, or vigorous aspiration of, or living in the midst of, air markedly contaminated by influenza bacilli, the nasopharyngeal lymphatic defenses and the ciliated epithelium of the respiratory tract are unable to prevent access of these bacilli to numerous alveoli.

6. The severity of an attack of influenza is pro-

portionate to the number of alveoli invaded by influenza bacilli, but a mild attack may be converted into a severe one by a secondary autoinfection, if the influenza bacilli derived from the alveolar colonies are caused to invade other, and usually numerous, alveoli by the increased respiratory activity entailed by leaving the sickbed too early and without sterilizing the respiratory tract.

7. Sterilization of the respiratory tract is produced most efficiently by stimulating the lymphoid tissues of the nasopharyngeal area and the mucosa of the entire tract to the bronchioles with iodine fumes deeply inhaled, which, beside, promote phagocytosis and sensitize the Bacillus influenzae to the action of these defensive cells.

8. In the treatment of influenza the paramount aim should be to prevent access of the influenza bacillus to the alveoli: An influenzal cold without temperature or other symptom means the presence in the respiratory passages of numerous bacilli, which the mucosa and lymphoid tissues are opposing. Absolute rest in bed to diminish respiratory activity and sterilization of the respiratory tract are imperative.

9. All patients with a rise of temperature should be treated as severe cases: Absolute rest in bed, calomel and saline, deep iodine fume inhalations, the salicylates, and when the temperature is down, strychnine or adrenalin. The patient should not rise until agar plates no longer indicate that the breath contains influenza bacilli.

For the prevention of influenza the following precautions are suggested in addition to those usually taken during epidemics:

10. Prophylactic measures should aim to prevent prolonged, repeated, continuous or vigorous inhalation of air where it is likely to be contaminated, the respiratory tract being able to prevent access of bacilli to the alveoli only up to a certain limit. All public places should be kept sterilized and aerated to reduce as much as possible the average infectivity of their air. All sickrooms should be placarded, the attendant wearing a mask.

11. The defensive functions of the respiratory tract should be enhanced by the inhalation of iodine fumes, and the nose and mouth be covered with a handkerchief when in crowded places or where coughing, sneezing and loud talking are occurring, to insure selfprotection and avoid becoming a carrier.

12. Personal prophylaxis should be further enhanced in persons greatly exposed to infection through their daily occupation by the use internally, in addition to iodine inhalations, every three hours of small doses of strychnine and thyroid gland to increase the phagocytic activity of their respiratory tract.

13. Suspected carriers can be readily detected with the aid of agar plates. They should be isolated and treated with iodine fumes and small doses of strychnine and thyroid gland until agar plates no longer indicate that they are carriers. This measure, applied to passengers and crews of vessels from infected countries, would indicate the carriers among them and make it possible to protect the country or municipalities exposed to infection.

14. The term influenza having lost significance in the light of modern studies, that of *alveolitis pulmonalis necrotica* is suggested as more in keeping with pathological findings and with the therapeutic and prophylactic measures indicated.

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- 2043 WALNUT STREET.

EXPERIMENTS WITH TRANSMITTING INFLUENZA THROUGH FLEAS.

By C. ENGELBRETH, M.D.,
Copenhagen.

EXPERIMENT I. C. W. M., aged forty-five years, barber, in good health. January 15, 1919, at 10 a. m., he was infected by a flea (*Pulex irritans*) which a short time before had been infected with influenza and pneumonia. January 17th, at 8 p. m., he complained of not having felt well since the evening before (incubation, twenty-four to thirty-six hours). He slept badly, had no appetite, and suffered from headache and exhaustion. He was obliged to go to bed, temperature 38.1 C., pulse 60. January 18th, he slept badly, had no appetite, and complained of headache and exhaustion. Temperature 38.10 C., pulse 60. January 19th, he slept well, but had a slight headache. Temperature 36.8 C., pulse 68. January 20th, temperature 36.2 C., pulse 68. January 22nd, temperature 36.4 C., pulse 76, slight headache. January 27th, temperature 37 C., pulse 68. On February 12th pneumonia had suddenly developed, temperature 40.5 C., with great pain in the affected side, and difficult breathing. After six days the temperature fell to 36.5 C., rose again to 39.2 C. for two days and finally became normal. On February 27th he was out of bed, and on March 21st he came to visit me, though he was not feeling quite well.

EXPERIMENT II. January 15, 1919. H. C., aged twenty-five years, paper hanger, denied having influenza. At 10 a. m., January 15th, infected by a flea which immediately before had been infected by a woman with influenza and pneumonia. Infected again ten hours later. January 16th, in good health, temperature 37.45. January 17th, slept badly, poor appetite, headache, sore throat (angina), redness in the throat, temperature 37.8 C., pulse 100. January 18th, slept badly, headache, angina, pain in the backs and limbs, exhaustion, temperature 37.9., pulse 100. January 19th, slept badly, temperature 37, pulse 72. January 21st, temperature 36.7 C., pulse 72.

EXPERIMENTS III, IV, V. February 12th to February 18, 1919, were all negative. Three young men (P. L. and F.), who denied having influenza, were inoculated February 12th and 13th by three pulices, which had sucked blood February 12th from a man with pneumonia. The three men remained healthy. Two pulices succeeded in escaping. February 15th to 17th the experiments were renewed with three other pulices which had been infected by a woman with typical influenza without complication. Two experiments were tried on each of the men twenty-four hours elapsed between the inoculations. None of the men were infected, so these experiments were given up.

EXPERIMENT VI. March 1, 1919. A. N., aged nineteen, seaman, denied having influenza. Infected March 1st, at 8 a. m. by three pulices, which had been infected ten hours before by a pregnant woman with influenza and pneumonia. March 2nd, temperature 37.3 C., pulse 76 (one pulex died). March 3rd, poor appetite, headache, angina, pain in the back, weariness, temperature 37.7 C., pulse 112

(one pulex died); 8 p. m., no appetite, vomiting, temperature 37.8 C., March 4th, no appetite, headache, temperature 37.3 C., pulse 88. March 5th, in good health, temperature 37.4 C., pulse 76.

EXPERIMENT VII. March 14, 1919. A. B., aged twenty-eight, workman, denied influenza. Infected March 14th by three pulices which had been infected March 13th from a teacher with influenza (the infection in pulex had lasted thirty hours). Temperature 39.4 C., March 15th, temperature 37.6 C., pulse 76. March 16th, headache, no appetite. March 17th, slept badly, headache, pain in the back and limbs, temperature 37.7 C., pulse 104. March 18th, slept badly, coughing attacks, phlegm, pain in the back, temperature 37.5 C., pulse 80. March 20th, feeling constantly ill, no appetite, cough, headache, dizziness, temperature 36.6 C., pulse 56. March 22nd, headache, pain in the back, cough, exhaustion, appetite and sleep better, temperature 37.2 C., pulse 72. March 26th, in good health, temperature 37.2 C.

EXPERIMENT VIII. March 15, 1919. A. G., aged twenty-three, workman, denied influenza. March 15th, infected by the same two pulices (infection fifty-four hours before). March 16th, temperature 37.1 C., pulse 72. March 17th, temperature 37.4 C., pulse 80. March 19th, in good health. Experiment negative.

EXPERIMENT IX. March 17, 1919. A. G. C., aged twenty-one, workman, denied influenza. Infected March 17th, at 8 p. m., by the same two pulices. Infection in pulices lasted four days. March 18th and 19th, in good health. March 20th, sore throat. March 21st, headache, pain in the back and limbs, coughing attacks, weariness, constipation, temperature 38.2 C., pulse 100. March 23rd, slept badly, angina, headache, pain and cough as before, phlegm, rhonchi. Patient kept in bed, temperature 38 C., pulse 80. March 24th, the same condition, temperature 37.8 C., pulse 92. March 25th, same condition, temperature 37.6 C., pulse 90. March 26th, same condition, temperature 37.5 C., pulse 80. March 28th, enrolled as a soldier.

EXPERIMENT X. March 22, 1919. F. F. L., aged thirty, painter, denied having influenza. March 22nd infected by a pulex. The infection in the pulex lasted nine days. March 24th, slept badly, headache. March 25th, headache, weariness, temperature 38 C., pulse 112. March 26th, same condition, pain in the back and limbs, angina, cough, phlegm, temperature 38.1 C., pulse 112. March 27th, same condition. March 31st, continual headache, weariness and cough, temperature 38 C., pulse 120. April 1st, profuse perspiration, temperature 37.9 C., pulse 112. April 3rd, temperature 37.4 C., pulse 80.

EXPERIMENT XI. March 23, 1919. T. A., aged twenty-one, machinist, denied having influenza. March 23rd, infected by pulex from March 13th (infection in pulex of ten days' duration). March 24th, temperature 37.3 C., pulse 80. March 25th, temperature 37.7 C., pulse 100. Enrolled as soldier.

EXPERIMENTS XII, XIII, XIV. March 27th to 31, 1919. Inoculations from the same pulex (March 13th) on three men infected March 27th, 28th and 31st, were all negative. The infections

in the pulices had lasted fourteen, fifteen and eighteen days.

To these experiments I should add the following remarks: These pulices infest humans. They were taken from a lodging house and kept in glass tubes with cotton corks. I soon learned to put a piece of wool in the bottom of the tube so they could not hop, and this made them easier to place on the skin. This was done by turning the glass upside down. When the flea had filled itself suitably, a piece of smooth stiff paper was placed between the glass and the skin, and holding the paper tightly over the mouth of the glass, it was turned and the flea again dropped to the bottom. For some time I was dubious as to how I should preserve the infected fleas. One might think that the infection would weaken when the creatures became cooler, and I therefore kept them in a thermostat at 31°. They died. I kept them at 27° C. They died. At 22° C. they lived. I soon found that the best thermostat was my vest pocket. Strangely enough the fleas were inclined to die one or two days after sucking blood from sick persons, while the other ones lived ten days without food. The only explanation is that they died from infection.

EXPERIMENTS III, IV, V, VIII, XII, XIII and XIV were negative. This might have been caused by the persons already having had influenza. It could also be that the pulices had not been infected, or that the infection in them had run out. Evidently this was the cause in experiments XII, XIII and XIV. The pulex infected March 13th was still infectious ten days afterward, but fourteen, fifteen and eighteen days afterward it could no longer infect. If one accidentally took such a pulex for experiment, it could not be reinfected perhaps and the experiment would be negative, even if both the sick persons and the experimental person were suitable.

The principal interest is in the positive cases I, II, VI, VII, IX, X and XI. These cases were not isolated, as I had no means of doing that. However, I do not believe that it can be carried through by a greater number of experiments. One will always point out the possibility of another infection, if not directly, then indirectly, through the attendants or through the doctors.

The conclusions are not so much from the absolute isolation as from these facts: 1, That the source of infection was influenza; 2, that the time of incubation agreed with a generally known incubation period, and 3, that in a certain proportion of cases the disease produced was influenza. These facts give us sufficient scientific security for correct conclusion.

The source of infection has in all cases been patients from a department for influenza under the direction of Doctor Kirstein. The patients employed had all had typical cases of influenza, often complicated with pneumonia. The duration of the disease in these cases has perhaps not been properly observed. However, it has value in the study of the degree of infection transmitted through insects.

The time of incubation in the positive cases, as has been shown, was from one to two days, and

in one case three days. This corresponds very well with a time otherwise observed. No prodromal symptoms of any kind were observed. The symptoms of the infected patients were severe headache, as a rule lasting during the course of the disease, and angina and redness of the throat, coughing, phlegm, pains in the back, limbs and joints, weariness, exhaustion, lack of appetite, loss of sleep, perspiration. The fever was not marked, remaining from 37.5 C. to 38.2 C., and with a recession of the illness usually subnormal, 36 C. The pulse was rapid, 120, or in some cases very low, 56.

All in all, we have before us a number of cases of mild influenza, such as they are for a great part in epidemics, and without complications, with the exception of the first experiment. In this case it is possible to assume, from the account of the patient, that the pneumonia was caused by the pulex.

ACUTE INDIGESTION.

By BEVERLEY ROBINSON, M. D.

New York.

Undoubtedly cases of acute indigestion are not infrequent when one has overateen or has taken food which did not agree with one. Sometimes this acute indigestion is termed ptomaine poisoning, especially where the food is presumed to be tainted, or poisonous, for one reason or another. In some of these cases alarming or painful and distressing effects often follow very soon and occasion much anxiety to patient, physician and friends. As a rule, however, even real ptomaine poisoning, if we adopt a somewhat doubtful or unexplained name, does not cause death and after a few days the patient is about in his usual health. This is not always the case, unfortunately, and I have known instances where it required many weeks, or even months, before the patient recovered his health.

In writing this short article I had in mind that which we read so frequently in the daily papers, or have been told by acquaintances, friends or patients, that such and such a person has died suddenly of acute indigestion. Now is this true? If it is not true what useful lesson should be learned by the wise practitioner?

I have seen, as other have, patients die with symptoms of what might be termed, incorrectly, as I believe, acute indigestion. The cause of death in these cases is primarily an overstrained, weakened heart, already diseased, or a cerebral hemorrhage, caused by diseased arteries and perhaps aided by a weakened circulation, which causes stasis in the vessels of the brain. Here again the heart itself is partly at fault.

A few days ago I answered a very urgent call to see a friend who had been taken suddenly ill in the street and it was all he could do to go a few blocks to where he could lie down and send immediately for medical help. I asked a few questions and then acted. The pulse was rapid and irregular but apparently strong. There was an uneasy feeling in the head, and the hands were cold. The patient was naturally solicitous, not to say alarmed. He had no symptoms of indigestion. His bowels were somewhat constipated, he had not had the usual

movement that day. The attack was occasioned by walking hurriedly to catch a street car, when he felt the attack coming on and desisted. The patient was a man of sixty years, or more and some months previously had had an attack of neurasthenia for which he had received treatment from a specialist in nervous ailments. He had sufficiently recovered to resume his law practice and was on his way to his office when the attack of faintness and loss of strength suddenly occurred. After ascertaining a very few facts I immediately put a hypodermic tablet of tincture of strophanthus under his tongue and allowed it to dissolve. I then called for aromatic spirits of ammonia and gave him half a teaspoonful in water. The patient at the time was lying on the sofa. When he was decidedly better, ten, or fifteen minutes later, I called up a hospital, secured a private room for him, called a taxi and took him there. I ordered a compound cathartic pill, every three or four hours, until the bowels moved freely. The patient left the hospital the following afternoon, went to his country home near the city, and has had the advice of two physicians since, who permitted him to come to the city after a few days and go to his office. He wrote me four or five days after I saw him and expressed himself as feeling far from well.

I consider this attack one that proceeded from both heart and brain. He called it acute indigestion in his last letter to me, presumably in that statement echoing his physicians' affirmation. They probably knew well that the term acute indigestion was really a misnomer, but called it thus to lessen apprehension and, in reality, to be helpful to the patient both mentally and physically. I am satisfied that, except for my timely aid in the right way, things might have resulted differently.

I wish here to reaffirm what I have stated more than once during the last year or two, that nothing equals strophanthus given sublingually, as a rapid restorative in just such, or analogous cases. Of course, ammonia is indicated and desirable and should be given as promptly as possible, but it takes time, a few moments in any event, to get ammonia, water, a tumbler and a teaspoon. It takes a single instant to make use of strophanthus, sublingually, in hypodermic tablet form.

I trust my colleagues may lay to heart what I have written and never answer an urgent call without having in their vest pockets a vial of hypodermic strophanthus tablets, preferably of one minim each, so that they can be repeated, if need be, several times within a brief period. The frequency of repetition and the amount of strophanthus given must depend upon the seriousness of the case and the effect produced. It is better *not* to give even a sip of water for at least three to five minutes. Absorbed in the stomach, strophanthus does not act so well as when it is absorbed under the tongue, and small doses act better than large ones. Both these statements have been proved to my satisfaction. Experimental research has corroborated the affirmation about relative stomachal intolerance in a way, namely, that the gastric fluids cause the effect of strophanthus as a heart stimulant to be lessened markedly.

GASTRIC DISTURBANCES IN APPENDICULAR INFLAMMATION

By SAMUEL FLOERSHEIM, M. D.,
Los Angeles, Cal.

Of late years the appendix has been adorned with ever increasing acts of vandalism. Though stomach symptoms have been ascribed to the appendix, still I observe a number of cases of appendicitis with outstanding symptoms of gastric disturbance which are diagnosed and treated incorrectly, due to lack of appreciation and insufficient emphasis being brought to bear upon the fact that the appendix can cause more or less marked disturbances of the gastric functions. These disturbances seem to be produced reflexly through the nervous mechanism. This tends to influence the mobility of the stomach, its secretion and other physiological functions. In some cases we find hypersecretion with or without increased mobility, whereas in others there is a more or less marked atonicity. We also find various degrees of hyposecretion to the point of bordering on achylia, together with different degrees of disturbed motility. Then again I have observed a practically normal secretory function with degrees of disturbed motility ranging from a severe cramp, or in fact from so-called convulsive spasms of the stomach and peristaltic unrest to an almost complete loss of motility. In some cases fluoroscopic observations have shown active retroperistalsis. This latter phase probably explains the existing and persistent nausea in a number of instances.

Deficient mucus secretion was frequently noted, while at other periods so much thick, viscid mucus was found that a severe degree of mucous gastritis of an advanced type would be readily diagnosed. In a number of the cases the etiology of mucous gastritis would be lacking. Hyperacidity as well as subacidity of varying degrees were noted alone or in conjunction with one or more of the other pathological conditions.

Pain appears in many cases; it may range anywhere from simple annoyance with general discomfort to a degree of severe agony which may simulate gastric ulceration. Theories of threatened perforation, internal hernia and a possible perigastric exudate with or without abscess formation have been advanced. A number of cases of gastric hemorrhage have been reported. These were observed mostly in the more severe and septic types of appendicitis. This symptom may be severe with no apparent pathological changes in the stomach, and is significant of a grave prognosis. There may be a wide range of disturbance of appetite from apparent bulimia to a most meagre intake of nutriment.

The stomach may be normal in size, shape and contour, yet at times it may simulate either acute or subacute gastric dilatation, phantom tumors, or it may appear as a diminutive or infantile stomach. Hour glass stomachs have been simulated and diagnosed as such, and when in these apparently authentic cases of hour glass phenomena, after operation the malformation has not been found, the diagnosis is tabulated as an error. The fluoroscope could

demonstrate an apparent hour glass contraction and if not followed up closely it would, in a number of cases, appear to be an organic lesion.

Disturbance of the muscular rhythm, even into a number of serial plates, may cause apprehension from the similarity to carcinoma and ulcer. Cases were observed in which the hydrochloric acid was absent, lactic acid present, a stagnant meal with dark color and fetid odor was found, though no occult blood was present. This made it difficult to rule out malignancy. The x ray, fluoroscope, general physical picture and examination, together with repeated gastric and intestinal (colon) analysis finally aided in ruling out malignancy. This was confirmed later at the operation. Fortunately these cases are infrequent. The symptoms referred to are not those of acute appendicitis, but they frequently accompany the subacute and especially the chronic types of the disease.

In these cases of reflex forms of appendicitis, gastric analysis and frank symptoms of gastric irritability would tend to divert one. Chronic appendicitis would not only exert untoward influences but also kinks, adhesions and bands resulting from inflammatory processes or so-called congenital formations (Jackson's membranes) and other pathological conditions in the right iliac fossa which materially interfere with the physiological functions of the cecum and appendix.

Whenever gastric disturbances are not ameliorated by active rational treatment of sufficient duration, among other etiological factors of the gastric disturbance, some form of appendicitis or a pathological condition in the right iliac fossa should be included in the multitude of diagnoses for exclusion.

STORY BUILDING.

AN OUTBREAK OF DIPHTHERIA IN A SMALL CITY.

What Was Done to Check It.

By ISAAC W. BREWER, M. D.,
Watertown, N. Y.

The year 1919 was a banner year for diphtheria in many cities in New York State, and Watertown suffered with the others. The disease had not been very prevalent in the city for some years, as will be seen from the following table:

Year	No. Cases	No. Deaths	Fatality Percentage
1914.....	67	4	6.0
1915.....	22	0	0.0
1916.....	31	1	3.2
1917.....	5	0	0.0
1918.....	47	4	8.3

Prior to taking the office of health officer, my predecessor, Dr. A. H. Allen, called my attention to the prevalence of diphtheria in the city. Upon assuming office all the diphtheria cases for the years 1918 and 1919 were spotted on a large map of the city, and although it was not confined to one section, the majority of the cases seemed to centre about one school. At the same time a study was made with reference to the different milk routes in the city, but this did not establish any connection between milk and disease. It was assumed, there-

fore, that the problem was one of carriers, and the campaign was based upon that assumption.

Cultures were taken immediately from all the pupils and the teachers in the school where the largest number of cases had occurred. This netted twenty-three carriers, and immediately the number of new cases in that vicinity was cut down. Later in the season a case occurred in a children's home where there were eighty residents. Cultures from those children revealed twenty-two carriers. Later in the summer several cases were reported in a short street, and after a study of the cases a number of cultures were taken, resulting in the discovery of several carriers. Early in the fall a number of cases appeared in another street, and cultures taken from the children disclosed six carriers. Shortly after the opening of school in the fall three cases were reported from one room, and cultures taken revealed twelve carriers. We also adopted the plan of culturing all members of the family, and a number of carriers were picked up in that way. In all 105 carriers were discovered. That many of them were but transient carriers is obvious, but we believed then, and still believe, that most of them were sources from which other cases would have developed.

Virulence tests were made in a number of these cases, but the number was too small to be reported. During September a child became ill with what was called enteritis, but as there was no improvement under the usual treatment a more careful study was made, when it was found that the child had an extremely sore throat which clinically was diagnosed as diphtheria. The child was so sick that cultures were not made, but a large dose of antitoxin was immediately given. On receiving the report of the case cultures were taken from the rest of the family, including a relative who had recently arrived and who had a slight nasal catarrh. Three out of five cultures taken in this group were positive, but virulence tests were negative, and these persons were immediately released from quarantine. That the laboratory diagnosis was reliable is demonstrated by the fact that no new cases occurred in that vicinity or among the friends or associates of these persons.

We did not expect to eliminate the carrier from the community, but we did hope to find a large number of them, and by so doing to control the disease. During the year 1919 we took 3,092 cultures, and a considerable number were taken by the physicians of the city and examined at a local laboratory, which were not included in the number given. The taking of so many cultures was quite a tax upon the force of the department.

The diphtheria carrier was a new thing to many of the citizens, and they could not understand at first the reason for isolating a person who was apparently well. To overcome this we started, through the cooperation of the editors of the *Times* and the *Standard*, a campaign of education, the result being that when the last batch of carriers was discovered there was practically no opposition to the necessary isolation.

The happy termination of the campaign is largely due to the splendid cooperation with the physicians

of the city. They were prompt in reporting their cases, and many of them made cultures on many sore throats which did not appear to be diphtheritic. Personally I have felt for a long time that in a large number of cases, inflammation of the throat, especially that which is called tonsillitis, is really diphtheria. A case which illustrates this came under my observation recently. Upon looking into the child's throat one tonsil was seen to be covered with membrane, having all the appearance of tonsillitis. It was easily wiped off, but cultures showed the diphtheria bacillus, and it was a long time before we were able to get a negative culture. A physician who saw the patient on the day the result of the culture was reported said that he was sure it was nothing but tonsillitis.

Treatment.—Antitoxin was used freely by the local physicians, and as a rule was administered early. Its use as a prophylactic was general. In most of the fatal cases the patients were seen late in the course of the disease or died from complications. In the treatment of carriers the removal of the tonsils is the most satisfactory procedure, provided they are enlarged or contain diseased follicles. Time and time again we have seen a case which had resisted all known local treatment rapidly clear up after the removal of the tonsils. In cases where the tonsils were not diseased some physicians were successful with the use of dichloramine-T, others found ten per cent. nitrate of silver equally effective, while others used chlorazene with good results. Toward the end of the epidemic we were able to do the Schick test on a large number of children in an institution. Many of these children had received an immunizing dose of antitoxin about six months previously. The result of this study will be reported later. It was not found practical to try the Schick test on other children.

Statistics of the disease.—During the first week of 1918 one case was reported. The next case was recorded during the week ending March 4th. No cases were reported until the week ending April 30th, when two were reported. New cases continued to be reported each week until the week of June 11th, when the number fell to zero. An interval of two weeks occurred without a case, after which there was an interval of four weeks without a case. During the week of August 14th there were three new cases, and the following week there were an equal number. No new cases were reported until the week of October 9th, when one case was reported. With the exception of the weeks ending November 6, 1918, and March 11, 1919, one or more cases were reported weekly until the week ending with December 23, 1919. The last case was reported on January 6, 1920. This last patient had an ulcer on the tonsil that did not look like diphtheria, but the laboratory report was positive. A second positive culture was never obtained, and the case cleared up rapidly under local treatment.

During the period under consideration 160 clinical cases, confirmed by culture, and 105 carriers were discovered. There were twelve deaths, which made a fatality percentage of 7.5, which corresponds very closely with Crum's average for the city of Philadelphia. In seven of the death cer-

tificates the cause was given as diphtheria; in one case, as diphtheria complicated by organic heart disease; in three cases, diphtheria complicated by nephritis, while in one case the cause was given as diphtheritic paralysis of the throat complicated by scarlet fever.

The ages in the fatal cases were as follows:

One to four years.....	four
Six to ten years.....	two
Eleven to nineteen years.....	two
Twenty years and over.....	four

As regards those attacked, the ages were as follows:

Under five years.....	eleven per cent.
Five to nine years.....	thirty per cent.
Ten to fourteen years.....	thirty-two per cent.
Fifteen to nineteen years.....	thirteen per cent.
Twenty and over.....	fourteen per cent.

Conclusions.—In dealing with an epidemic of diphtheria, which is not due to milk infection, the carrier is of the most importance. Carriers should be treated as regards isolation in the same manner as clinical cases of the disease. The removal of the tonsils is the most important procedure in clearing up cases that are carriers. Many cases of scalled sore throat or of tonsillitis are really diphtheria.

GROUP DIAGNOSIS.

By JACOB GUTMAN, PHAR. D., M. D., F.A.C.P.,
Brooklyn.

Medical Director, Brooklyn Diagnostic Institute.

GROUP DIAGNOSIS.

It is the trend of modern times to inject highest efficiency into every modality of man's usefulness. The hospital has to keep pace with the advances of progress. Whereas only a short time ago the hospital served all purposes intended for the diagnosis and cure of disease, it is now destined to specialism as much as the medical man. We now have separate institutions for children, for the eyes, the lungs, orthopedics, infectious diseases, the insane, and one important addition, the diagnostic hospital, just as certainly needed and as certain to stay. Although the idea is not a new one for it has gained foothold in the United States with the establishment of the Mayo Clinic, it has failed to gain deserved recognition until recently. It seems assured, however, of rapid growth, as it is being realized that such an institution is the proper place for exact scientific diagnosis. The world war has taught many lessons; the arts and sciences have profited by the intensive preparedness and are already making practical use of their acquired experience. Medicine has benefited in many directions, but one positive and decided forward step has been gained by those of our medical colleagues who have participated in the co-operative system of army practice. It has taught the city as well as the country practitioner the great advantages, usefulness, perfectness, practicability and methodicity of studying a patient cooperatively by a group of specially trained professional men.

The function of group practice is to obtain all the data regarding each organ of the individual examined as is consistent with our present aids in diag-

nosis and in the most practical, economical and applicable manner.

I believe Robert Pollack (3) of the San Diego Group Clinic, established recently, defines the ideals of group diagnosis to perfection. He says that group diagnosis is based on the belief that valuable diagnosis sometimes comes from unexpected sources. The surest way to get a comprehensive picture of the patient, the causes and needs, lies in the making of a complete survey of his entire system by clinicians competent to pass upon special fields and thus reaching a composite diagnosis after actual discussion by the examiners in consultation assembled. In this way, it is felt that little would be overlooked and that the recognized enthusiasm of specialists would be balanced by that of his fellows, so that in the process of examining the data under discussion, the grains of truth would be separated from the chaff of insignificance. Diagnosis is too complicated a proposition to enable any one man to acquire all its phases. Individualism in medicine, as in trades and commerce, is losing ground and giving way to concerted efforts. Cooperative specialism is the future method of practice of medicine. A cooperative group can render the sick thorough and perfect service. It offers the opportunity of analyzing an individual completely, under one roof, dispensing with the necessity of traveling all over the city for similar service. It permits joint discussion and study of a case, and a common conclusion based upon the recommendations of all.

Group practice is generally more economical, no matter how expensive it may appear at first. Adding the fees of individual specialists for similar service, the sum total by far exceeds the amount paid in a group clinic. Besides, the services rendered by specialists individually cannot be as complete and perfect as if rendered collectively. Furthermore, group practice also benefits the specialists. It provides them with an opportunity to learn the viewpoints of each other, and thus broadens their scope of information.

CORRECT DIAGNOSIS.

Correct diagnosis is the ambition of every conscientious physician. He knows that successful and useful therapy can be applied only after careful, painstaking examination and an exact diagnosis, and he recognizes the absurdity of attempting to rectify morbid conditions without first determining their true character. The sensible practitioner refrains from the allaying of symptoms without having first discovered their causation; he appreciates the real value of rational therapy, based upon exact knowledge of the status of a case, and knows the folly of empirical therapy which, in the great majority of cases, is either useless or at most temporarily palliative, if not harmful.

To provide more precise and practical methods for correct diagnosis has for many decades been the goal of the scientific men of every country. New apparatus, simple chemical, pathological and functional tests and improved technic are now at hand which enable the practitioner to obtain an exact knowledge of his case. Medical schools, modern

institutions and clinics all lay great stress upon their diagnostic facilities. Enormous sums are expended yearly for better laboratories to foster correct diagnosis.

It would seem superfluous to dwell upon the necessity of exact and scientific diagnosis, for even the layman now understands its value. The time has come when this must be our first requisite in the treatment of a patient, otherwise an injustice is done to the sufferer. Lewis (1) speaks prophetically when he says: "The failure on the part of scientific medicine to locate the essential origin of many serious diseases is tending to lessen public confidence in medicine as a whole, and the time has come when we, as physicians, must reorganize our methods of practice, or means will be taken by the public, if not on the part of the State, to direct them for us, with results that may be equally disastrous for the public and for us." The people nowadays demand not only honesty, but also proficiency and are not satisfied with snap diagnoses. When ill, even the poorest patient expects attention, good service, close observation and the use of modern methods in the diagnosis and cure of his illness. The practice of medicine with pencil and prescription pad only is becoming a thing of the past. No physician does his full duty to his patient or to his profession who fails to utilize all means to disclose the true cause of disease.

But how can correct diagnosis be obtained under our present system of practising? Are the means adopted to accomplish it really adequate or perfect? Do we handle our task in a practical manner? Are we satisfied with the results obtained and, if not, is it not time to revise our methods and better them? To answer these questions it seems necessary to analyze, even if briefly, the methods at present in vogue in the diagnosis of disease, and to delve into their sphere of usefulness.

THE FAMILY DOCTOR.

From time immemorial the diagnosis of disease has been within the province of the family physician. He occupied a very dignified and exalted position in the community. To him were faithfully entrusted the destiny of the human race and the life and limb of all in the family. The mother, when tortured with labor pains, prayed to him for the relief of her sufferings and appealed for the safety of her infant. The growth and development of the child, the health of the adult, the care of the aged, the hygiene of the home—all were entrusted to the family doctor. His aid was sought and advice heeded in every exigency. He was supposed to be an expert in measles, typhoid fever, renal colic, paralysis, skin diseases, toothache and every other ailment. He served as obstetrician, pediatrician, surgeon, hygienist, internist and anesthetist. In other words, he was the dispenser of all there was in medicine; he was the handy all around expert.

Formerly, when the scope of medicine was rather limited, the family physician was competent, perhaps, to serve in all such capacities. In late years, however, owing to the intensive progress in medical science, his limitations have necessarily become

apparent. He may no longer assume all such responsibilities, even if thrust upon him. He cannot continue to attempt to diagnose properly an intricate nervous syndrome, treat a complicated cardiovascular case and act as a general surgeon, without detriment to his patient and to his reputation. No one understands this better than himself. Indeed, he repeatedly sees the advisability of calling upon others in special fields of medicine for assistance. He consults the neurologist, the ophthalmologist, the internist and the surgeon; he seeks their advice and experience in special diagnosis because he is anxious to render only the best of service to his patient. He feels his responsibilities; he knows his limitations; he seeks to learn from others especially proficient in their particular field, how to cure his patient in the quickest, surest and most pleasant manner.

The right kind of family physician will never be deprived of his rightfully esteemed position in the community. He still is and will continue to be indispensable, though the respect which he will command will be due largely to his willingness to keep abreast of the march of scientific progress. The day is rapidly passing for the practitioner who depends chiefly on his thermometer, prescription pad and optimistic temperament. It is evident that to expect the practitioner to diagnose intricate medical cases needing exhaustive study and expert knowledge would be absurd and unjust. He already has enough of a burden when we consider the multiple functions which he has to perform: therapy of every variety, dietetics, hygiene, minor surgery, obstetrics and other conditions. We must not expect a correct diagnosis of a complicated chronic disease from a practitioner unprepared for such a task.

THE SPECIALIST.

The source of correct diagnosis in obscure or difficult conditions is the specialist. During the past several decades, medicine and its allied sciences have been greatly enriched by numerous epoch making discoveries. This necessitated the subdivision of medicine into branches or specialties. So immense have become even its branches that it is quite impossible now for any one man to familiarize himself fully with even one such branch. Hence, a further division of the branches into minor specialties became obligatory. Such specialization has proved to be of great benefit to the human race because it has stimulated skillful diagnosis and therapeutics and has fostered progressive research work. The services of the specialist are now sought by all: the family physician, the clinic, the hospital, the public and even the business corporation.

Useful and desirable as this method of practice may be, it nevertheless has many disadvantages which tend to diminish its applicability and lower its scientific value. In the first place, no one organ is so isolated that when disabled it might be considered alone, to the entire exclusion of all others in the body. In the second place, the specialist, though efficient in his chosen specialty, is generally inadequately trained in the other branches of medicine. He is, therefore, competent to judge only a part of and not the whole individual. Third, the

specialist is not infrequently biased and likely to ascribe every complaint to some derangement of the organ of his particular specialty. Fourth, when the patient chooses his own specialist an improper diagnostician is often consulted, and thus an entirely wrong view is obtained of the case. Fifth, at times, a specialist is consulted for a disorder which appears to be of great importance to the patient or attending physician, while others, perhaps of much more serious nature, are overlooked and not disclosed. Sixth, frequently conditions are such that a number of consultants are desirable but cannot be obtained either because of the expense or opposition on the part of the patient, physician or family. Lewis (1) is right when he says: "When ill the practical man is not satisfied to be compelled to run the gauntlet of a circle of specialists unless he can be made to see the bearing which each of these has on his malady." Particularly is this true when the patient has to be hustled from one end of the town to the other, from specialist to specialist. It certainly is a most impractical method of obtaining a correct diagnosis. Neither is it sensible or logical, whenever a complete diagnosis of a case is demanded, to depend entirely upon individual specialists.

DISPENSARIES AND CLINICS.

Some people apply to a dispensary or clinic for a diagnosis and are likely to compare dispensary practice with group medicine, asserting that the patient for little or nothing may have his case studied by a number of specialists directing the departments. Some patients even go so far as to discard the services of their family physicians in their belief that all examinations in dispensaries and clinics are performed by specialists and that more expert advice may thus be obtained. Furthermore, other people avoid consulting the dispensary or clinic physician in his private office, because they prefer to be examined by more than one specialist, and not for pecuniary reasons.

The above suppositions of the laity and some practitioners are quite erroneous. There is absolutely no comparison between a dispensary and a group clinic. In the dispensaries, as a rule, the examinations are performed hurriedly, inadequately and under improper surroundings. In the group clinic minute care is given to every patient, ample time is allowed for examinations; the attending physician is a selected, experienced and often eminent specialist, with every necessary scientific equipment on hand and working under the most favorable surroundings. In a dispensary the public derives but little benefit; only in some special cases or in clinics connected with teaching institutions where the patient is used as clinical material for instruction does the patient receive better attention. Also, then only if he is fortunate enough to suffer from an obscure affection which may interest the chief of the clinic.

The teamwork of a dispensary is certainly far from ideal. In spite of the best of intentions on the part of the staff, it is a physical impossibility to do justice to all cases applying for relief. The shifting of the patient from department to depart-

ment is more often for the purpose of dispensing with him than for correctly diagnosing his case. Savage (2) correctly defines the situation in his paragraph: "When a patient is transferred from one class to another, it is often rather to be rid of him than to give him the benefit of consultation. The prime end of dispensary practice seems to be to satisfy the patient with a prescription or application to relieve some symptom." It is evident from this statement that the dispensaries and free clinics are not the proper places for the great mass of the public to seek correct diagnosis. These institutions have their valuable features and are extremely useful in many of their functions but must not be considered an asset in scientific diagnosis except in minor cases.

HOSPITALS.

The great centre for diagnosis is the hospital. Most opposition to group clinics has been shown by hospital organizations. Their opposition is particularly felt in the larger cities, where the institutions are more extensive and their accomplishments of higher merit. They assert that they all have the facilities to render to all kinds of patients most perfect service. They maintain that the organization of group institutions is uncalled for and lodge all functions of a group clinic with the average hospital.

In theory, these assertions may appear plausible, but in practice they are far from being just. In the first place, most hospitals, except municipal and charitable institutions and especially those in larger cities like New York, are not soliciting these cases which the group clinics particularly invite. They treat acute cases only and will not admit those of a chronic nature. If a supposedly acute case turns out later to be a chronic one, it is discharged from the hospital at the earliest opportunity. It frequently happens that the admitting physician, interested in a particular chronic case is obliged to enter the case tentatively as acute; otherwise he is unable to admit the case to the hospital. In many cities, the municipal government, in defraying the expenses of the sick poor, pays only for diseases of an acute character or for a limited period only, insufficient to cure any other but acute conditions. Not so with group institutes. Here, the chief object is the diagnosis of chronic rather than acute derangements. The latter, as a rule, do not present great obstacles in diagnosis and need no group clinics. Only at an early stage may an acute disturbance cause perplexity, but not later when additional symptoms rapidly appear, which bring a correct diagnosis within reach of every experienced practitioner. The diagnosis of chronic diseases is not such an easy task. It is here where skill, perfect equipment and broad experience are required, and yet in spite of every effort and the application of every means of diagnosis, we may be led astray because of insurmountable difficulties.

The contention that hospitals are always manned by an efficient staff needs moderation. Perhaps, in rare instances, the entire staff, surgical, medical and specialistic may be uniformly composed of class one men only, but this is the rare exception. In most

institutions one or two divisions are represented by excellent men while the other departments are in charge of mediocrities. Besides, but little attention is given in our hospitals to the medical staff and service, compared with that given to the surgical department. The medical service of all hospitals usually consists of fewer beds. A surgical case, even if the condition is not acute, gets preference of admission over a medical one. The provisions for treatment, nursing, and supplies, are always more generously accorded to the surgeon than to the internist. Large sums are yearly spent for the operating room, but only a meagre sum is assigned toward medical efficiency. The laboratories and x ray departments are equipped more with a view to surgical usefulness than medical use. In European countries, the reverse is true, the medical service is usually the predominant one. In our country, the medical division is the stepchild of the hospital. Thus, all institutions less prepared and less eager for medical work, less attention is given to the selection of the medical staff, less cognizance to their qualifications, less encouragement is offered for medical work and for accurate medical diagnosis.

The contrary is the situation in a diagnostic clinic. Here the principal rôle is played by the medical man, the diagnostician, and not by the surgeon. The latter is considered more as a therapist and less as a diagnostician. Exploratory operations are the very last sources from which information is sought and are thus reduced. With painstaking researches by internists and specialists, they are unnecessary. In the hospital the surgeon opens the abdomen and functionates as the diagnostician; hence there is no necessity for an efficient and active diagnostic department. In the group clinic, the diagnostician is the chief factor; hence all its facilities, equipment, personnel, professional work and results are of a higher class than are those of the hospital. The patient seeking a correct diagnosis can rightfully expect better service from such a diagnostic institute than from the ordinary hospital. As to the assertion of the hospital of its ability to serve all classes, criticism may not be out of place. The wealthy class can afford everything; nevertheless, a complete analysis including hospital accommodations and the necessary laboratory, clinical and specialists' investigations is an expensive luxury. The very poor, or those paying a nominal fee for hospital service also often obtain satisfactory attention. They may obtain good treatment, good laboratory service and specialists' care if required. Not such, however, is the lot of the great middle class, who seek no charity. The clerk, the skillful laborer, and the middleman, are at a great disadvantage. They are charged for everything done in the study of the case and however moderate the fee may be, the final sum is often an amount which is quite beyond their ability to shoulder. If one dares to indulge in such luxury, he is either crippled financially or it is a long time before he is enabled to free himself from the debt incurred through the examination. This, of course, debarbs many from such service since it is beyond their means. The hospital has its advantages, but it cannot compare with a well or-

ganized diagnostic institute, because the latter is an institution specializing in diagnosis exclusively and is therefore best suited for that purpose.

REQUIREMENT OF A GROUP INSTITUTE.

To become practicable and serviceable, a group institute must fulfill the following requirements:

1. It must aim to make a complete survey of every individual examined, notwithstanding the character or meagreness of the complaints. It must subject the patient to every necessary examination until all doubtful issues of the case are cleared to the full satisfaction of an inquisitive mind.
2. The institution's staff must be a competent one, and consist of specialists who not only have good training in their respective specialties, but also have had extensive clinical experience in general practice.
3. The institution must have sufficient departments equipped with all facilities to perform all desirable examinations needed in solving any question.
4. To every specialty must be accorded its own quarters and equipment. The armamentarium must be of the best so as to enable perfect work, and in a practical manner, on the part of the specialists.
5. If the institution attends also to nonambulant cases, it must own proper facilities to keep the patient during the observation period.
6. It must provide means for full compensation of the specialists. Their fees must correspond to those in their own regular practice, otherwise lack of interest may exist and the work suffer.
7. All charges to patients must be so arranged that the great middle class, constituting the greatest proportion of the population, may be permitted to take advantage of the group service. The poor, deserving class, must not be excluded, but be afforded the same service as rendered to the middle and rich classes at reduced rates. The professional men, however, must be compensated for these as fully. This can be accomplished if provisions are made from funds of other sources, such as endowments, for additions to the reduced fees paid by the poorer class. Perfect service may thus be obtained by all people, of all classes.
8. The procedure of the examinations is also of importance. All cases should at first be studied by an experienced, well educated and broad minded internist. A most exhaustive history covering every phase of life and every organ must be obtained. A most thorough physical examination, including every minute feature which an experienced clinician may detect, must then follow. The history and the physical analysis shall determine the further course of the investigation and all other examinations to be undertaken. Additional tests which suggest themselves in the course of investigation should be applied. For the final conclusions, compiled from the reports and suggestions of all specialists, the case must then again be referred to the internist, who may then be able to determine the correct status of the case and report upon the diagnosis properly.
9. Complete records of all examinations must be made and kept. Scientific deductions and observa-

tion should be recorded and published. Consultations among the examiners must be held frequently.

10. The physician who refers a case for diagnosis must at all times be taken into consultation, be fully remunerated for his time and labors, and afforded every opportunity to study the case jointly with the specialists. The patient, on the other hand, must be made to realize that his physician and the specialists are mutually cooperating for his special benefit.

11. It must be the aim of every group diagnostician to use all his skill in determining the most exact status of a case. Having done this, after a broad view of the situation, and having considered the viewpoints of the other consultants, he shall then offer his advice for the correction of the conditions disclosed.

12. It seems inadvisable and impractical for a diagnostic clinic to engage in therapy. The carrying out of the treatment recommended by group specialists is best left to the attending physician. This encourages the latter to consult the group specialists without fear of losing his association with the case and forfeiting the opportunity of sharing in the restoration of his patient's health, while the patient will receive the benefit of the group clinic.

CONCLUSIONS.

Diagnostic institutions based upon the fundamental principles mentioned above, such as the one lately established in Brooklyn, N. Y., are assured of continued and increasing support, and will eventually be a permanent addition to every medical centre. When properly organized and efficiently conducted, they are certain of success, scientifically and financially; scientifically, because they render a vitally essential service to the physician and to the public; financially, because they will be self sustaining and independent of the charities, gifts, endowments or solicitations of other institutions. They will be a legitimate source of income to the specialists instrumental in their success.

For these reasons the number of group institutions will continually increase and bid fair to grow rapidly.

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867 ST. MARKS AVENUE.

Carcinoma of Ovary in a Girl of Nine.—H. M. Gerson (*Lancet*, December 27, 1919) records a case of carcinoma of the right ovary in a Spanish girl of nine on whom a laparotomy was performed for supposed tuberculous peritonitis. There was immediate recurrence in the left ovary and annexa and omentum, after removal of the right ovary and tube. Autopsy showed a large fungating growth of the left ovary, adherent to the left iliac bone and extending down the psoas sheath into the thigh. Microscopic examination showed a large papillary carcinoma with cyst formation.

THE RELATION OF THE NEUROLOGIST TO GROUP DIAGNOSIS.*

BY CHARLES ROSENHECK, M. D.

New York,

Neurologist to the Hospital for Deformities and Joint Diseases, and to the New York Diagnostic Clinics.

In order to place the relation of the neurologist to group diagnosis in its true perspective and to elucidate our conception of this relationship, reference to our previous efforts in this direction may be permitted. The following quotation from an article published recently (1) may serve as an introduction to this phase of the subject:

"The tremendous upheaval caused by the World War has so affected and revolutionized every form of human endeavor that we can truly say with Addison that 'Death is but an awakening'—the death of the old order of narrow, accepted standards and its inevitable limitations; and the awakening of the new order with its wider applications and limitless benefits. This, in the main, obviously implies the emancipation from servitude of the age worn old political, and social orders. But this emancipation reaching into the vitals of every form of human effort has not overlooked the medical art; it has also been liberated from its old narrowed existence. True, its mutterings of discontent have been heard for a long time and it has tried to free itself from bondage—the bondage that the medical profession subjected it to by their narrowness, distrust, and unwillingness to witness the awakening of a new era in medicine.

"The new era in medicine is here, and the sooner the profession embraces its beneficent influence, the better it will be for them and their patients. The world does not move backward, and the hand of evolution cannot be stayed. We speak particularly of the evolution in medical science, and its application to the sick. The advances in medicine in the past decade have been truly marvelous, notwithstanding the pessimism of a few who are dismayed that pathological organs cannot be replaced *in toto*. And we are on the eve of still greater advances as soon as the chaos of the recent upheaval has subsided, and the medical scientist resumes his work in the quiet of his study. Truly there dwells not the mind that can encompass present day medical knowledge. A single problem easily absorbs a lifetime, and a conscientious physician approaching his patient may well feel appalled and helpless. This apparent helplessness, however, will be a fleeting unpleasantness, if he will embrace the benefits of group diagnosis. The sick have accepted the idea without equivocation. The physician must do likewise, else his folly will seriously endanger his professional status.

"We are, of course, fully aware that physicians avail themselves of the aid given them by the laboratory and the specialist. This readily serves its purpose in a great many cases where the condition is obvious and interpretation simple. What we have in mind, in particular, is the great number of patients presenting ill defined, vague, clinical

*Read at a meeting of the Clinical Society of the Hospital for Deformities and Joint Diseases, March 9, 1920.

states, who trudge wearily from specialist to specialist. Each specialist's own narrow viewpoint is injected into the case, and the relief which they seek, and which is their due, is more elusive than ever. Group diagnosis obviates the narrowness and correlates all diagnostic data, so that final correct interpretation is possible. The medical profession will be spared the just censure and mistrust of the patient, and the ever growing crop of cults and quackeries will cease to exist.

"What is the relation of the neurologist to group diagnosis? We consider this to be a highly important one from several viewpoints. As a result of the great war, the prestige of the neurologist has been enhanced immeasurably. His opinion was eagerly sought in the great mass of organic disturbances which were the direct results of injuries, and for that type of disorder, largely functional and grouped under the misnomer shell shock. His deductions were obviously of manifest importance, for it was he who had the final decision in hand to which side a certain type belonged. In civil practice his rôle is no less important, for we are all cognizant of the innumerable conditions that simulate visceral organic diseases, and which, in the final analysis, are caused directly by organic nervous diseases. Group diagnosis will prevent a patient with a tabetic crisis from being operated upon needlessly; and this holds true for a large number of nervous affections whose onset and course are characterized by pains largely confined to the visceral organs. Repeated operations for a condition which does not exist will, naturally, be obviated. The neurologist himself, as the result of group study, will avoid the pitfalls of falsely interpreting a patient's complaint. He will not dismiss a case as functional and then, very much to his chagrin and humiliation, find that someone else had cured the functional affection by proper operative procedures.

"We are, of course, fully aware that we have but briefly touched on the relation of the neurologist to group medicine. It is not the purpose of these notes to unduly thrust into the medical limelight the neurological specialist. Each member of the diagnostic group has an equally important function to fulfill. His deductions in a given case bear a definite and important relation to the group as a whole. Inferentially, the deductions of the other members of the group either add greater value to his interpretations or repudiate them altogether. The manifest educational value of such an association hardly needs extended comment.

"We trust that we have not created the impression that the conception of group diagnosis is largely the product of our own originality. On the contrary, there exists in the profession today forceful pioneers who have within recent years preached this radical innovation. The success of their endeavors is a matter of record. We have merely attempted to emphasize their importance to the medical profession, and to the ill who entrust themselves to their care."

As indicated in our introductory remarks, these quotations from a former publication are mainly directed toward giving the physician a general

visualization of the problems confronting him today. The ever increasing advances in medical science have heaped such responsibilities upon him that the most courageous falters when, alone and unaided, he attempts a diagnostic study of his patient. To overcome this apparent paradox diagnostic clinics are being established whose function is to relieve the physician of the perplexities associated with difficult cases. This arrangement brings him into contact with specialization in its highest attainable form. The individual opinion of the specialist upon whom he has relied since time out of mind, no longer shapes the destiny of his patient. In the light of modern medicine one can readily perceive that the physician's conception of morbid states is pitifully inadequate, nor can it be said the specialist himself is free from such an imputation. Although by intensive study and close application he may have attained a superiority in his particular branch, his opinion may be of no value unless he reinforces it with data from other special branches. His observations are simply a link in the diagnostic chain. It is quite obvious that even in the diagnostic unit, the opinion of one observer, no matter how trustworthy, is not permitted to go unchallenged. His coworkers in their respective fields are ever on the alert to subject his diagnosis to merciless scrutiny. This scientific rivalry, as it were, manifestly acts as a deterrent against ill conceived and premature judgment. It thus surrounds the patient with safeguards which assure correct interpretation of the morbid phenomena.

We have stated elsewhere that the opinion of the specialist may have little value unless it is fortified by convincing data from the other members of the diagnostic unit. Thus, we at once see the importance of the relation of the specialist in one particular branch to specialists in other departments. It is opportune at this point to discuss more in detail this relationship and its bearing on a diagnostic study. As the title indicates, this will mainly be directed toward an analysis of the relation of the neurologist to the other members of the diagnostic group.

The Ophthalmologist.—The relation of the neurologist to the ophthalmologist is obviously of great importance. We are all familiar with the many and varied neurological affections which appear as the dominant system in involvement of the oculomotor apparatus or visual tracts. Indeed, it is the oculist who is first to diagnose grave intracranial conditions by the ophthalmoscopic picture. The degenerative diseases of the brain and cord, vascular cerebral disturbances, and certain types of degeneracy in infancy are quite often initially recognized by the ophthalmologist. In frank neurological affections, his opinion is of great assistance to the neurologist in establishing a correct diagnosis. In the great mass of ill defined, functional states associated with cephalalgia, it is of manifest importance that the oculist furnish the neurologist with correct information as to the precise condition of the oculomotor apparatus. Ocular fatigue as a result of muscle imbalance or refractive errors very

often gives rise to a confusing symptomatology. The distressing cephalalgia of the patient suffering from a functional disturbance is a cause of grave concern to the neurologist until assured by the eye specialist of the innocuous character of the complaint. We have refrained from citing specific morbid neurological processes, in which the cooperation of the ophthalmologist is essential for a proper diagnostic study. It is rather the purpose of these notes to treat of the relationship between the various specialists in a broad and general way.

Internist.—The relation of the neurologist to internal medicine is an important one. One has only to review the varied symptoms of thoracic and visceral diseases and their resemblance to organic nervous disorders to realize the importance of the association. The internist may be grappling with a baffling clinical syndrome, which may readily be explained by the neurologist as an incipient or frank neurological disorder. Conversely, a bizarre array of nerve symptoms may properly be explained by the internist as a result of visceral or thoracic diseases. This mutuality of observation and opinion is of obvious import in ill defined clinical states. It precludes the narrowed viewpoint of the neurologist or the internist from placing in jeopardy the patient's wellbeing. In this connection it may be well to dispose of the assumption that under intensive group study the individual specialist will render his opinion with a good deal of timidity. This fear may have its origin in the fact that his coworker may be in possession of facts which entirely negate his observation. We insist that this fear is groundless, for we have reiterated numerous times that the individual opinion is to be regarded strictly from the specialist's own viewpoint. This is but a link in the diagnostic chain. Manifestly, negative data are equally as important as positive findings in the final disposition of the case.

Orthopedist.—The relation of the neurologist to the orthopedist has assumed an importance which the most conservative cannot deny. Heretofore, there was no correlation attempted between these two very important specialties. The neurologist acted independently in forming his conclusions, and any case that presented orthopedic phenomena was considered simply as the unfortunate sequela of morbid nervous affections. If the patient unfortunately drifted into the orthopedist's hands, he was treated from a purely orthopedic point of view, and the underlying pathological process was ignored. Obviously, failures were many and successes very few. As time went on and the specialties assumed the importance that they have today, it was apparent that cooperation between the neurologist and the orthopedist was necessary for a proper understanding of the disturbances resulting primarily from diseases of the neural axis. Conversely, orthopedic diseases can so readily produce morbid nerve phenomena that this may present the dominant complaint in the clinical syndrome. Specific instances need not be detailed, nor are they the purpose of this paper. They will readily visualize themselves to anyone having experience in these branches.

Surgeon.—The relation of the neurologist to the surgeon should indeed be an important one, but unfortunately, the relationship thus far has been rather an indifferent affair. The average surgeon, we regret to say, looks somewhat with scorn on a neurological opinion, just as he invariably does when an internist suggests medical treatment in borderline surgical conditions. It is not our purpose to minimize the value of his art and achievements, and we ungrudgingly concede the great debt humanity owes him. But, as stated elsewhere, we still have in mind numerous patients who have been operated upon needlessly, where careful neurological tests revealed either incipient or moderately advanced disease of the neural axis, which as part of its syndrome gave rise to visceral disturbances. A little condescension on the part of the surgeon to request a neurological status in obscure or ill defined visceral pain, would in a great measure prevent useless operative procedures. The neurologist himself can profit by the experience of the surgeon who discovers grave surgical conditions on the operating table, which, through lack of co-operative study, have been considered functional in nature. Obviously the neurologist must call to his aid surgical opinion. A diagnosis of functional disturbance should always be made with reservation, for we assure you that many pitfalls await one who is bold enough to venture such an opinion.

Otolaryngologist.—The relation of the neurologist to the nose and throat specialist has assumed an importance which can best be expressed in the words focal infection. The nefarious activity of pyogenic foci in the tonsils, middle ear, and sinuses, gives expression, as a rule, to confusing symptomatology. Intractable cephalalgias and neuralgias often disappear in a miraculous manner after ablation of tonsils or drawing a pus laden sinus. As certain degenerative diseases of the cord have recently been considered to be focal in origin, it must be obvious that the relationship between the specialties will assume an ever increasing importance.

Conclusions.—In conclusion, we feel that in this paper the scope of the subject has been but partially covered. The relation between neurology and the major divisions of medicine has been principally dwelt upon in order to emphasize the common bond that unites them. This bond can obviously be extended so as to include every department of medicine. The humblest specialty may thus assume an importance equal to that enjoyed by the major specialties. The signs of the times indicate clearly that group study is an established reality.

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Treatment of Burns by the Paraffin Wax Method.—Charles G. McMahon (*Southwestern Medicine*, January, 1920) concludes that this is the best method of treating burns and asserts that it has the following advantages: 1, Rapid healing; 2, reduction of pain to a minimum; 3, contracting scar tissue is minimized; 4, constitutional symptoms subside rapidly; 5, many patients recover who would die under any other treatment.

HEREDITY.

Mechanisms of Balance.

By L. D. McEvoy, M. D.,
New York.

In a former article (1) the theory of zonal proliferation as a basis of structural variation was advanced as an hypothesis affording an explanation for the phenomena of heredity. The cell as the unit of structure in the zone had parted with a portion of its nerve filaments, to the end that an organ might be formed, termed the neural control. This organ, by securing cooperation between the zones forming a body, produced the function of coordination between the zones, and could be compared to a governing group of elements, each element retaining control of the zone which it represented, subject to the needs of the body, or the total number of zones of which it formed a part.

As the complexity of a body depends upon the number of zones forming its structure, it should be obvious that the most complex body would necessitate the greater number of neural elements; but no matter how relatively simple the anatomical structure of life form may be, it would afford sufficient complexity to serve to place it among the problems of the infinite. Forbidding as the analysis would seem, there are added difficulties presented by the chemical antagonism, or what we term incompatibility, of various elements found within the structure of the body.

When salt and water are mixed, we have four elements which, if properly proportioned, combine to form a succession of crystals. Obeying the law of crystallization they assume a certain form and shape, and to do so have to coordinate in a measure, but whether this result is an index of the presence of a neural control or is due to the ordinary valencies exhibited between elements is immaterial. They are compatibles and the fact is accepted without a reason. Nevertheless all processes in nature must obey a natural law, a law that is fixed, always general in its application, uniform in its operation, and applicable to the inanimate as well as to the animate. Thus the status of a cell or a crystal of definite form and texture is fixed. The progeny of a cell is as its parent, stabilized by the chemical compatibility of its elements. Any other hypothesis would reduce the cosmos to a condition of indescribable chaos.

In the grouping of heterogeneous zones to form a body, great degrees of chemical incompatibility necessarily follow. As the function of coordination and cooperation would be impossible between these zones without the presence of some neutralizing agent, one must of necessity be formed. As an example, the presence of the poison fangs and secretory apparatus of a reptile would require the immunization of the reptile's body, or such zones as were not previously immune. This function would fall to the lot of other than neural elements.

The ink sac of the squid, the varied hues of the chameleon, the secretory apparatus of the reptile, the coloring of avian forms, are all types of the same mechanism. They operate for the purpose of defense or protection of the zonal group forming

the body. Inasmuch as their functions are communal in nature, they bear analogy to special senses.

The defensive mechanism of a body consists of such elements as can be furnished by its group of zones, yet consideration of the means employed discloses but three dependencies: Reliance upon deception in coloring or form suggesting neural control, differences in the texture of the envelope armor, teeth, claws, etc., and in lethal secretions. The first two present no incompatibilities. The secreting apparatus and all analogous mechanisms depend upon the toxicity of their products. They are inimical to all zones or groups of zones forming bodies. They are incompatible with zones in the structure of the body they protect, therefore the secreting apparatus of lethal compounds does not form a zone. Nevertheless it must of necessity represent the mechanism of protection used by all, or a majority, of the zones forming the body. It is dominated by the neural control, but neural elements have no part in its makeup.

As it is not unusual to find the excretions of cell forms to be of a toxic nature, indeed a stasis in the environment of any life form, wherein it will be exposed to the chemical action of its waste products, is inimical to its life; intended, perhaps, as a protective process, it may become a menace. The grouping of a number of zones using this protective mechanism would, if they were in the majority, impose upon the body the use of a like mechanism. It would also imply the possession on their part of the neural control which, if all the zones were analogous, would follow as a matter of course, but if differences existed would indicate a potential cause of variation if an unbalance was ever established.

The result of such an unbalance in the reptile's economy will be considered.

The preponderating chemical power of the zones using this method of defense had established a neural control and the adoption of the mechanism of the body. Owing to environment the food of the reptile proves inadequate to furnish the chemical nutriment required by the dominant zone. Their virility is impaired. Coincident with this event the neural elements of other zones retain or, because of the adaptability of the nourishment provided, increase their strength. Following these quantitative (real or relative) changes an unbalance is established. An unbalance in any mechanism of coordination reacts upon the neural control, tending to reduce the power to coordinate to a minimum.

The dominant zones, because of the quantitative change in their chemical allotment, have now become weaker, and this weakness is transmitted to the nuclei extruded by them. When grouped in their container, thrown off by the body and fecundated, the new body formed inherits the loss of virility. The process being repeated they eventually part with the neural control to a more virile group, and an organism is formed retaining the ancestral vestiges of the once powerful combination, now atrophied and inert. A new protective mechanism will take the place of the old, following the zonal law; thus zones depending upon the contractile power of muscular elements may establish

constriction, or those having a protective armor may adopt a like envelope for the purpose of defense.

Reversing the Hegelian philosophy, or the conclusions of Darwin regarding the biogenesis of life forms, we can surmise that skeletal remains having relationship with existing species did not advance through successive stages of development; that the processes of environment and natural selection did not produce the distinctive changes in the structure of a cell enabling it to conform to any theory, but contrarily, the cell form had never changed though it might cease to proliferate if the zone of which it formed a part were unable to procure the definite chemical pabulum necessary. Other favored zones, proliferating under the dominance of their neural control, would form bodies varying in shape and function from the ancestral type, but retaining the atrophied vestigial remains of the ancestral nuclei.

The loosely held affinity between the zones forming a body, may at times endanger its existence. In some of the marine forms, the disproportion and unequal distribution of their zones cause difficulty in securing coordination and cooperation. In others the neural control is divided between contending zones, which, though held together by an affinity strong enough to form a body, yet act independently of one another. At times they exhibit an unbalance of a degree sufficient to destroy a large percentage of their kind in the normal process of existing. The crab is an example. The zones of its carapace act independently of the body needs, exposing the animal to the many vicissitudes of environment, often indeed killing the animal in the process of shedding.

The line of demarcation between the flora and fauna being one made by the relative complexity in the distribution of zones, the same law will apply to both, environment furnishing the chemical necessities and function determined by the needs of the zones. Many agencies, the number varying in direct ratio with the complexity of the body, are relied upon to assist the neural control. Nearly all having to do with zonal chemical incompatibilities, an unbalance in a body mechanism of a high degree of complexity is more likely to occur than in a simpler form.

The agencies will have to coordinate interdependently; incompatibilities in the food neutralized; proliferation of zonal nuclei inhibited or advanced as required; a mechanism of color to protect sensitive zones established (the capillary curtain of red in mammals for example); protective mechanisms to stabilize temperature, for the excretion of waste, for the distribution of nourishment, for the prevention of infection, all must coordinate to secure perfect function.

The result of an unbalance in any of these agencies will disturb the function of coordination, and if of sufficient importance will be followed by a variation in type. Thus the variation in racial and mental characteristics, the coloring and the impulses of man, may be ascribed to the result of chemical unbalances within his economy.

Changes in the relative nourishment of zones may give a greater relative virility to a certain

group, and if it is large enough, it may dominate the neural control. The normal shape of such zones may be altered, even to the extent of structural change due to increased cell proliferation. Less favored zones will be displaced, and the channels of nourishment diverted. The attempt to accommodate themselves to the change of environment will cause modification in their functioning power, but without disturbing coordination unless the neural control has been completely dominated.

For example, under the stimulating influence of suitable chemical nourishment, the skeletal structure during its development proliferates to a greater degree than normally. The cause might be an unbalance in the mechanism of distribution, or a loss of inhibitory control over the process of proliferation. The bones have grown longer. The lengthening of the bones would be met by changes in the musculature, until maturity stabilizes the process and corrects the unbalance.

The changes in the musculature were forced. Its fibres were lengthened, and many structures depending upon the greater contractility and strength of short fibres would necessarily be weakened. The compact shape of the heart is changed to one having a longer axis, with long fibres, taking the place of the stronger short ones. The result is a body subject to the effects of strain, and curiously predisposed to tuberculosis—in fact was formerly considered to have inherited this disorder, because of the frequency of its incidence. The zonal proliferation in excess of normal would mean added virility possessed by the zone or group of zones, with consequent added fecundity on their part. Their characteristics would certainly be transmitted.

A zone may have a chemical affinity for an infection to the exclusion of others. If infected, its protective mechanism is relied upon to furnish relief unless the trouble threatens to involve other zones, then the protective mechanism of the body makes an effort to eradicate the menace. It will succeed, unless the invasion presents new chemical elements produced by changed environment.

As immunity is produced by a mechanism, it is but feebly transmitted. Certain zones would be immune under any circumstances. Having furnished a specific immunity to the body mechanism they might thereby become more virile and through the mechanism continue the body protection, but the nonimmune zone could not change in its chemical affinities. The constant use of the mechanism furnished by a group would increase their virility. This group could transmit its potential sufficiently to modify the results of infection, but not stop it.

During the process of development, in the period between birth and maturity, the danger of a congenital control being secured by certain groups of zones over the neural control must be regarded as a grave menace. If the control is of sufficient magnitude it will lead to the dissolution of the whole group—death.

If the process falls short of complete control, the body will live and transmit the characteristics of the dominant zones. The virility of such zones, being enhanced, will continue indefinitely unless interfered with by the appearance of an ancestral form

at the time of fecundation, but this eventuality would serve only to mark the appearance of normality in an individual, one in a series deficient in neural control and powers of coordination, as the virility of the dominant zones would most likely be reestablished in the next generation of deficient. Confusing and hopelessly inextricable as this synopsis must appear, it is made worse by the addition of other complexities which must inevitably follow the law of the zone, and the facts as nature presents them.

The number of zones in a body can not even be approximated. They may be few or many. Relatively they must be numerous. The difference between a mechanism and a zone may at times be hard to differentiate. As a mechanism is formed by the necessary elements donated by many zones, it can not transmit. Only the zones could transmit, otherwise a condition of chaotic change or series of changes would preclude a condition of stability being established. The efficiency of a mechanism depends therefore on the vitality of its formative group of zones, and this vitality or lack of it is transmitted.

A mechanism can function independent of the neural control, providing enough neural elements coordinate to secure the necessary function of eliminating waste and securing food, but the coordination will always be poor. There is hope for deficiencies in disordered mechanisms, none for zonal disturbances in which the neural control is dominated by a powerful group. Normally the neural control should dominate as a unit. Departures from the normal of varying degree are to be expected, but this will be considered when the neural control and its functions are outlined.

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286 FORT WASHINGTON AVENUE.

MEDICAL OPPORTUNITIES FOR WOMEN IN JAPAN.

By CAROLINE E. FURNESS,
Poughkeepsie, N. Y.,

Professor of Astronomy in Vassar College.

Last year I had leave of absence from my work at Vassar, and spent most of the time in Japan, where I made a special study of the activities of women in educational lines, in business, and in social work. I was especially desirous of seeing what they were doing in medicine, for to my mind the position which women hold in this profession is the surest indication of progressiveness in a country. If they are provided with adequate opportunities for study and are welcomed to active practice, then they stand side by side with men in the most difficult and responsible of all kinds of public service.

Long before leaving America I had read of a successful practitioner, Dr. Yoshioka by name, who has a medical school of her own for women called the *Tokyo Jo-Igakko*, Jo meaning woman; I, medical, and gakko, school—Tokyo Medical School for Women. After my arrival in Tokyo I made plans

for meeting her and seeing her work, but since she spoke no English I was dependent upon finding a guide and interpreter. Fortunately I often enjoyed the companionship of a Japanese woman, a graduate of Goucher College, who was my escort on many occasions, and she accompanied me on this expedition. I visited the medical school first, and some months later called on Dr. Yoshioka at her private hospital in another part of the city. After that I had a long talk with another Japanese woman doctor and learned more of Dr. Yoshioka's career and the history of medical training for women in Japan. Many other points I gathered here and there during my stay in the country, but it was not possible for me to verify all the statements, and doubtless there are some inaccuracies in my story, but it is in the main true, I am sure, and presents a most interesting picture of a rather unknown side of a country which is at present very much out of favor.

Dr. Yoshioka, now fifty-two years old, obtained her medical education thirty years ago at a coeducational school privately supported in Tokyo, in which the lectures were given by professors from the medical school attached to the Imperial University. There were two departments in the school, the elementary, in which the theoretical training was given in the form of lectures, which was terminated by an examination, and an advanced part, in which the practical work was given in the form of general laboratory training and practice in the hospital belonging to the school. After an existence of about ten years it was forced by the government to discontinue on account of its poor equipment.

Shortly after it terminated, two other private medical schools were established which had departments for women, one of which closed almost immediately and the other only recently. The school of Dr. Yoshioka, which is exclusively for women, was founded about fifteen years ago, with a four years' course including lectures, some laboratory work in chemistry, physics and biology, with considerable work in anatomy, and training in its own hospital. It has now four hundred students and 550 graduates. There are so many applicants for admission that they can not all be accommodated, and there is a plan to raise the requirements for admission and give a stiffer entrance examination. It has government recognition as a special school, which gives it an assured standing, and its graduates are permitted to take the examinations for license to practise.

This last statement perhaps needs a little explanation. The control of all education in Japan is in the hands of the Department of Education, which is represented by a minister in the cabinet. The profession of medicine is one of the oldest and most respected in Japan, having been cultivated long before the opening of the country to Western culture. The only contact permitted by the Tokugawa Shogunate with western learning was through the study of Dutch astronomical and medical books. The account of the effort to master and translate the first medical treatise would in itself be a whole chapter in Japanese history, but it is out of place here. It is mentioned only to show the high esteem

the government has for the profession and to explain why it is continually trying to raise the standard of medical education.

It specially favors the medical schools connected with the Imperial universities, and graduates from these are permitted to practise without examination. Other schools send their graduates up for the examinations which are usually very severe. Those from Dr. Yoshioka's school do very well, as the following statement from the *Japan Times* shows: "In 1908, one of them was the only lady among three persons who succeeded in the examination out of 1,400 competitors."

Openings for further study after leaving the Woman's Medical School are quite surprising. The young women may go into the laboratories and hospital of the Imperial University in Tokyo with the permission of the professor in charge, as observers or volunteer workers, but may not attend lectures with the men, or count their work toward a degree, though it helps them in preparing for their examinations. They can also find places in some of the large charity hospitals as volunteer interns, and some of them are regularly employed in the hospitals of the *Saiseikai*, a large relief organization which has hospitals in many of the Japanese cities. When the Empress paid a visit to the largest one, which is in Tokyo, she was particularly pleased with the work of the women, and gave them a special present, which was very high recognition and most gratifying to all the women doctors.

The girls seldom expect to take the examination for license to practise immediately upon graduation, but often spend a year in getting ready for it. Those who obtain it may set up in private practice but not many of them do so, because it requires too much capital. About twenty-eight women in Tokyo are thus engaged. Those who do not receive the license may become doctors' assistants, and are in great demand for such positions. Dr. Yoshioka told me that requests for them come from all over the Empire, and she can not satisfy them all. An explanation of this great need throws considerable light upon certain living conditions in Japan.

Many doctors have their own hospitals in which their patients are often treated instead of in their homes. In a Japanese house of moderate size with an ordinary family, it is almost impossible to isolate a patient. There are no separate bedrooms, for at night the bedding is spread upon the soft matting, and in the morning it is folded up and put into a closet. Two sides at least of a room are closed with sliding screens which can not be fastened, and through which sounds penetrate very easily. The greatest obstacle, however, to recovery is interference with the doctor's orders on the part of some elderly person in the family who has been brought up on the old fashioned Chinese method of practice, or prefers to use some charm from a temple. A young woman even with modern education may be rather at the mercy of her husband's mother in this respect. Therefore doctors often insist upon taking patients into their hospitals where they can supervise their treatment. It is interesting to note that most Japanese have no objection to a hospital.

The reasons why young women are in demand as assistants are also significant. Men for similar positions would probably be taken from the minor medical schools and the women are often their superiors intellectually. They are more faithful and reliable in their work, pay more attention to women and children, are more gentle and considerate in the hospital and do not object to being sent out into the homes. But their chief advantage is that they do not spend their spare time in dissipation and do not frequent the geisha houses. The hospitals belonging to the medical schools at the Imperial Universities in Tokyo and Kyoto have the reputation of being rather rough with the patients even when they are private cases. As one Japanese man in Kyoto told me, they are very cruel to them. Cruel is probably not the word we should use, but his meaning is clear. This man had taken his doctor's degree in pure science at Johns Hopkins University and knew something about medical work in that institution. I met also a physician who had been sent to the same university for advanced work during the war, when he could not go to Germany where the majority of Japanese study. It was almost pathetic to see his devotion to it and his desire to introduce some of the ideas gained there into his own medical school, which was one of the minor ones in a provincial city in the west of Japan.

Other opportunities for advanced study come to the women who are full fledged doctors. Classes in special subjects lasting for three or four weeks are held at the Imperial University at intervals to which women are admitted on the same terms as men. The Kitasato Laboratory gives to doctors twice yearly courses lasting six weeks each, and Dr. Saiki, in his nutrition laboratory, offers a course to doctors dealing with dietetics as a part of medical treatment. He also has a more simple course on food values and household nutrition open to any one. Those attending it are teachers of domestic science or sometimes housekeepers studying to improve conditions in their own homes. The various medical societies are open to women on the same terms as men.

A few Japanese women have studied medicine in American schools and are engaged in private practice, but they must also pass the government examination. The Barbour fellowships at the University of Michigan will enable more of them to get a high class training. Unfortunately, on account of the lack of laboratory work in general science at the *Tokyo-Io-Igakko*, its graduates can not enter the medical school at Michigan directly, so I was informed by the dean of women, because two years of college work are required for admission, and even the four years medical study in Japan will not take its place. A still greater obstacle is the lack of English. Most of Dr. Yoshioka's pupils come from the government schools where English is taught but where there is little chance for conversation. Many of them have never come in contact with foreigners. German is studied in the medical school.

That better opportunities will come to women in Japan for medical study, I do not doubt. I was told recently that the *Kiyojigjuku*, a well endowed

private university in Tokyo, which has just added a well equipped medical school, will admit women graduates to its courses, but this has not been confirmed.

I should like now to say something of the personality of Dr. Yoshioka and the deep impression it made upon me. I was particularly interested in studying her because I imagined that in her was expressed the spirit of purely Japanese culture, untouched by direct contact with foreigners. She was thus a typical representative of the old Japanese womanhood who were trained to be ready for any emergency, and to sacrifice themselves, even to the very end. Dr. Naruse, the founder of the Japan Woman's University, has written: "They seem to possess a latent, indomitable spirit of fortitude and courage, a product of long historical association and traditional training. Once roused into activity, they show themselves capable of behavior which is little short of marvelous." These qualities are not wanting in the modern Japanese woman though the crisis awaiting her is not like that of the old *samurai* days, and she is free to use her initiative in other lines of service. What obstacles Dr. Yoshioka had to overcome in the early part of her career I did not inquire, but no one can doubt that they required courage of a very high order. When in her presence I felt her power, though I could not then analyze my impression or formulate it as I have done in this paper.

Dr. Yoshioka is rather slight in build. Her face is full of serenity and her smile is very winning. She told me she was always well and seldom took a vacation. When she needs a rest, she slips away for a few days to her native province of Shizuoka, to enjoy the climate which is very agreeable. This may be the reason why she looks so much younger than her years. Her chief assistant, on the other hand, wore quite an anxious expression, as if she felt her responsibility keenly. Perhaps this is in part the difference between old Japan and new Japan.

Our conversation was carried on in the reception room of her private hospital, which was tastefully furnished in foreign style. The windows opened onto a little court laid out in garden style, from which came the sound of trickling water, a pleasing effect for a warm afternoon in June. On the first floor were the waiting and consultation rooms, drug room, examination and operating rooms and a well equipped kitchen. Dr. Yoshioka is much interested in dietaries, which she is working out with Dr. Saiki. The rooms for the patients are on the second and third floors, the inner ones opening onto a large court also arranged as a garden. They are furnished in Japanese style, although beds may be used if desired, and several of them contained cribs, all ready for the new babies. On the roof is a platform where the doctors can take refuge on hot summer evenings. Everything was beautifully neat. Dr. Yoshioka took pride in telling me that all of the work in the hospital was done by women, and that no men were employed. As I am only an astronomer, I do not feel competent to pass upon the medical side of the work.

From the proceeds of the hospital, Dr. Yoshioka

carries on the medical school and its hospital. She also supports a hospital in Rangoon, Burma, where three of her graduates are practising. She would like to send some of her girls to America, but the cost is almost prohibitive. I wish there might be some opening where they could give their professional services in return for a chance to study our hospital methods and associate with women doctors. Her chief assistant was very eager to come.

A few words may be added regarding the standing of the nursing profession in Japan. Practically every hospital has its training school. Of these the Red Cross hospital ranks first, and the heads of departments are women of fine character. The general morale is very high, due partly to the fact, so I am told, that the nurses are not allowed to receive gratuities of any kind. They have a charming recreation hall of which they are very proud, and which they tend with the greatest care. Candidates for admission may come directly from the higher division of the elementary school. The graduates are expected to give their services to their country when there is need for it, and a group of nurses from this hospital crossed America on their way to France during the first year of the war. Another group was in Petrograd, where Viscountess Motono, wife of the Japanese Ambassador, was directing a hospital.

In the home, the nurse does not rank much above a common servant, and hence men of good position are unwilling to let their daughters take up the work. Some Japanese women interested in social work, like Miss Tsuda, are urging young women to go into it, for the sake of using it for the public benefit, or in order to prepare for executive positions in hospitals, but no great response has come as yet. I inquired of one doctor, if it was possible for girls of so little education and background to do successfully the kind of work required by a surgeon in a first class hospital, and he told me that women were usually picked for this work and specially trained. Their positions were permanent and they were not expected to leave on graduation. A great deal of the confinement work is in the hands of midwives who must pass a government examination in order to secure a license. Many hospitals have courses of instruction for them.

Altogether it seemed to me that there was much promise for Japanese women in the profession of medicine. What they need is more opportunity for thorough scientific study, and recognition of the value of their services. The attitude of Japanese men toward the work of women seems to me to be rather pragmatic. If it proves to be useful and really necessary, they are encouraged in it and expected to continue. This is evidently coming to be the case in medicine.

Definite public health work, which has so recently developed with us, is still a thing of the future in Japan. Such work is entirely consistent with Japanese ideals, and if a few of their medical students could come in contact with the work in some of our well equipped public health centres, like that just being established in Oakland, Calif., I am sure the idea would soon take root at home. Women doctors are especially well qualified to en-

gage in this kind of work, because of their easy access to the home where the most important work is to be done. This matter has been put before them quite forcibly, and Dr. Yoshioka realizes what an opportunity lies before her.

It has been suggested that in conjunction with Dr. Saiki a regular department of public health instruction could be built up in her school. Whether this can be done is largely a question of finance. Certainly there is no doubt as to its usefulness.

Japanese people are becoming greatly interested in social work; their home training develops in them a strong feeling of family responsibility, and if this can be carried over to the community, there is much hope for the future. But until this social conscience does come into existence, the outlook for the poorer class of workers is pretty black.

LONDON LETTER.

(From our own correspondent.)

Medical Research—Medical Research Council—Mr. Barker and a Medical Degree—Fatigue in Shop and Office—The Royal Society of Medicine—British Parliamentary White Paper—Pay System in Hospitals.

LONDON, April 24, 1920.

In a former letter attention was drawn to the need of encouraging medical research in this country, and it was stated that a deputation had waited upon Mr. Balfour to advocate a system of government rewards for that class of work. It was also said that the deputation found Mr. Balfour at once sympathetic and sceptical. While he has always been an ardent advocate of the encouragement of research, he was doubtful of the practical feasibility of the plan suggested by Sir Clifford Allbutt and Sir Richard Gregory, since it would be extremely difficult to select the men most worthy of the awards. In his opinion it would be better to encourage those actually engaged in research work than to give grants on its completion. This point of view has much in its favor. With regard to the lack of encouragement given to research work Mr. Balfour in his reply to the deputation said he was informed that there were people carrying on research work at Cambridge University who received less money than unskilled workmen in the service of the corporation. This can hardly be otherwise, if it is borne in mind that the only money available for the purpose in Great Britain is the £600,000 (\$300,000) a year or so, which is at the disposal of the Medical Research Committee. In the annual report of this committee (1918-1919) it was pointed out that not only was research work crippled for want of proper monetary support, but that in spite of the enormous benefit to the civil community and to the national finances from the discoveries of investigators during the war, there had been no increase in the grant, albeit there had been so great a rise in prices. As a rule, in this country the situation is that research work is supposed to be done as a fad by lamentably underpaid professors and hospital pathologists. The *Morning Post*, April 6th, in a communication from a special correspondent, declares that the result of this shameful parsimony is that not only are formidable

handicaps laid upon research workers at the present time, but the existing system operates steadily against what is the first necessity for future progress, namely, the recruitment in the research service of medicine of the ablest young brains, well trained in the primary sciences. At almost every stage in the career of a young worker who may be capable of advancing medical science by research there are continual temptations to turn aside to professional practice or to administrative work, in which the remuneration, the worldly influence, and too often the worldly recognition given are so much higher. Reasonable financial security, given directly for research work, is the first condition of maintaining the ablest men for it in the service of the country. It should be superfluous to have to emphasize the value of research work. Its results during the past few years have been amazing, and the field of investigation in tuberculosis and cancer, to mention only two diseases, is wide. But in order to obtain success it is obvious that investigation should be continuously and persistently carried on by as many competent and trained men as can be got together. The money at present available in Great Britain is hopelessly insufficient to accomplish a tithe of what should be done.

If research work is not encouraged before long there will be no efficient men forthcoming to carry on such work. First class university positions in England command no more than before the war, at the present value of money, about £350 (\$1,750) a year. This is the reward of an individual, on whose education not less than £1,000 (\$5,000) has been expended, who did not begin to earn until he was twenty-three years of age, and up to the age of thirty-six, when elected to a professorship, did not get more than £400 (\$2,000) a year. However, unless there is provided without delay a more favorable financial prospect for young men who take up medical research, there will soon be none fit to fill professional chairs in our universities and no research work will be done. State aid must be invoked to save the country from this calamity, and it should be made possible to follow medical investigation as a career comfortably and with fair prospects. It may be said that in so far as the emoluments and future of medical research are concerned, America is better situated by far than is this country. American millionaires are much more willing to encourage medical research than British rich men. In this they have displayed superior foresight and wisdom.

A charter has now received the King's approval, and a warrant prepared accordingly, the significance of which will be to transform the existing Medical Research Committee into a body corporate styled the Medical Research Council, with an enlarged sphere of duty and with considerably enhanced responsibilities. The new Medical Research Council will carry out its function under the aegis of a committee of the Privy Council, which will consist of the Lord President of that body, the Minister of Health, the Secretary for Scotland, and the Chief Secretary for Ireland, these latter ministers having *ex officio* charge of the health of their divisions of the United Kingdom. The Medical Re-

search Council thus becomes a permanent subcommittee of the Privy Council, and under its governing body can enter into all contracts, can hold personal property, and dispose of the same, including parliamentary grants. There are two features of the constitution of especial interest to medical men. First, the Medical Research Council will have direct access to the ministers intimately associated with its work. There is no intervention of any permanent official required when the Medical Research Council wishes to urge any measures upon those in supreme charge of the health of the United Kingdom. The other feature is that the advice of the Royal Society is to be taken in respect of the personnel of the council. The first council consists of the existing Medical Research Committee and is constituted as follows: Mr. C. J. Bond, F.R.C.S., consulting surgeon to Leicester Infirmary; Professor William Bullock, F.R.S., professor of bacteriology in the University of London; Dr. I. R. Elliott, F.R.S., physician to University College Hospital; Mr. William Graham, M.P.; Viscount Goschen; Dr. Henry Head, F.R.S.; Professor Gowland Hopkins, F.R.S., professor of biochemistry in the University of Cambridge; Sir William Leishman, F.R.S., director of pathology, A.M.S.; Professor Noel Paton, F.R.S., professor of physiology in the University of Glasgow, and the Hon. E. F. Lindley Wood, M.P. Three members of the council will retire at intervals of two years, and appointments to their vacancies, or to any other vacancies which may casually arise, are to be made by the supervising committee of the Privy Council, after consultation with the existing body itself and with the president for the time being of the Royal Society.

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The petition of members of the British Parliament in favor of the medical degree *honoris causa* being granted to Mr. H. A. Barker has been formally presented. Mr. Barker, who is the well known bonesetter, will visit New York *en route* to Los Angeles for a holiday.

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The question of fatigue in shop and office is one to which scientific attention has been given only recently. It is recognized now that the human machine, in order to work efficiently, cannot be treated like machines of steel and brass, which, if of proper construction, and if kept clean and oiled will work satisfactorily. The human machine is of more delicate construction and peculiarly susceptible to its surroundings and needs the greatest care and attention if it is to perform its functions with the best results. Therefore, industrial psychology is one of the most important departments of industrial research and hygiene. It is with the object of studying the conditions prevailing in factories, workshops, and offices systematically and scientifically, and of securing their observance in practice, that the proposal to found a British National Institute of Psychology and Physiology as applied to industry and commerce has been put forward with the support of leaders of industry, of psychologists and physiologists and of educationalists. One of the chief means proposed is the establishment of well equipped laboratories for research

into various occupations, in order to determine the conditions necessary to get maximum output with a minimum of fatigue and discomfort to the worker, such as elimination of unnecessary movements, and to study the causes of mental and muscular fatigue and the methods for reducing it. Tests would be made in the laboratory for the purpose of establishing standards by which workers could be selected for the occupations for which they were best fitted, mentally and physically. These standards would enable parents and aftercare committees to be advised as to the best vocations for children, and would tend to eliminate much waste at the outset and prevent the discontent which arises when a worker finds out too late that he has taken up an unsuitable occupation and is a square peg in a round hole.

The facts established by research would be collected and classified and from time to time published in such form as to bring out their practical value. Another function of the institute would be to provide training courses and lectures for investigators, managers, foremen, and welfare workers in the practical applications of psychology and physiology, and it would undertake investigations at factories and offices in relation to any special problem. It would study the conditions that tend to promote the health, comfort, and welfare of the worker, and also the psychological relations between employer, manager, foreman, and worker with special reference to securing harmony and cooperation. It would further undertake propaganda work among employers and employed, and cooperate actively with organizations of both, for the furtherance of national unity and prosperity. It goes without saying that to carry out this program money will be required. The minimum income thought necessary is £6,000 (\$30,000) a year. A laboratory will be established in London, and later in such of the provincial towns as may be desirable, and it is intended to obtain the services of a number of experts in psychology and physiology who will give their whole time to the work.

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To one man belongs the chief honor and credit of forming and establishing the Royal Society of Medicine and of placing it in the proud position it holds today. The man to whom the achievement is due is Sir John MacAlister, the secretary of the society, and to whom the British medical profession gave a complimentary dinner on March 18th to show the appreciation of the profession for the services he has rendered it and to compliment him on his receiving a knighthood. The dinner throughout was a conspicuous success, the attendance was large and representative, practically every town in the kingdom being represented by its most prominent medical men. The career of Sir John was described by three speakers: the first period by Sir William Church, the second by Sir Rickman Godlee and the third by Sir Francis Champney. Last, but not least, Sir W. Arbuthnot Lane described Sir John as a man and by facts and figures showed vividly what he had done for the Royal Society of Medicine. It was peculiarly appropriate that Sir Arbuthnot Lane should have

struck the human note, for it is largely, if not entirely, owing to his diagnostic acumen and surgical skill that the secretary of the Royal Society of Medicine is in the enjoyment of good health at the present time.

The recipient of these honors is a Scotchman from Aberdeen who began life as a librarian at Liverpool. He was for many years the honorary secretary and organizer of the library association, during which time he also founded the Bibliographical Society and established the library in 1889. Nine years ago he founded the University of London Press. In 1887 he was appointed resident librarian and secretary of the Royal Medical and Chirurgical Society. In the beginning of the present century the society had made such rapid advancement that it became impossible for one man to be responsible both for its business affairs and for the library. In 1901, therefore, Sir John was appointed secretary and consulting librarian. A few years later came his great scheme and amalgamation between the Royal Medical and Chirurgical Society, and most of the other medical societies of London. The adjustment of the vested interests of the various societies concerned involved an immense amount of work, but by dint of tact, influence, and pertinacity of purpose the majority of these bodies were gradually gathered into the fold. The question of finance was shrewdly arranged by Sir John, who displayed throughout great prescience and business acumen. This fact was well brought out in the speech of Sir W. Arbuthnot Lane at the dinner. He showed that from practically nothing the society had come to be highly prosperous, its assets now being over \$600,000. It may be said that Sir John's work for the amalgamation had the warm support and approval of many distinguished members of the medical profession, notably that of Sir William Church, Dr. Arthur Latham, and Mr. H. S. Pendlebury, without whose cooperation the scheme could not have been carried into effect.

* * *

One reason why I have dwelt at considerable length upon the work of Sir John MacAlister and its results is because he is particularly well known and, needless to say, liked by the many American army officers who during the war were in London at one time and another and who were warmly welcomed to the home of the Royal Society of Medicine. It also may be added that Sir John played a prominent part in the creation of the Fellowship of Medicine, and the Postgraduate Association, which was established mainly perhaps for the purpose of attracting Americans to London for postgraduate medical work and for promoting and cementing good feeling between the two great branches of the English speaking race. American and Canadian medical men who have been in London during the past few years will be as pleased to learn of the honors which have fallen to Sir John MacAlister as the members of the medical profession of this country. In addition to the dinner to mark his exceptional work for thirty-three years as secretary of the Royal Society of Medicine, his friends have expressed a wish "to emphasize their

warm affection and deep admiration for him and his unselfish character." In order to carry out this object a testimonial fund has been formed for the purpose of making him a presentation, the organizers being Sir Humphrey Rolleston, president of the Royal Society of Medicine, Sir W. Arbuthnot Lane, and Mr. Percy Dunn, honorary treasurer of the fund.

* * *

A British Parliamentary White Paper published recently gave detailed statistics of street accidents during the past year which came to the knowledge of the police. Throughout the whole country there were 51,326 accidents, 2,628 being fatal. Horse drawn vehicles were responsible for 440 fatal accidents, pedal cycles for 178. The 2,010 fatal accidents in which mechanically propelled vehicles were involved included 221 busses and 187 tram cars. Accidents of all kinds involved the following types of vehicles: Horse drawn: in 1918, 7,664; in 1919, 8,148. Busses: in 1918, 2,170; in 1919, 2,662. Tram cars: in 1918, 7,556; in 1919, 6,866. Other mechanically propelled vehicles: in 1918, 14,667; in 1919, 25,480. Pedal cycles; in 1918, 16,868 in; in 1919, 8,170.

In 1918, the number of fatal accidents was 2,193. The figures for the London Metropolitan Police District for 1919 were as follows: Horse drawn vehicles: fatal, 98; nonfatal, 2,886; total, 2,984. Busses: fatal, 136; nonfatal, 1,953; total, 2,089. Tram cars: fatal, 41; nonfatal, 2,906; total, 2,947. Other mechanically propelled vehicles: fatal, 398; nonfatal, 8,338; total, 8,736. Pedal cycles: fatal, 14; nonfatal, 2,915; total, 2,929. Total of street accidents in the London Metropolitan Police District in 1919: fatal, 687; nonfatal, 18,998, and grand total, 19,685. In the principal provincial cities there were 380 fatal and 8,472 nonfatal accidents.

* * *

According to reports with regard to the hospital situation, coming in from all parts of the country, it appears that the pay system is finding favor.

The *Lancet*, however, in a leading article in its issue for March 27, 1920, points out that, considering the immense strain and drain put upon them, the hospitals are in a fairly satisfactory position, as figures seem to show that the voluntary hospitals were still able to meet out of their income for the year, including grants from the central funds, ninety per cent. of their bills. Arguing from these figures the article in question holds that there is no valid reason why voluntary hospitals should not be continued as such, for a considerable period at any rate, if, after the ordeal of the war, the pecuniary position is so little worse than previously. Until we are reasonably certain that a better scheme has been devised to take its place, the article goes on to say, the voluntary system must hold good, as far as London is concerned, supplemented but not supplanted, by public funds. The subject of a pay hospital system or of a modified system of this kind is ignored by many who write with authority on the matter. However, the plan appears to be gaining support from a goodly number of the medical profession and to be commending itself to the general public.

Editorial Notes and Comments

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THE SEARCH FOR TRUTH.

Disgruntled practitioners, feeling the ground slipping from under their feet, have shouted against the various methods which in recent years have forged to the front. They have intimidated the credulous by attributing to the men interested in the specialties statements which were far beyond any assertions that had been made. In the same unreasoning manner they continued destroying the house of their own creation. Strong arm neurologists, clinging to set classifications and trustworthy bromides, apomorphine and the straightjacket, have protested against exploration of the unconscious. Frequently fearful of revealing their own conflicts and shortcomings, they assailed the process as injurious and costly. They shook their heads solemnly and told how pernicious it was for young people to know what was going on in their unconscious.

They stated that exploration of the unconscious was not feasible; they sometimes denied the existence of the unconscious. How could there be such a thing as an unconscious, when it was all one could do to understand the workings of the conscious? Admitting that there was an unconscious, how could we explore it when it was infinitely greater than the conscious? At any rate, the science had never cured anyone. These antagonists spread the belief that this was supposed to be a cure, when in reality it was only a method which enabled one to examine dispassionately the existing conflicts and to determine why the censor which stood at the gateway between the conscious and the

unconscious could not admit certain complex thoughts to appear in the conscious mind unless they wore a disguise—unless they were symbolized. They said the physician who attempted by using the symbol to trace back the origin of the complex giving rise to the conflict was unscientific, and frequently that he was a low type of person. The physician who searched for the truth was called a criminal.

It is easy to recall the time when anatomists in their search for truth were persecuted and regarded as enemies of society. While our present status as regards mental development is nothing to boast about, nevertheless it is a relief to know that this sort of cowardice has not manifested itself to a sufficient degree to halt the chariot of progress.

ALTERNATING RHYTHM OF THE HEART AND PULSE.

Nothing lends itself better to definition than an alternating pulse in a condition where the rhythm is characterized by a succession of cardiac contractions exactly equidistant but alternatively strong and weak. In the more distinct cases each weak arterial pulsation is somewhat nearer to the strong pulsation that follows; the weak pulse wave extends less rapidly than the strong, regardless of the equidistant ventricular systoles. The phenomenon of alternancy intimately related to the reactivity of the cardiac muscle may occur in every portion of the heart. In ventricular alternancy the pulse or the ventricle should be examined, the characters of the former being very distinct; in alternating pulse there is a slight arrhythmia with inequality of the two consecutive periods which does not exist in an alternating heart. There are two reasons for explaining the retardation of the weak beat. There is a prolongation of the period of closure of the valves and a slower propagation of the weak wave along the arteries. This delay is the more marked the greater the difference between the two successive weak and strong waves. All degrees are met with, from that perceptible to the finger to one that only the sphygmograph can detect. Occasionally the weak pulsation may be so imperceptible as to create a false embryocardia on account of an apparent division of the pulse. Exploration of the apical shock, if this is possible, will confirm the equidistance of the cardiac contractions, a negative sign from the viewpoint of alternancy, but one which is of the greatest value in distinguishing the true alternating pulse from the pseudo form resulting from delayed bigeminism. The alternancy of the

ventricular systoles is not always visible on account of the difficulty of making the tracings, even when the subject is lying on the left side. Various types of ventricular alternancy and variations are met with.

Certain subjects present a persistent alternancy for several weeks, until death occurs, but the alternancy is not always the same, as it offers constant variations which appear to depend upon the frequency of the pulse. An increase of the pulse rate greatly facilitates the appearance of alternancy and especially the extra systoles. Alternancy of the auricle is certain, but there is extreme clinical difficulty in recognizing it. Rihl has demonstrated the existence of an alternancy of the fasciculus of His.

Extra systolic arrhythmia in the bigeminate form offers the same alternate succession of the cardiac contractions, but in this case the weak beat closely follows the preceding strong one. In the majority of cases the bigeminate rhythm can be readily distinguished clinically from alternating rhythm, but in doubtful cases cardiographic tracings must be made. The diagnostic difficulties between alternating pulse and extra systolic bigeminate arrhythmia have given rise to the question whether it was worth while to separate these two rhythms, but an affirmative reply has been given. The weak beat of the bigeminate rhythm is due to an extra-systole—a premature cardiac contraction. The production of this premature contraction implies either a greater cardiac excitability or an abnormal excitation. If the ventricular contractions are equidistant, this implies that there is neither an increase in the excitability nor an abnormal excitation present. Therefore, alternating rhythm and bigeminate rhythm do not appear to result from the same cause. Engelmann and Hoffmann have shown experimentally that alternating rhythm is due to a disturbance of contraction. Bigeminate pulse is formed by the adjunction to each normal cardiac contraction of a weak premature contraction because of its too early occurrence and followed by a compensating rest. Alternating pulse is the result of a weak amplitude of one contraction in two and since all the cardiac contractions are equidistant, the moment of their production cannot explain the weakness of one half of the contractions. Liau has shown that this phenomenon is due to a decrease in the contractile power of the heart muscles.

In alternating rhythm all the cavities of the heart are independent; the ventricles may alternate, although the auricles do not. One ventricle may alone alternate, while each ventricle may alternate in an opposite sense. Division of the fasciculus of His does not prevent the isolated ventricle from presenting this rhythm. It has also been shown

that this same ventricle can present completely independent areas of alternancy and Hering supposes that these are areas of partial asystolia, certain of the more exhausted fibres no longer responding to the auricular excitation sent through the fasciculus of His. This theory is generally accepted and it also explains the regular alternancy of weak and strong pulse beats. But an alternating pulse is not common. It is met with more frequently in chronic nephritis with cardiac hypertrophy and chronic myocarditis and is an important sign of left ventricular insufficiency. Its prognosis is serious and indicates death within not more than a year or two, usually within a few months. However, Liau has reported a case of transitory alternancy and it is possible that if other similar cases are recorded the gravity of the prognosis may be lessened.

PHYSIOTHERAPEUTIC WORK IN CANADIAN MILITARY HOSPITALS.

On April 1, 1918, the Canadian Army Medical Corps took over all the military hospitals in Canada which up to that time had been administered by the Military Hospitals Commission. A systematized scheme for hospital centres in the various military districts of the Dominion was adopted after a report had been made of the apparatus designed and used in the special hospital at Ramsgate, England. Under this scheme all the Canadian hospitals were divided into active treatment sections where the surgical operative work was performed, and convalescent sections to which the patient was removed after immediate recovery from the operation. A typical treatment department in Canadian military hospitals consists of: An office for the medical officer in charge of treatment departments where examinations and reexaminations are made and where the records of attendances, progress in improvement, and other data are kept; a massage room furnished with massage plinths and electric vibrators, where only female personnel (*masseuses*) work; a smaller room for male personnel (*masseurs*) to whom is intrusted heavy and lower extremity stump cases; another room devoted exclusively to electrical treatment work where both male and female personnel give treatment; a room arranged for electrical heat baths and heat cabinets; a hydrotherapy department where all the water baths are given; two rooms devoted to the workers in muscle function training; a rest room for patients who require rest after treatment.

At least fifty per cent. of all these hospital populations require and receive physiotherapeutic treatment; in special hospitals, such as the Dominion

Orthopedic Centre, Toronto, the proportion has been much higher.

On arrival in Canada the patient's home district, as well as his disability, has always been considered, and he was at once sent to the hospital centre nearest his residence. After having been allocated to the hospital, a careful physical examination has always been made, including the electrical reaction of muscles in nerve lesion cases, and a system of angular measurements both for these and for joint cases. After this the patient is detailed to the treatment department whether after operation or not, and when he comes under the supervision of that department the officer in charge has always been made responsible for the treatment to be carried out. Treatment is never altered or prescribed unless by consultation with the medical officer immediately concerned. In the case of nerve lesions and joint injuries, at a certain stage of progress the patient is placed in the hands of the muscle function trainers. When function is sufficiently restored, the patient is placed in the gymnasium group, where he graduates into occupational therapy shops, full physical training, and is finally discharged. In the case of amputation special exercises are arranged and a careful record kept of the increase in strength. Special attention in this section is devoted to the correcting of faulty methods of use of the stump, more especially in the case of the lower extremity with its well known tendency to lessened extension and overabduction. In the gymnasium special attention is given to organized games, such as hand ball, medicine ball, giant hole, and badminton. The value of billiards in training for fine coordination has not been overlooked.

ETIOLOGY OF CHRONIC PRIMARY GLAUCOMA.

In spite of the immense amount of study which has been devoted to the various forms of glaucoma our knowledge concerning the etiology of the disease is still limited. This fact renders it imperative that we should seriously consider every attempt to explain in a reasonable manner the actuating cause of any variety, whether or not it may coincide with any of our preconceived ideas. Yet much past experience has taught us to be wary how we accept the observations and deductions of the proponent of any new theory until they have been thoroughly investigated and tested by many other students. Hence we try to be cautious in discussing the theory advanced by E. J. Curran in the March number of the *Archives of Ophthalmology*.

His theory is that the aqueous humor is secreted

into the posterior chamber, flows between the iris and the lens into the anterior chamber through the pupil, and that when the anterior surface of the lens is brought into contact with the iris, whether by the enlargement or the pushing forward of the lens, an impediment is formed to the free passage of the aqueous humor, which causes it to accumulate in the posterior chamber, driving the lens and iris still further forward and increasing the impediment. In his own words: "Normally the aqueous humor passes through the pupil from the posterior to the anterior chamber, but it is here contended that in glaucoma this passage is impeded on account of the iris hugging the lens over too great an extent of surface. Some of the aqueous humor gets through, while some passes back, forcing the lens and iris still more forward." He states that if we examine the pillars of a coloboma formed by an iridectomy preliminary to extraction of cataract in an eye with normal tension some weeks after the operation has been performed, we shall see that they do not rest on the lens, except barely to touch it near the pupil. But if we examine the pillars of a similar coloboma formed by an iridectomy for glaucoma, they will be seen to lie closely upon the surface of the lens almost to its extreme periphery. He also says that before any operation has been performed in a case of glaucoma the bulging of the iris can be seen to correspond to the curvature of the anterior surface of the lens to a line far out toward the periphery of the latter. These observations formed the basis on which he developed his theory.

The idea, as we understand it, is that as the lens normally increases in size it advances its anterior surface until it comes into actual contact with the iris, probably near the pupil. This contact impedes the flow of aqueous humor so that a small portion of it is held back in the posterior chamber, where it acts by accumulation to drive the lens further forward, gradually increasing the contact area between lens and iris, and so increasing the obstruction. At the same time the accumulation of fluid within the eye gradually increases the intraocular pressure and inaugurates the onset of symptoms of chronic primary glaucoma. It is ingenious and plausible, though not absolutely convincing in all its details. For instance, instead of ascribing the contact to the advancement of the surface of the lens, it might be imagined that a fluctuation took place in the secretion of the aqueous humor that allowed the iris to fall back against the lens, and that then the cohesion of the two surfaces afforded the impediment to the free flow of aqueous humor. But nothing more than that it is plausible and pos-

sibly correct can be said in its favor until it has been studied and its correctness confirmed or refuted by competent investigators.

It is different with the operation that the author describes, based on his conception of the etiology of the disease, to make one or more small apertures in the iris near its root so as to open a free passage for the aqueous humor from the posterior to the anterior chambers. The fifteen cases he reports are open to criticism; the period of observation was too short to permit of a fair judgment as to final results. Other operations, particularly Elliot's, had been performed on several of the patients. In one case the attempt to make a hole in the iris failed. Possibly the operation may come to have a recognized value in early cases, before the avenue for the escape of the aqueous humor from the anterior chamber has become closed by the occlusion of the filtration angle. But it is difficult to understand how much improvement could be expected when the outlet is closed. It is certainly not an operation for indiscriminate adoption in all cases of chronic primary glaucoma without regard to the stage of the disease.

THE DOCTRINE OF EROGENOUS ZONES.

Havelock Ellis, in the *Medical Review of Reviews* (April, 1920), traces the origin and meaning of the term erogenous zones from the time of Hippocrates and Galen, when this phenomenon was termed "sympathy." Willis in the seventeenth century and Hyatt and Hunter dealt with this subject, but they and their successors were occupied chiefly with the nonerotic fields of synesthesias, synaesthesias, and so forth. Charcot, who may be said to have taken up sympathy where Hyatt left it, was particularly concerned with hysterogenous zones which he considered as a simulacrum or a compensatory substitute or a morbid transformation of what later became known as erogenous zones. In 1881 Ernest Chambard first named and set forth the erogenous aspect of general nervous activity. Fere noted the analogy, which Chambard seems to have overlooked, between these erogenous centres and Charcot's hysterogenous zones. In 1905 Freud published his book *Drei Abhandlungen zur Sexualtheorie*, and here first adopted and made wide use of the doctrine of erogenous zones, which fitted admirably into his own theory. He points out that these zones are likely to become unduly active in the psychoneuroses and in hysteria, where they take on a compensatory heightened sensibility. Havelock Ellis states in conclusion that the question has chiefly fallen into the hands of investigators, who are primarily interested in the pathology of the psychoneuroses, and have insisted mainly on the exaggerations and perversions of which the erogenous zones may form the basis. It has not always been clearly emphasized that these zones constitute an important part in normal sexual development.

News Items.

Society for Clinical Study.—The next monthly meeting of this society will be held Wednesday evening, May 26th, in the reception hall of the New York Diagnostic Clinics, 125 West Seventy-second Street.

American Public Health Association.—The annual meeting of the American Public Health Association will be held at San Francisco, September 13th to 17th. A change has been made in the date because of a California state election being held on August 30th.

Lectures on Psychoanalysis.—A course of four lectures on The Four Schools of Psychoanalysis will be given by André Tridon on Thursday evenings, May 13th, 20th, 27th, and June 3rd at the Bramhall Playhouse, 138 East Twenty-seventh Street, New York.

Samuel D. Gross Prize.—The Samuel D. Gross Prize of the Philadelphia Academy of Surgery for 1920, amounting to \$1,500, has been awarded to Dr. Evarts A. Graham, of Washington University Medical School, St. Louis, for his essay entitled *Some Fundamental Considerations in the Treatment of Empyema Thoracis*.

New Hospital in Bronx.—The People's Hospital of the Bronx, situated at 169th Street and Fulton Avenue, New York, was recently opened to patients. The new institution is located midway between Fordham and Lebanon Hospitals, in a congested section. It will accommodate one hundred patients and will care particularly for maternity cases.

Fund Distributed to Hospitals.—The United Hospital Fund has completed the distribution of \$850,000 among forty-four nonmunicipal hospitals in New York City. Half of the total distributed for the present fiscal year is divided among nineteen of the larger general hospitals. The remaining \$425,000 goes to ten special hospitals, nine women and children's institutions, and six homes for chronics and convalescents.

Memorial to Doctor Jacobi.—A bronze bas relief of Dr. Abraham Jacobi was presented to the New York Academy of Medicine by George McAneny, his son-in-law, on behalf of members of Doctor Jacobi's family, at a memorial meeting on May 6th. The gift was formally accepted by Dr. George David Stewart, president of the Academy of Medicine. Dr. George E. Vincent, president of the Rockefeller Foundation, delivered an address on *The Life and Influence of Doctor Jacobi Upon His Time*.

Government to Buy Quarantine Station.—The purchase by the federal government of the quarantine station in New York Harbor has been approved by the House of Representatives. The purchase price is \$1,395,275, which is the amount settled upon in condemnation proceedings. A statute of 1906 authorized the government to take over the various state quarantine stations, but this is the first time that congressional action has been obtained upon the New York depot. The Senate, which has always been favorable to the purchase, is not expected to raise any objections.

Medico-Psychological Meeting.—The annual meeting of the American Medico-Psychological Association will be held at the Hotel Statler, Cleveland, June 1st to 4th.

Alabama Medical College to Be Moved.—At the end of the present session the university medical school will be moved from Mobile, Ala., to the university site, Tuscaloosa, Ala.

Fort McHenry Hospital for Public Health Service.—The hospital buildings at Fort McHenry, Md., are to be turned over to the U. S. Public Health Service for use in connection with war risk insurance patients.

Gift to Johns Hopkins Hospital.—A gift of \$100,000 has been made to the Johns Hopkins Hospital by Henry Phipps, of New York, founder of the Phipps Psychiatric Clinic. This will be used as the nucleus of a permanent endowment fund.

Sweden to Have Health Insurance.—A commission appointed by the Swedish government has recently issued a report advocating the introduction of compulsory health insurance and maternity insurance. It is estimated that eighty per cent. of the population will be included in this scheme.

Courses at University of Paris.—The faculty of medicine of the University of Paris is to extend its privileges to foreigners, particularly in laboratory research and clinical studies. A special degree of doctor of medicine will be granted, but this will not confer the right to practice medicine in France.

New Department for Cavell Hospital.—A school of puericulture will soon be added to the faculty of medicine of the Edith Cavell Hospital in Paris. The school will be under the direction of Professor Pinard and will consist of three sections—prenatal period, infancy, and childhood—under the charge of Professors Couvelaire, Marfan, and Léon Bernard, respectively.

Birth Statistics.—In the birth registration area of the United States 1,363,649 infants were born alive in 1918, according to figures issued by the Bureau of the Census, representing a birth rate of 24.4 in 1,000 of population. The total number of deaths in the same area was 1,014,620, or 18.2 in 1,000. The mortality rate for infants under one year averaged 101 in 1,000 live births.

Positions at Manhattan Hospital.—Dr M. B. Heyman, superintendent of Manhattan State Hospital, Ward's Island, New York City, announces vacancies for the position of assistant physician, at \$1,300 to \$1,900 and maintenance, and of medical intern, at \$1,200 and maintenance. The hospital offers unusual opportunities for study and research in psychiatry and neurology, as well as instruction in hospital administration.

Urologists Meet.—The seventeenth annual meeting of the American Urological Association was held March 23rd to 25th, in New York. The following officers were elected: President, Dr. W. F. Braasch, of Rochester, Minn.; vice-president, Dr. H. G. Bugbee, of New York; secretary, Dr. Henry L. Sanford, of Cleveland, Ohio (reelected); treasurer, Dr. James A. Gardner, of Buffalo (reelected). The next meeting will be held in Montreal.

Liebig Museum Opened.—A Liebig museum was opened March 26th at Giessen.

Sir William Osler's Library.—Word comes from London that Sir William Osler bequeathed his medical and scientific library to McGill University, Montreal.

Workmen's Compensation in New York.—A bill bringing occupational diseases under the workmen's compensation law in New York State has been signed by Governor Smith.

Campaign for Psychiatric Workers.—At the request of the U. S. Public Health Service, the American Red Cross is planning a campaign for volunteers to take courses of instruction in psychiatric social work, to aid in caring for war veterans suffering from nervous and mental diseases.

Women Admitted to Vermont Medical School.—The University of Vermont has decided to admit women to the medical department next fall for the first time in its history. The action was decided upon because of the shortage of doctors throughout the rural districts of northern New England.

Tribute to Florence Nightingale.—In honor of the 100th anniversary of the birth of Florence Nightingale, a dinner was given May 12th at the Hotel Biltmore, New York. Among the speakers were Surgeon General M. W. Ireland, U. S. Army; Dr. Livingston Farrand, chairman of the national executive committee of the Red Cross, and Dr. Thomas W. Salmon, medical director of the National Mental Hygiene Committee.

Missouri Health Officers Organize.—A meeting of health officers was held at Jefferson City, Mo., on April 6th, at which time the Missouri Health Officers' Association was organized. Officers elected were: President, Dr. G. C. Eggers, of Clayton; vice-presidents, Dr. U. F. Kerr, of Springfield; Dr. T. W. Cotton, of Van Buren; directors, Dr. J. W. Bruton, of Ozark; R. E. Crabtree, of Butler; W. P. Smith, of Troy.

New York Tuberculosis Association.—The first public meeting of the New York Tuberculosis Association will be held May 18th at 4 p. m. at the Academy of Medicine. At this meeting announcement will be made of the completed plans of the association for the establishment of a workshop for the industrial rehabilitation of soldiers, sailors, and others who have recovered from tuberculosis. This work is being carried on jointly by the federal government, the National Tuberculosis Association, and the New York Tuberculosis Association.

Personal.—Dr. A. M. Wood, of Lentner, Mo., has accepted a medical commission from the American Red Cross to fight typhus in Holland and the Baltic countries.

Dr. F. M. Vessells, of Perryville, Mo., has been awarded the Order of University Palms by the French government.

Dr. Hugo Fuchs, professor of anatomy at the University of Königsberg, has been transferred to the University of Göttingen, where he succeeds Professor Merkel.

Dr. Esther Pohl Lovejoy has announced herself as a candidate for the Democratic nomination for Congress from the third district of Oregon.

United States Civil Service Examinations.

The United States Civil Service Commission announces the following examinations:

1. An examination will be held on June 22nd for bacteriologist, to fill a vacancy in St. Elizabeth's Hospital, Washington, D. C., at \$2,500 a year and maintenance, with temporary increase of \$20 a month. Vacancies in positions requiring similar qualifications will be filled from this examination.

2. Examinations will be held July 7th and September 8th for physician in the Panama Canal Service. The entrance salary is \$225 a month; promotion may be made to salaries from \$250 to \$340 and to higher rates for special positions.

3. An examination will be held for the position of physician in the Indian Service, acting assistant surgeon in the Public Health Service, surgeon in the Coast and Geodetic Survey, and for positions in other branches of the service.

Local Society Meetings.—The following local medical societies will meet during the coming week:

MONDAY, May 17th.—New York Academy of Medicine (Section in Ophthalmology), Medical Association of the Greater City of New York, Yorkville Medical Society.

TUESDAY, May 18th.—New York Academy of Medicine (Section in Medicine), Federation of Medical Economic Leagues of New York.

WEDNESDAY, May 19th.—New York Academy of Medicine (Section in Genitourinary Diseases), Society for Experimental Biology and Medicine, Medico-Legal Society, Northwestern Medical and Surgical Society of New York, Women's Medical Association of New York City, Alumni Association of City Hospital.

THURSDAY, May 20th.—New York Celtic Medical Society, New York Academy of Medicine (stated meeting).

FRIDAY, May 21st.—New York Academy of Medicine (Section in Orthopedic Surgery), Clinical Society of the New York Postgraduate Hospital, New York Microscopical Society, Brooklyn Medical Society.

SATURDAY, May 22nd.—Lenox Medical and Surgical Society, New York Medical and Surgical Society, West End Medical Society.

Meeting of American Medical Association.

At the meeting of the American Medical Association held April 16th to 30th in New Orleans, the following officers were elected for the ensuing year: President, Dr. Hubert Work, of Pueblo, Colo.; vice-president, Dr. Isadore Dyer, of New Orleans; secretary, Dr. Alexander R. Craig, of Chicago (re-elected); treasurer, Dr. William Allen Pusey, of Chicago (re-elected); speaker of the house of delegates, Dr. Dwight H. Murray, of Syracuse, N. Y.; vice-speaker of the house of delegates, Dr. F. C. Warnshuis, of Grand Rapids, Mich.; trustees, Dr. Charles W. Richardson, of Washington, D. C.; Dr. W. T. Sarles, of Sparta, Wis., and Dr. Walter T. Williamson, of Portland, Ore.

The following eminent physicians were elected to honorary fellowship: Dr. Norman Walker, representing the three Scottish Medical Corporations; Col. H. J. Waring, M.S., F.R.C.S., representing the Royal College of Surgeons of England; Sir Humphry D. Rolleston, K.C.B., M.D., Royal College of Physicians, London; Dr. E. E. Desmarest, professor of surgery, University of Paris; Dr. Gustave Roussy, professor of medicine, University of Paris; Dr. Jules Voncken, Liège, Belgium; Dr. Iwaho Tsuchiya, Japan, physician to the imperial court of Japan.

Boston was selected as the next place of meeting.

Coming Meetings of National Societies.

Annual meetings of the following medical societies will be held in May and June: American Association of Genitourinary Surgeons, Rochester, Minn., May 31st; American Climatological and Clinical Association, Philadelphia, June 17th to 19th; American Gynecological Society, Chicago, May 24th to 26th; American Laryngological Association, Boston, May 27th to 29th; American Ophthalmological Society, Hot Springs, Va., June 15th and 16th; American Orthopedic Association, Toronto, Ont., June 7th to 10th; American Otological Society, Boston, May 31st and June 1st; American Pediatric Society, Highland Park, Ill., May 31st; American Psychopathological Association, Cleveland, June 5th; Association of Peroral Endoscopists, Boston, June 1st.

Insanitary Housing.—A housing survey was recently instituted in New York by the health department, with a view to eliminating sanitary conditions which constitute a menace to health. The survey established the following facts: A general lack of necessary repairs. In numerous apartments, arranged and intended to be occupied by one family, two or more families are housed. To avoid paying higher rents, two, three and sometimes as many as five families have crowded into apartments formerly occupied by a single family. In other apartments families have been forced to rent out rooms.

International Health Council.—An international health conference has been held in London, at the request of the League of Nations, to consider the establishment of an International Health Office under the League. An informal conference was held last July, at which time provision was made for the later formal gathering which has recently been concluded. At this latter meeting a plan was drawn up to be submitted to an international conference which provides for the formation of an International Health General Committee, to consist at the outset of delegates appointed by all the governments represented on the Committee of the Office Internationale d'Hygiène Publique and of any other nations which are adherents of the League. The Office Internationale will form an important part of the new health organization. The general committee will sit only as occasion may require, though not less than once a year, but a much smaller executive committee will meet quarterly, with power to settle questions requiring urgent consideration. The office is to be advisory to the International Labor Office on health questions and will advise with the League of Red Cross Societies. The delegates to the conference were as follows: Chairman, Viscount Astor; United States, Former Surgeon General Rupert Blue; Great Britain, Sir George Newman and Dr. G. S. Buchanan, C.B., with Dr. Steegmann as technical adviser; France, M. Brisac, with M. Léon Bernard, M. Boujard, and M. Thiebault as technical advisers; Italy, Dr. Lutrario, Dr. Fornaciari, and Dr. Druetti; Japan, Dr. Yoneji Miyagawa, with Mr. Kakichi Kawarata as technical adviser; Office Internationale d'Hygiène Publique, Dr. Pottevin. There attended, as additional members for discussion of typhus in Poland, Dr. Chodzko (vice minister of the Polish Ministry of Health) and Dr. Rajchmann.

Book Reviews

THE TRAFFIC IN OPIUM.

The Opium Monopoly. By ELLEN N. LA MOTTE. Pp. ix-84. The Macmillan Company, New York, 1920. Illustrated.

The author is a clear headed, intelligent woman who is noted for success in tracking evils to their true source and depriving officials and the public of the excuse that they were unaware that such conditions existed. "In an absolutely friendly spirit" she writes of "a real evil maintained under British administration in the Far East," and her purpose of "cleansing the world of a poison and a great Empire of a foul stain"—the opium traffic. Her hope of reform is founded on the fact that "no more bitter opponents of the opium traffic are to be found than among the English people themselves." She writes from observations during a journey through Japan, China, Hongkong, French Indo-China and Singapore, and a thorough study of the situation as set forth in blue books, health reports and other reports since her return.

She quotes freely from American and English literature, but any reader of the daily papers can note for himself the recent arrests of drug violators who were found with some \$800,000 worth of the drug in their possession. English blue books state under Opium Revenue that it is gained by a monopoly of the drug raising in Bengal and the United Provinces, partly by the levy of a duty on all opium imported from native states. The cultivator receives a license and is granted advances free of interest; all the product goes at a fixed price to opium agents for distribution. The supply of prepared opium for consumption in India is made over to the excise department; that for export is auctioned at monthly sales in Calcutta. About 654,928 acres are cultivated. "The buyers are not agents of the British government, but a crowd of Parsees, Mohammedans, Hindoos and Asiatic Jews who are recognized distributors of opium into the channels of trade." Next to India, the two greatest opium producing countries are Turkey and Persia, and as since the war both are more or less under Britain's control, she virtually controls the world's output.

The opium manufactured in Indian Government factories is of three kinds: Provision, for export; excise, for Indian consumption, and medical, for export to London; hundreds of tons, far beyond Britain's medical requirements, land there. Sir William Collins, M.D., writing in May, 1919, said, "that the vast overproduction has to be fully recognized and provided against by legislation. The greater part is manufactured in London and cannot possibly be used for legitimate purposes."

Where do the superfluous tons go? There are few English names as buyers at the sales, but distributors have done the work. In February, 1919, opium valued at \$10,000 was seized at Schenectady. The *Seattle Union Record*, of June 24, 1919, tells of a British ship with 778 tins of opium, 670 ounces of cocaine and sixteen ounces of morphine, which was fined \$49,265 for bringing dope into America. Of what use is the Harrison antinarcotic act when

smuggling is rife and opium peddlers successfully evade the police? The number of drug addicts in New York alone is estimated at tens—even hundreds—of thousands, and boys and girls acquire the habit partly through curiosity, often by association with bad company, as they say—that is, peddlers who offer it free at first, knowing their victim will soon be won.

The case against England seems strong. It is only when opium is produced far in excess of any need that it is profitable. Hundreds of thousands of miserable victims create this profit. Much opium is distributed in devious, roundabout, underhand channels throughout the world, and much of it comes to America.

Concerning the case of China and other Eastern countries, the book gives authenticated facts. These facts are unknown to many; indeed, many are ignorant concerning the whole traffic, but ignorance becomes a vice when it refuses to be enlightened. There is a grave peril confronting us. Who will help to eradicate an evil which does not even hold the short lived pleasures of too much alcohol?

CASE HISTORIES OF DISEASES OF WOMEN.

Diseases of Women. Including Abnormalities of Pregnancy, Labor, and Puerperium. A Clinical Study of Pathological Conditions Characteristic of the Five Periods of Woman's Life. Presented in One Hundred and Seventy-three Case Histories. By CHARLES M. GREEN, A.B., M.D. Professor of Obstetrics and Gynecology, Emeritus, in Harvard University. Twelve Full Page Plates, One Cut, and Twenty-five Charts in the Text. Boston: W. M. Leonard, 1920. Pp. iii-22.

A book well worth reading and rereading. The author presents a series of cases, much as they would be presented before a well conducted clinic. Here we find the cases just as we find them in everyday practice. No two cases are alike, and yet many of them have points of common interest. In this method of case handling we are not bound by hard and fast didactic rules. Each case must be thought over and handled as an entity. All of the abnormalities and deviations must be considered. The case assumes individuality, just as the patient does in our practice. The more attention we give to these variants the more aid we can give to our patients and the more progress we can make in medicine. It leads to a new way of thinking and a new way of acting. We are led to make deductions of our own, decisions of our own. In short, we are forced to stand on our own feet and obliged to think for ourselves. You ask then: "How can the book help in everyday practice?" Only by widening our experience, in allowing us to look into the work, the observations, deductions, and treatment, as well as the errors, of other men, under conditions which may in a measure simulate those we may encounter. It serves to broaden our field of vision, makes us compare this or that case to one we have had or one we may see at some future time.

It is not so easy to find the thing one wants in a book of this kind. It requires work, study and thought, but the effort is well worth while.

EXPERIMENTAL PHARMACOLOGY.

Experimental Pharmacology. By HUGH MCGUIGAN, Ph.D., M.D., Professor of Pharmacology in the University of Illinois College of Medicine. Illustrated. Philadelphia: Lea & Febiger, 1919. Pp. iv+251.

The way in which McGuigan has classified the experimental material in this concise manual is very pleasing. It should prove extremely helpful in giving a new point of view to the men engaged in pharmaceutical investigations. While the outlines follow the more elemental experiments, the broad general concept of the mechanistic and physiological action of the drugs is presented in a manner that enables one to get a practical interpretative view of the entire field of therapy and pharmacology. It enables one to take the step from the experimental field to the practical with understanding, and it reconciles the theoretical to the practical. Only the principal drugs are handled, caffeine, digitalis, epinephrine, morphine, and other widely used preparations.

The principles of anesthesia are carefully described and a résumé of the various well known methods is given. If the action of these few drugs were more carefully gone into and the bodily mechanisms which are affected by their administration better understood, we would derive more benefit from all of our therapeutic endeavors. The more we practise medicine the fewer drugs we grow to rely upon. There is some danger in making a sharp differentiation in the specific action of drugs. It is well known that drugs, like diseases, manifest a special predilection for certain systems and organs, but we must never forget the remote effect they have on other organs. In other words, we must not lose sight of the organism as a whole. McGuigan's book will not lead us far astray.

REGIONAL ANESTHESIA.

Regional Anesthesia. (Victor Pauchet's Technique.) By E. SHERWOOD-DUNN, M.D., Physician to the Cochin Hospital, Paris. With 224 Figures in the Text. Philadelphia: F. A. Davis Company, 1920. Pp. i+294.

Victor Pauchet is admittedly the leading exponent of regional anesthesia in France, and the book under review aims to present a résumé of his writings on this subject, together with those of Sourdatt and Labouré. Instead of applying the anesthetic to the nerve terminals, as in the method of Reclus, which has been practised for many years, it is injected at the point of origin of the nerve, or along the trunk near the point of origin, so that the entire region supplied by the nerve and its branches is anesthetized. In this way all the major operations, as well as the most delicate minor operations, can be performed painlessly. The method was used extensively during the late war and gained many adherents.

The author has covered the ground thoroughly and has presented a work of unusual beauty. The illustrations are not only artistic and true to life, but the legends accompanying them are highly illuminating and explanatory to the fullest degree. The American publishers have contributed in no small measure to the production of a beautiful and extremely useful book, which must inevitably attract many readers.

IMPOTENCE.

Sexual Impotence. By VICTOR G. VECKI, M.D., San Francisco, Cal. Sixth Edition, Revised. Philadelphia and London: W. B. Saunders Company, 1920.

This edition of Vecki's excellent book differs in no great respect from its predecessors. The author says that it is written under the sway of endocrinology, and almost every one of the sections of the book exhibits this beneficent influence. It follows, therefore, that the author has given us a work that is in harmony with present day views on the subject of the male sexual organs and their disturbances, in so far as they affect the function of potency.

Vecki always discusses sexual matters frankly and with a pleasing sense of humor that is frequently exhibited in this book. Associated with it is his evident scholarship and horse sense, both of which combine to make this a readable, useful book for the student as well as the practitioner. Unfortunately, however, the author in his revision has not changed his bibliographic references to any appreciable extent, and the reader is still brought face to face with opinions and other data culled from the literature of the past century. The sections on treatment are excellent, thoroughly sound and conservative, especially the portions dealing with the urethroscopic technic. Yohimbin is still anathema, and, we believe, deservedly so.

The book is one that can well be recommended.

SPIRITISM.

Modern Spiritism. Its Science and Religion. By A. T. SCHOFIELD, M.D., Vice-President, Victoria Institute, etc.; Author of *The Unconscious Mind*, etc. Philadelphia: P. Blakiston's Son & Co., 1920. Pp. i+259.

Some twenty years ago, the author, who is a leading neurologist in London, wrote the first English book on *The Unconscious Mind*. A paper on the same subject read before the Harveian Society was received with howls of derision and the authorities were rebuked for allowing it to be read. Nowadays the library shelves of doctors are rapidly filling up with psychological and psychiatric literature, and the laity are all tip a toe to peer through that rent in the curtain which such writers seem to have made. Doctor Schofield judges spiritism from every point of view and does not condemn where he does not see clearly. He says it is possible, even probable, that we have latent senses or powers far transcending in force those in present use. Spiritism is the special cult which vigorously stimulates the use of those powers, which—here he writes as a physician—have proved to be very unsafe. "The body seems physically, sooner or later, unable to bear the strain; the mind loses its fibre, will power, and concentration; the moral character markedly deteriorates." He knows hundreds of young people who regarded researches into spiritism as harmless and amusing, who had no intention of "dabbling in mysteries of the other world," and the search after a time repelled, but "the attraction grows for a pursuit which they feel is unlawful and certainly very mysterious." Sound, wellbalanced minds may dissuade themselves from continuing, but for the weak and illbalanced, the table turning and planchette may be precursors to a wrecked life.

Doctor Schofield does not deny truths which he cannot understand, and gives a fair presentment of the facts for and against. There is no hasty condemnation: as he says, if our own grandfathers had been told that the point of a needle, pressing into a groove in a revolving, hard, vulcanite disk would produce four voices singing in perfect harmony or the sounds in a full brass band, they would have regarded it as impossible and the teller as a rather daring liar.

Spiritists insist that they have established the fact of another world, inhabited by intelligences, but modern advancement makes it less certain that spiritists are really in touch with disembodied spirits, if the only spirits who populate the unseen world are those of the departed or of good angels. The only interpretation of communications received, which "lack morality, grandeur, emotion, in a word, religion, . . . and deal with petty things, mere prolonged egoism . . . and an endless capacity to exchange platitudes" (Birrell), is the existence of the old *daemons*, a freakish race of spirits intermediate between the good and fallen angels, and inclining to evil. Investigation only seems to increase the mysteries.

The author then goes on to prove from his own experience and that of other alienists that possession by evil spirits is tacitly recognized by most neuropaths, who say there is no large asylum without such people, who, otherwise sane, have their bodies used involuntarily by some alien and evil force. This chapter is exceedingly interesting. The established phenomena are then rehearsed before speaking of other states: Heavy bodies moved without contact, seemingly directed by spirit intelligence; sounds produced without visible agency; heavy bodies moving to order, without contact; levitation of articles, and of human beings; rapid movements of small articles; alteration in weight; luminous appearances; appearance of human hands and limbs; direct writing, phantom forms and faces. All these phenomena are accounted for by the fact that "outside our scientific knowledge, there exists a force exercised by intelligence differing from the ordinary intelligence common to mortals." In this great scientists have concurred for some thirty years.

But, a brief review cannot do justice to a subject of tremendous interest nor sufficiently impress a reader. The review is merely written to induce all to follow and thoughtfully read the chapters on possession, second sight and apparitions, collective hypnosis, dangers and failures of spiritism, spiritism and Christianity, and true spiritualism, which is quite another thing.

"If Spiritism were all fraud it would be no real danger to the nation: it is because it is not that the book is written." If seriously read, the reader will be enabled to weigh and intelligently use the terms Christian Science, Spiritism; Theosophy or Modernism and other terms lightly used and little understood and be glad to welcome such a fairly written and lucid volume to his library. At any rate even its opponents will do well to familiarize themselves with the material concerning spiritism which is here presented.

A MODERN MEDIEVALIST.

Tales of My Native Town. By GABRIELE D'ANNUNZIO. Translated by PROF. RAFAEL MANTPELLI, Ph.D., Instructor in Romance Languages at the Berkeley-Irving School. New York: N. Y. With an Introduction by JOSEPH HERGESHEIMER. Garden City, N. Y.: Doubleday, Page & Co., 1920. Pp. iii-287.

Those who know D'Annunzio chiefly as a political personality will find in the tale of Fiume much that is characteristic of D'Annunzio as a writer. These stories are lovely, violent, and vitriolically realistic. "It is exactly," to quote the excellent introduction by Mr. Joseph Hergesheimer, "as if all the small principalities that were Italy before the *Risorgimento*, all the amazing contradictions of stark heroics and depraved nepotism, the fanaticism and black blood and superstition, with the introspective and febrile weariness of a very old land, were bound into D'Annunzio's being."

There is none of the facile optimism of the American magazine story in these pages: D'Annunzio is not a pleasant writer. But though he is pitiless in his portrayal of reality, it is saved from being merely sordid by the quality that above everything else is D'Annunzio—the ecstasy of living that runs through his art like a gold flame. Turlendana wandering drunk in the sweet spring moonlight and falling into a stupor on the body of his dead camel may be a pitiable spectacle, but D'Annunzio embodies in it the tragedy of humanity blundering through a beautiful world. With this same magic touch he dramatizes the senile passion of Don Giovanni Ussorio, Mastro Peppe and his stolen pig, the battling of towns over the candles for Saint Pantaleone, the scornful death of the Duke of Ofena. There is little of what we are accustomed to call plot in these stories; that is, there is no artifice. They are moments, snatches of the human comedy, enacted in a setting saturated with the loveliness of Italy—Pescara and its river, the sandy square and the houses whitened with plaster, the lighted windows of Violetta Kutufa, the sailors' taverns, the sea. . . "It is useless," says Mr. Hergesheimer, "for anyone not impressed with the beauty of sheer living as a spectacle to read *Tales of My Native Town.*"

THE THUNDERBOLT.

The Thunderbolt. By G. COLMORE. New York: Thomas Seltzer, 1920. Pp. i-353.

The Thunderbolt is a startling novel. For the greater part of its length it is a story of life in a small English town, and the reader is made acquainted with Mrs. Bonham's social eminence, Mrs. Bonham's care for her daughter, Mrs. Bonham's friendships, and the humdrum current of small rivalries and personal animosities that stir such backwaters. From her protected childhood, Dorrie, Mrs. Bonham's daughter, grows into attractive young womanhood and becomes the fiancée of an exceedingly eligible young man. Her mother takes her abroad for an interlude of French before the precipice of matrimony, and a portion of the book is devoted to adventures in Paris and in the castle of a Gräfin. The thunderbolt is the fact that Dorrie, seeking treatment from Doctor Reisen for a slight injury to her foot, arrives at the doctor's clinic instead of his office, is mistaken for a daugh-

ter of the proletariat, and is inoculated, for experimental purposes, with an—to the laity—unmentionable disease. The exceedingly eligible young man refuses to marry her, and the dénouement provides a second thunderbolt for the reader.

The book achieves its aim—it describes tedium without being tedious, and it develops a most unexpected climax. The people of Stottleham and in fact all the personages of the story are drawn with deftness, and with a trace of malice in the characterization. If innocent girls can be inoculated with syphilis in Europe, without their knowledge and merely because they arrive at a clinic on a rainy day, we think this book should be spread abroad, but its message is assuredly not needed in this country. That it is not directed against German doctors in particular is shown by the fact that the English medical profession welcomes Doctor Reisen on his visit there and presents him with a medal! Some of the bitterness of propaganda manifests itself in this part of the book. While the author's identity is hidden behind an indeterminate G. Colmore, we would hazard the guess, from the deftness in malice exhibited, that the writer is a woman.

A WELL BALANCED DIET.

Food for the Sick and the Well. By MARGARET J. THOMPSON, R. N. Yonkers-on-Hudson: World Book Company, 1920. Pp. v-82.

This volume contains recipes designed to form the basis of a well balanced diet for patients, convalescents, and those who are healthy and wish to remain so. A varied diet is included, and the directions are delightfully free from the technical terms of the professional cookbook writer. Miss Thompson's sample menus are not calculated to cut down the high cost of living, but they are tempting and—one can tell it from the pages—palatable.

New Publications Received

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Peter Jameson. By GILBERT FRANKAU. New York: Alfred A. Knopf, 1920. Pp. i-431.

The Book of Marjorie. New York: Alfred A. Knopf, 1920. Pp. v-128.

Sarah and Her Daughter. By BERTHA PEARL. New York: Thomas Seltzer, 1920. Pp. 7-521.

A Night's Lodging. By MAXIM GORKI. Translated from the Russian by EDWIN HOPKINS. Boston: The Four Seas Company, 1920. Pp. v-143.

The Antichrist. By F. W. NIETZSCHE. Translated from the German with an Introduction by H. L. MENCKEN. New York: Alfred A. Knopf, 1920. Pp. vii-182.

Sex Attraction. By VICTOR C. VAUGHAN, M. D., LL. D., Professor of Hygiene and Physiological Chemistry, and Dean of the University of Michigan Medical School, Ann Arbor, Mich. St. Louis: C. V. Mosby Company, 1920. Pp. 7-44.

A Secret of the Sea. By WILLIAM ALLISON. Illustrated. Garden City: Doubleday, Page & Company, 1920. Pp. iii-328.

The Release of the Soul. By GILBERT CANNAN. Author of *Pink Roses*, *Mendel*, etc. New York: Boni and Liveright, 1920. Pp. i-166.

Pagan and Christian Creeds: Their Origin and Meaning. By EDWARD CARPENTER. New York: Harcourt, Brace & Howe, 1920. Pp. 7-319.

Their Son. The Necklace. By EDUARDO ZAMACOIS. Translated by GEORGE ALLAN ENGLAND. New York: Boni and Liveright, 1919. Pp. i-186.

The London Venture. By MICHAEL ARLEN. With Drawings by Michael Sevier. New York: Dodd, Mead & Company, 1920. Pp. i-188.

The Death of Titian. By HUGO VON HOFMANNSTHAL. Translated from the German by JOHN HEARD, JR. Boston: The Four Seas Company, 1920. Pp. ix-27.

Forty-second Annual Report of the Department of Health of the State of New Jersey, 1919. Illustrated. Trenton, N. J. Published by the State, 1920. Pp. i-440.

Publications of Cornell University Medical College. Studies from the Department of Pathology, Bacteriology, and Hygiene. Illustrated. Volume XVI. New York: 1916-1918.

Personal Beauty and Racial Betterment. By KNIGHT DUNLAP, Professor of Experimental Psychology in the Johns Hopkins University. St. Louis: C. V. Mosby Company, 1920. Pp. 15-95.

Psychical Miscellanea. Being Papers on Psychological Research, Telepathy, Hypnotism, Christian Science, etc. By J. ARTHUR HILL, author of *Psychical Investigations*, *Man Is a Spirit*, etc. New York: Harcourt, Brace & Howe, 1920. Pp. i-118.

Handbook of Diseases of the Rectum. By LOUIS J. HIRSCHMAN, M. D., F. A. C. S. Vice-Chairman, Section on Gastroenterology and Proctology, American Medical Association. Third Edition, Revised and Rewritten. Illustrated. St. Louis: C. V. Mosby Company, 1920. Pp. 7-378.

Essays on the Surgery of the Temporal Bone. By SIR CHARLES A. BALLANCE, K.C.M.G., C.B., M.V.O., M.S., F.R.C.S., Consulting Surgeon to the British Army during the War, and Chief Surgeon to the Metropolitan Police. With the Assistance of CHARLES DAVID GREEN, M.D., F.R.C.S. Illustrated. In Two Volumes. London: Macmillan & Co., 1919. Pp. 1-612.

Surgical Shock and the Shockless Operation Through Anociassociation. By GEORGE W. CRILE, M. D., Professor of Surgery, School of Medicine, Western Reserve University, Visiting Surgeon to the Lakeside Hospital, Cleveland, and WILLIAM E. LOWER, M. D., Associate Professor of Genitourinary Surgery, School of Medicine, Associate Surgeon to the Lakeside Hospital, Cleveland, etc. Second Edition, revised. Edited by AMY F. ROWLAND, B. S. Illustrated. Philadelphia: W. B. Saunders Company, 1920. Pp. 7-272.

Miscellany from Home and Foreign Journals

Technic of Appendectomy.—Angelo L. Soresi (*Annals of Surgery*, March, 1920) remarks that in cases of acute appendicitis the patient's life may be in grave danger whether he is operated upon or not; the surgeon, therefore, must deal with the case so that he follows the principle *primum no nocere*; then he has to think that his work must be done in such a manner that the operation will give the best results *quoad vitam* and *quoad functionem*. We believe that the special points of the technic to be advised in all acute cases are as follows: ether preparation of the skin, pararectus incision, freeing of only the external portion of the cecum, raising up the cecum, so as to expose the base of the appendix, immediately severing the appendix close to its base and inverting it; then following the distal portion of the appendix and removing as much of it as possible; paraffin gravity drainage when pus is present; closure of the abdominal wound in all cases; paraffin gravity drainage of the abdominal wall; elastic closure of the skin; the application of an elastic belt as an external dressing. These answer all the desiderata. Indeed, life is saved more often if this technic is followed, and we have had striking proofs of this fact in several almost desperate cases, which are not referred to for brevity's sake. No one can be sure of the position and condition of the appendix in all cases, and the technic recommended is ideal for all patients, because it prevents the spreading of infection, does not lower the resistance of the peritoneal organs, and does positively drain out safely any secretions that should be drained out. *Quod functionem* it prevents the formation of fecal fistulae, dangerous postoperative adhesions, postoperative hernia and allows a maximum of comfort to the patient.

Increased Renal Activity in Febrile Disorders. I. G. Etienne and R. Druesne (*Bulletin de l'Académie de médecine*, February 10, 1920) state that in a systematic study of forty-three febrile patients suffering from such conditions as pneumonia, bronchopneumonia, typhoid fever, influenza, erysipelas, articular rheumatism and tuberculosis, all with sufficient urinary output, they found the ureosecretory constant usually low. Out of thirty-eight cases, twenty-three had constants below 0.066, and thirteen below 0.050. In tuberculous cases the average constant was 0.050. The constant was normal in only six cases. Methylene blue tests seemed to confirm these findings, the dye being eliminated more rapidly than under normal conditions. In febrile cases with impaired kidneys, on the other hand, the constant was high, e. g., 0.113, 0.126, 0.171, 0.186, and even 0.380. The ratio of urea in the blood was nearly always normal in the patients with unimpaired kidneys. This controverts the view hitherto upheld that accumulation of urea occurs in the system in fever because of increased catabolism of nitrogenous materials. The output of urea in the urine was found, in fact, definitely increased, twenty-five grams being excreted in twenty cases, forty grams in eight cases,

and individual cases exhibiting such outputs as 69.8, 57.66, 57.53, 52.1, 53.2 and 61.56. Low ureosecretory constants recorded by previous observers have usually been ascribed to mistakes in calculation or to irregularity of the constant under abnormal systemic conditions. The authors believe, however, that such constants represent an actual physiological modification in these cases. The rise in body temperature and the increased amount of blood passing through the kidneys by reason of the febrile activation of the circulation are not sufficient to account for the low ureosecretory constant. A third factor is necessarily operative, viz., an essential increase of function of the kidneys under the influence of fever, analogous to that witnessed as regards the cardiac and pulmonary functions. The efficiency of the kidneys being thus increased, the ureosecretory constant is lowered. The increase of renal function shown by the index of urea excretion, calculated according to Ambard's formulas, is very marked, being frequently about two hundred per cent. of normal and in many instances between two hundred and four hundred per cent. of normal.

Illegitimacy from the Viewpoint of the Physician.—Foster S. Kellogg (*Boston Medical and Surgical Journal*, February 19, 1920) maintains that illegitimacy is a big State problem, and that physicians should be familiar at least with the basic facts. Little or no progress is being made in the solution of the problem because of a lack of an adequate machinery for sorting, distributing, and recording end results, and for coordinating effort, expense, and information. He points out how such machinery may be obtained, and asserts that its cost should be supplied by the agencies interested, including the commonwealth. In addition to the fact that a clearing centre would reserve only the woman worth while working over for the more expensively run agencies, it would be of equal or greater use in the early segregation of a large number of mentally deficient, whose first tangible evidence of their mental condition is pregnancy. The problem of illegitimacy is big enough to be handled as an entity, directed legally, sociologically, and medically, loosely at first until knowledge is accumulated, under one office. The medical and social service standing of the agencies should be kept to as high a degree of efficiency as possible. The worst form of care under present conditions for illegitimates, with a few exceptions, is a public lying in hospital, or maternity wards in public or semipublic general hospitals. The best form of care for low grade illegitimates, with a few exceptions, under present conditions is the State institution. The best form of care for high grade illegitimates requiring care outside their own homes, with a few exceptions, is a well equipped, well staffed maternity home. We are forced to believe that, as a rule, the mother and baby should be kept together for as much of the first year as possible; that adoption, when it is to take place, should be, as a rule, after six months, or better a year, as less harm will be done to the child.

Mental Hygiene Lessons of the War.—John T. MacCurdy (*State Hospital Quarterly*, February, 1920) gives the following as the lessons that may be learned from the experience gained by the handling of neuropsychiatric problems encountered during the war. The first is the military significance of the neurosis. The neurotic, before symptoms have developed sufficiently obvious to demand his evacuation, is not an asset to his command. His morale is poor, and this is a contagious thing. In the discovery of these early cases the neuropsychiatrist is of great value to the unit.

Secondly, these conditions have shown the paramount importance of psychology in medicine. The war neuroses may be unique in some of their features, but the same human conflicts will always be encountered. The clash is always present of the individual's adjustment between his individualistic and his social instincts. The war has shown how these conflicts produce symptoms. That psychological factors should be responsible for a breakdown in war is not a difficult thing to explain, and by popularization of what has been learned of the mental mechanisms which cause breakdown under fire, we may do much toward building up a demand among laymen for expert medical assistance along psychological lines that is essential for the development of this specialty.

The last point emphasized is that neither the army staff nor the medical corps invited the neurologists and psychiatrists to form a special branch of the service. It was the pressure of the civilians that forced the recognition and segregation of this specialty. As a result of this the army is now making such plans for the care of mental disease and the special psychiatric training of officers as would have seemed preposterous two years ago.

Desquamative, Edematous Arsenical Erythema.—G. Milian (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, December 18, 1919) notes that most authors have not attempted to differentiate various forms of arsenical erythema following novarsenobenzol treatment. The majority of such instances, however, actually arise through coincident appearance of the rashes of infectious diseases, such as scarlet fever, measles, or rubella, or of urticarial or multiform eruptions. These eruptions usually occur soon after beginning of the treatment, often about the ninth day. The drug brings out a previously latent rash. Generally after three or four injections accompanied by a febrile reaction the treatment can be continued without difficulty from the same lot of drug ampules, thus indicating that the previous skin manifestations were not actual toxic erythemas. True toxic erythemas are less common and present earmarks of arsenical intoxication in the sense that the skin exhibits not merely a punctate erythema but local dilations of the skin vessels suggesting purpura, together with intracutaneous and subcutaneous edema. One patient, for example, had received nine injections of novarsenobenzol in ascending doses, the last dose being 1.05 gram. One week after this dose, there developed edema of the lids and submaxillary tissues, tense, shiny swelling of the ears, and tense distention of the extremities and ab-

dominal wall. To this condition, suggesting renal anasarca, was added an erythema, partly diffuse and partly consisting of papulovesicular lesions of the size of a large pinhead. After pressure on the skin there appeared a yellowish, slightly ecchymotic tint, and following firm compression with the hand slight moisture could be noted upon the skin surface. The temperature was slightly raised, but the urine showed no albumin nor casts. Gmelin's and Hay's tests were negative, but the urine, brown in color, contained urobilin. From this and previous cases, Milian concludes that there is marked chloride retention in such patients and that the liver is usually impaired, the edema being dependent upon such hepatic impairment rather than upon renal changes.

Gas Gangrene in a Case of Typhoid Fever.—Weinberg and Françon (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, December 18, 1920) reports a case of typhoid fever in a sailor, aged eighteen years, in which, on the eighteenth day, in the absence of any intestinal complication, the temperature dropped to 38° C. Forty-eight hours later, there appeared two symmetrical patches of gas gangrene on the thighs. Serum treatment against the perfringens, septic vibrio, and edematous organisms proved effective, causing disappearance of edema and crepitation, immediate arrest of extension of the infection, and restoration of the limbs to their normal size. The patient had already been exhausted, however, by four weeks of fever and died three days after the appearance of the gangrene. The perfringens organism was found in large numbers in the gangrenous tissues. Saline hypodermoclysis had been administered at the points on the thighs at which the gangrenous process set in. The infection is not thought, however, to have been introduced with the needle, but to have been already present in the system from intestinal absorption and developed at the points of injection owing to the reduced tissue resistance resulting from the traumatism.

A German Bullet Embolus.—H. J. B. Fry (*Lancet*, January 3, 1920) reports a case in which a bullet entered the body through an oval wound one and a half inches below the left anterior superior iliac spine, gouged the posterior surface of the left external iliac artery and penetrated the left internal iliac vein, causing an arteriovenous aneurysm. It passed up the vein to the heart, through the right heart, and became lodged in the left branch of the pulmonary artery producing infarction of the lower lobe in two different places. It is interesting to note that there was no evidence of the bullet in an x ray plate, taken of the parts near the wound of entry, shortly after the injury was received. There was no pain referred to the heart at any time during the duration of life. The left leg became gangrenous from the lack of circulation and was amputated ten days after the wound was received. The patient did not do well, however, and finally went into shock with marked rise in temperature, pulse rate, and respiration, and died one month after being injured. Postmortem examination revealed the bullet in the pulmonary artery. No inkling as to its position had been had before death.

Anxiety and Fear.—Frankwood E. Williams (*Mental Hygiene*, January, 1920) in a brief description of these two conditions, presents the following conclusions: With quantitative and qualitative differences in the inherent ability of individuals to adapt themselves to a complex community life, with differing educational and environmental influences at play upon these inherent differences, there result varying degrees of success in adjustment, from complete failure—those with psychoses—through partial success—the neuroses—to more or less complete success. On this scale appear those who suffer from fear and anxiety, representing a degree of successful compromise. This compromise is born in conflict, conscious or unconscious, and the anxiety and fear represent the degree of failure or success and stand as the symptoms of the underlying difficulty. Whether benign or malignant, anxiety and fear mean conflict, and relief will be found only in meeting frankly the issues of the conflict. In most cases the cause of the conflict is apparent and can be dealt with. In many cases the apparent cause is not the real cause, which is more likely to be unconscious than conscious, and not until the source of the difficulty is reached can relief be found. But benign or malignant, conscious or unconscious, the mechanism and general method of handling are the same.

Cyclodialysis.—H. S. Gradle (*American Journal of Ophthalmology*, January, 1920) after giving the history and method of performing this operation for glaucoma, discusses its rationale and thus sums up the indications: It is indicated in, 1, glaucoma simplex that has failed to respond to continued miotic treatment and in which there is but little evidence of an inflammatory reaction; 2, borderline cases of chronic inflammatory glaucoma where an iridectomy is to be feared, or where the visual field is greatly reduced; 3, acute inflammatory glaucoma with a hemorrhagic tendency; 4, noninflammatory absolute glaucoma; 5, any case of glaucoma simplex in which a more severe operation is feared and which can be watched carefully for a long period of time; 6, any eye with increased tension upon which an unsuccessful iridectomy has been performed. The contraindications are less specific and are given as: 1, Acute inflammatory glaucoma; 2, chronic inflammatory glaucoma of the exudative type; 3, glaucoma simplex in a young individual which resists miotic treatment; 4, buphthalmos. His conclusions are that cyclodialysis is an operation that decreases increased intraocular tension by freeing the angle of the anterior chamber of adhesions. The particular indications for its employment lie in the essential chronicity and freedom from inflammatory reaction of the disease. It is distinctly contraindicated in acute glaucoma, in glaucoma of an exudative or inflammatory type, and in cases where immediate operation is desirable. The effects produced by it must be judged by the behavior of the central vision, the visual fields, and the intraocular tension. In about fifty per cent. of the cases with proper indications, cyclodialysis is successful; in about twenty per cent. of such cases it produces temporary results that usually become permanent after a second or a third operation; in about thirty per cent. it is a failure.

An Epidemic of Paratyphoid Fever Due to Laundry Contamination.—A. Louste and H. Godlewski (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, December 11, 1919) refer to a slight epidemic of B paratyphoid fever, confirmed by blood cultures, which occurred in a certain French army camp in 1917. Two cases developed in the first week and six in the second. All the patients were men belonging to a single company, none of the other thirty-one companies in the camp being affected. The entire force of 3,000 men used the same food and water, went through the same training and exertions, and went to the same places when on leave. Certain companies, however, had separate provisions for laundry work. Most of the companies sent their laundry to large establishments, in which the work was done in an approved manner. The laundry from the affected company went to a native washerwoman, who did exclusively the work for this company. Investigation showed that she did not trouble to boil the wash, which was merely soaked in a small, reeking pool about four metres in diameter, hardly large enough to accommodate all the laundry from the 250 men. Little or no change of water took place, and between times the chickens and cattle bathed in the pool. After being moistened in this water, the laundry was wrung out and dried in the sun. It was thus manifestly contaminated with animal excreta. The infected sheets, shirts, and drawers later soiled the wearer's fingers, from which the paratyphoid germs passed to the mouth. One week after the services of this washerwoman were dispensed with, new paratyphoid ceased to appear.

The Dead Finger Sign in Epileptics.—P. Hartenberg (*Journal de médecine de Paris*, December, 1919) notes that the dead finger sign was first described by Dieulafoy as one of the early manifestations of Bright's disease. The sensation experienced by the patient is similar to that which results from exposure of the hand to intense cold, viz., tingling pain and cramps in the fingers, sometimes accompanied by bloodlessness, pallor, and insensibility. This condition persists for a few minutes to half an hour, and recurs at intervals; it involves at times one finger, at times another, and occasionally all the fingers at once. The author found this condition manifested in typical form in a number of epileptic patients, generally, however, the same fingers were always involved in a given subject. Usually the condition occurred upon awakening in the morning or during the night, without the patient having exerted pressure on nerves by lying on the corresponding side. One patient demonstrated the condition particularly well by swinging his arm about, the hand thus becoming congested with the exception of the dead fingers, which remained pale and bloodless. The phenomenon may be explained as a spasm of the arterioles of the fingers. In view of the localization and symmetry of the spasm, it is probably dependent upon the nervous system, always occurring in the distribution areas of the same nerves. The arteriolar spasm, alike in Bright's disease and in epilepsy, may be due to the operation of some toxic influence.

Proceedings of National and Local Societies

AMERICAN LARYNGOLOGICAL SOCIETY.

*Forty-first Annual Meeting Held in Atlantic City,
N. J., June 16, 17 and 18, 1919.*

The President, Dr. CORNELIUS G. COAKLEY, of New York,
in the Chair.

(Continued from page 792)

The Disinfection of Carriers.—Dr. D. BRYSON DELAVAN, of New York, said that of twelve diphtheria carriers, every one yielded to treatment. Four had suffered undoubted attacks of diphtheria, the rest had not. All had been under treatment for periods varying from two months to three weeks, the treatment consisting of the use of various disinfectant solutions sprayed into the nose and throat and used as mouth washes or gargles. In all it had been ineffective. Under the use of the dichloramine-T chlorococaine solution, applied after the nasal cavities, the upper pharynx, and the tonsils had been thoroughly prepared by the preliminary application of adrenalin and thus thoroughly exposed, and the surfaces cleansed of secretion, the cultures became and remained negative. Failing at success after a reasonable number of treatments, redundant lymphoid tissue should be removed.

From observations already made on this subject, it would appear that not all varieties of germs showed a predilection for the same localities of the upper air passages. Thus the Klebs-Loeffler bacillus, the meningococcus and possibly others seemed to show a willingness if not a preference for the invasion of the upper nasal region. While the streptococcus, whatever might be its wanderings in the otolaryngeal realms, appears to elect the tonsil as its chief centre of action. The removal of a tonsil thoroughly and deeply infected with the streptococcus becomes, therefore, a matter of necessity, while, on the other hand, the mere removal of tonsillar tissue in any of the twelve cases of diphtheria quoted above would have been useless.

Whether the tonsils required removal or not, the presence of bacteria in the upper nasal region was sufficient in itself to constitute the subject a carrier, and a carrier he would remain as long as the nasal region remains infected. The proper cleansing and dilatation of this area, together with the efficient application of the disinfectant, did not require an excessive amount of time, and could be carried out by anyone possessed of a reasonable measure of skill and common sense.

The Relation of Streptococcus Hemolyticus Carriers to Streptococcus Epidemics in the Army.—Captain FRANCIS G. BLAKE, M. C., U. S. Army, said that the widespread hemolytic streptococcus infections that have occurred in the army had resembled hemolytic streptococcus infections in general in that they had been truly epidemic in character and had been almost entirely secondary, not primary infections. These infections had in large part affected the respiratory tract because the predisposing diseases which had prepared the soil for secondary streptococcus invasion had been respira-

tory diseases—measles, influenza and pneumococcus pneumonia.

The relation that hemolytic streptococcus carriers had borne to the development of these streptococcus epidemics was one of the most important phases of their epidemiology. Three types of streptococcus carriers must be recognized: a, Chronic carriers, individuals who harbored hemolytic streptococci in the crypts of their tonsils over long periods of time; b, contact or temporary carriers, those who acquire the hemolytic streptococcus and carried it for a relatively short time without sustaining any apparent injury; and, c, acute carriers, those who acquire the organism and in whom it produces disease.

Two points of view with respect to the relation of streptococcus carriers to streptococcus epidemics had been advanced. The first was that the streptococcus infections were autogenous in origin arising from streptococci innocently harbored in the tonsils. The other was that the secondary streptococcus infections were in large part due to invasion of virulent strains from outside the body—that is, to contact infection. Examination of the available evidence would seem to indicate that the theory of contact infection was the only logical one with respect to the widespread streptococcus epidemics that had occurred in the army. This opinion was supported by studies made at Camp Pike, which showed that in the absence of a streptococcus epidemic the incidence of streptococcus carriers among normal men and among patients admitted to the base hospital with measles, influenza or pneumonia was relatively low, not exceeding ten per cent. in any of the groups studied. These might be considered chronic carriers. Following the outbreak of an epidemic of streptococcus infections the incidence of streptococcus carriers among normal men and among patients admitted to the base hospital with influenza showed an increase of from one hundred to nearly four hundred per cent. This increase of carriers was due to the dissemination of streptococci coincident with the epidemic, and represented a group of contact carriers. Secondary streptococcus complications occurred exclusively among these contact carriers, chronic carriers of hemolytic streptococci among patients with measles, influenza and pneumonia remaining free from streptococcus complications. Highly fatal ward epidemics of streptococcus pneumonia among patients with influenza pneumonia were shown to be due to contact infection and were directly traceable to acute carriers of hemolytic streptococci introduced into the wards in which streptococcus epidemics broke out.

Even should it be granted that a large proportion of the population innocently harbored hemolytic streptococci in their tonsils as chronic carriers, it was difficult to maintain the theory of autogenous infection, since it predicated an equal coincidence of streptococcus complications of measles and pneumonia at all times, an occurrence which was quite out of harmony with the truly epidemic character

and strikingly selective incidence of these infections as they had existed in the army.

The relation of chronic carriers to the development of streptococcus epidemics was uncertain and must remain so until means were available for showing whether the hemolytic streptococci harbored by them were immunologically identical with those responsible for the epidemics. It was not impossible that they might be the initial source of these epidemics. From the point of view of prevention it would seem wise to consider this assumption as true until it was disproved or otherwise. It must not be overlooked, however, that the starting point might equally well be found among a number of acute carriers represented by cases of streptococcus tonsillitis, which were probably not infrequently present among large groups of drafted men at the time of their arrival in camp.

Sufficient evidence was available to show that the contact or temporary carriers of hemolytic streptococci bore an intimate relation to the streptococcus epidemics of the army, even if only a time relation. It seemed not improbable that they represented to some extent the intermediate hosts, if the term may be used, which help to disseminate the streptococci and assist in increasing their virulence by frequent passage. It was equally possible that the contact carrier played only a passive rôle except in so far as he became an acute carrier in the presence of a predisposing disease.

The part played by the acute carrier in the spread of hemolytic streptococcus infections could not be too strongly emphasized. It had been clearly shown that he was an actual source of great danger. The introduction of an acute carrier into a ward devoted to the care of respiratory diseases might be followed by a rapidly spreading and highly fatal epidemic of streptococcus pneumonia, which was comparable in all respects to the old time hospital epidemics of puerperal sepsis. Rigid isolation of every such case, whether it be a mild streptococcus tonsillitis or a severe streptococcus pneumonia, was the clear indication.

Extraction of Foreign Bodies from the Face by the Natural Route.—Major LA MAITRE, of Paris, read by invitation an interesting paper on this subject. He said that in removing foreign bodies from the maxillopterygoid fossa he had adopted a special technic which was quite different from that usually used. These bodies were generally removed through the skin route, requiring an incision, which was always disfiguring.

Instead of passing through the skin, he had succeeded in every case in operating through the mucous membrane, through the vestibulum of the mouth, by the natural route. The incision was made in about the same manner as that made to open the maxillary sinus, but a little back of that, which made it possible to reach through this canal a region which was between the ascending ramus, which was outside, and the maxillary sinus, which was inside, the mucous membrane of course being incised. It was possible to go very far, very deep, and remove the foreign body.

The help of the radiograph was important, and it could be used in three different ways: First, the

classical radiography, which gave an idea of the location of the foreign body and enabled one to choose the route and, in that case, choose the natural way. Major La Maitre considered it very important to put a probe in the mouth at the place where it was intended to open the mucous membrane, in order to have an understanding of the location of the foreign body and to enter the mucous membranes with the probe instead of through the skin incision.

But more important than that was the advantageous manner in which one might work in cooperation with the radiographer. It was not always the same radiographer. When the mucous membrane was open a forceps was put at the place in which the foreign body was supposed to be, and at the same time the radiographer was asked to tell the operator at what place the forceps were in contact with the foreign body. He would tell, for instance, half a centimetre below or half a centimetre above, and the forceps were changed accordingly. Sometimes he was able to discover where the foreign body was. Sometimes it was not possible, and the foreign body was grasped with the help of the radiographer. In some cases it was necessary to go through the sinus itself. If the sinus is involved, it was better to follow the route that the foreign body itself had followed, but generally, except in cases where the frontal sinus was involved, Major La Maitre said he preferred to go outside the sinus.

Sometimes the foreign body was deeply seated, very close to the lateral wall of the pharynx, and it was difficult to remove it because the external area of the subpterygoid fossa was like a wall between the foreign body and the forceps. In that case it was possible to remove the foreign body by excision of the external area, which was a difficult way to approach the foreign body.

(To be concluded)

Births, Marriages, and Deaths.

Died.

BARBAT.—In San Francisco, Cal., on Thursday, April 22nd, Dr. John Henry Barbat, aged fifty-eight years.

BROWN.—In Brooklyn, N. Y., on Wednesday, May 5th, Dr. Marshall Lebanon Brown, aged eighty-three years.

DAVIS.—In Chicago, Ill., on Monday, May 3rd, Dr. Achilles Davis, aged forty-six years.

DOWNES.—In Philadelphia, Pa., on Saturday, May 1st, Dr. Robert N. Downes, aged ninety-one years.

GILMAN.—In Worcester, Mass., on Sunday, May 2nd, Dr. Warren Randall Gilman, aged fifty-nine years.

GROUT.—In Waterbury, Vt., on Monday, April 19th, Dr. Don D. Grout, aged seventy-one years.

HILLS.—In New York, N. Y., on Sunday, May 2nd, Dr. Alfred Kimball Hills, aged eighty years.

MOORE.—In Sussex, N. J., on Thursday, April 29th, Dr. John Moore, aged seventy-nine years.

PATTEE.—In Dover, N. H., on Tuesday, April 27th, Dr. John Ralph Pattee, aged fifty-nine years.

POIRIER.—In Salem, Mass., on Thursday, April 29th, Dr. Emile Poirier, aged sixty-four years.

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Original Communications

THE THEORY OF THE PNEUMA IN HOMER.

By JONATHAN WRIGHT, M. D.,
Pleasantville, N. Y.

It has become somewhat out of date to insist, as was once the custom of the historians of civilization, that in all spheres of intellectual activity, in religion, in social science, in art, and even in science proper, Greek culture initiated or adopted and made its own all those germs which have given us our modern civilization. Recent writers of the story of Greece build on archeological foundations which in the time of Curtius and Grote offered a slender support. There is always a beginning back of a beginning, but I shall do no more here than allude to the evidences of the reality of the influence of Egyptian and Babylonian theory on medical thought in early Greece. Though I am repeating something upon which I have already insisted (1) in this journal more at length and though I shall again in summary refer to the fact that the birth of the theory of the pneuma may be traced much further back than civilization itself, it will, I trust, not be thought superfluous. It may easily be traced back in large outlines in the records open to us in the modern literature of travel and ethnography dealing with men much more primitive than those who have left their records on tiles and tablets, monuments and papyri rolls long buried beneath the sands on the banks of the Nile and the Euphrates. Of the theory of the pneuma, as it existed in the civilizations which flourished there, I have also had something to say in these columns (2 and 3).

The mystery of life was doubtless one of the first things to engage the mental processes of man as the curiosity to explain phenomena around him began to distinguish him from the brutes. It is sometimes said the latter have no curiosity, but no one who has seen the domestic cattle in the fields, nor any one who has followed the wild deer to his coverts, will believe this for a moment. It is no lack of curiosity that keeps the brutes beneath the dominion of man, it is the difference in the endowment with means to satisfy that curiosity which has been the telling factor in evolution. The horse will snort with fright at the blood of his dying comrade; the dog will sniff curiously, sometimes savagely, at the writhing body, growling at the surrounding danger perhaps, or even blindly

attacking his fallen friend. The cat will cower and sniff around the carcass of one of its tribe when it first meets it. Curiosity, fright, anger are often plainly aroused in the brutes at the sight of the dissolution of life into death, at the moment the spirit takes its flight with the last breath exhaled. There man took up the mystery. Something went out into the circumambient air, which he could not see nor comprehend. He looked down on his foe, and the last quiver of the muscles of the sinewy limbs was quiet as the last sob drove the foam from the mouth. Let us forget our knowledge and stand with our ancestor alongside his enemy as he lies prostrate before the victor, an arrow in his heart or a stone ax buried in his skull. Could any conviction be blasted into man's mentality more indelibly than the details of that scene impresses it on us—the fact that the pneuma leaves the body almost as plainly as though we see it? Indeed, so acute is the impression upon the mental faculties that we do some of us actually see with our mind's eye the wraith as it leaves the body whose every motion it had, since it came into the world, controlled and directed. It had moved the muscles of the mouth into a smile of welcome or a grin of hate; it had turned the forearm sinews into steel as we strove with it in the death grapple; and now it has gone forth, a viewless but an everliving reality to us, into the great mystery which surrounds us.

Hundreds of thousands of years, millions no doubt, have passed since that phenomenon first broke in full force on the dawning intellect of man, yet it awes us still into silence, and the bowed head is the outward sign of our cringing before something we know not what. We start in fear, just as the horse snorts, when we stumble over the murdered victim we find lying in the grass. All our knowledge, even familiarity with death, does not any more quickly expel this involuntary emotion from us than from the savage or the brute, but the involuntary alertness of all living things in the sudden presence of death is always with us whatever the scale of our mental evolution. It is a mute witness of that first primeval shudder before the mystery.

The very first glimpse we get of man's endeavor to cure disease is the oblation he is offering to the souls of dead ancestors, to prevent them from entering the body or enticing from it the soul of the sick, or we see the medicine man trying

to drive out the spirit who has found entrance. Later we see him studying, in the time of Hippocrates, what disturbance of the animating pneuma it can be which has deranged the functions of the stomach or the uterus, of the liver or the spleen. There is something of a step, it is true, between the naked savage in the wilds of Africa chasing the escaped soul up a tree (1) to bring it back to its duties in the body it has temporarily left, it is a considerable process of evolution which lies between what this act betrays and the thought which clouded the brow of Hippocrates as he watched the changes the departing spirit wrought into the facies of death, described in often quoted passages of his writings. That long process of evolution, were we to follow it step by step, would lead us through the incantations of Malay and Babylonian magic, directed against the demon spirits of disease, foul offsprings, but plainly offsprings, of that breath we all but actually saw leaving the lips of our prostrate foe. It would lead us through the lines of the *Poem of Gilgamesh*, the *Rig Veda* and the *Zend Avesta*, and it would carry us from the tombs of Egyptian kings, whose pious subjects, with an eye to their own safety, provided statues in their tombs to tempt the souls which might be troublesome if neglected, or planted trees by the grave for the birdlike beings to perch on. It leads us from the *Papyrus Ebers*, whose pathology and therapy are permeated with the idea of a disordered spirit at work in the patients, to the lines of Homer, who deals with the emotions and not with the diseases of men.

In the Homeric poems Galen has found (4), and in greatest profusion has exhibited, reference to that indwelling pneuma which excites the passions of man as well as the disorders of his digestion. Some reason for astonishment exists in perceiving that ethnologists, in the study not alone of African tribes but of American Indians, have discovered for us an extended, elaborate, and reasoned belief by them in a multiplicity of souls. If it had been observed only among the modern wild tribes of the interior of Africa we might easily find ground in ethnology and in archeology on which to base an almost unassailable theory of the extension of ancient Egyptian doctrine. To find it not only among the Malays but in the isolation of the American continent, despite the vehement efforts of Elliott Smith to see there the far extended influence of the civilization of the Nile, inspires us with considerable respect for the reasoning power of primitive man. When man has to ascribe to the soul the multifarious and widely dissociated functions which pantheistic theory logically imposes on it, some discrimination and separation of its activities and its duties are imperative. In the dissertations of Plato we shall find this differentiation. The soul that governs the bodily functions is sharply separated from the immortal soul which governs his ideas. Singular to say, the Homeric Greeks had not arrived at this stage of mental evolution when we first get a glimpse of it in the lines of their immortal bard. Galen was struck by the fact that in Homer all the passions, which Plato divided into good and bad and separated by the dia-

phragm, and all the reasoning faculties as well, were lodged in the heart, with an occasional refuge for some of the darker passions in the liver.

In Homer as in the *Papyrus Ebers* we find the pneuma or the soul of man undivided but extended throughout the uttermost limits of the human anatomy. When the bronze spearpoint tore through the flank of Hyperenor and let out his entrails (9) "the soul through the stricken wound fled hastily" (Iliad XIX, 517, 518), so the soul of Sarpedon followed the spearpoint when Patroclus drew it forth (XVI, 504-5); and Patroclus's own soul, when he came to die in turn by the hand of Hector, went "fleeing from his limbs," (XVI, 856) and Hector's soul, too, "flew forth of his limbs and was gone to the house of Hades," sent thither by the noble Achilles in revenge for Patroclus (XXII, 362). There are so many people dying violent deaths in the Iliad that stock phrases describing them seem to be used, and one almost feels one can follow the change in the authorship of the different parts by taking note how the soul is dismissed; but for our purpose it is all one whether a single author with variations in his death scenes, or a death scene for various authors is to be assumed. The soul, in one of these stock phrases, we see ready to depart whenever the body is tapped. The soul we know flowed along the blood channels with the blood. It must do so to meet the demands made on its services even by the crudest of men. Notwithstanding this, however, there was for the Homeric Greek a central station in the hairy breast of his hero, where the heart beat portrayed the activity of the soul within. The emotions and the thoughts of man dwelt there. "Grief came upon Peleus's son and his heart within his shaggy breast was divided in counsel." (I, 188-9).

All the poets after him have used Homer's phrases thousands of years after his physiology and anatomy have perished. The thing that makes Homer mighty and his modern imitators seem puny is the objectivity of the chief and the artificiality of the followers. Polydorus, Priam's son, was the victim of Achilles's wrath, "right through beside the navel went the spearhead and he fell on his knee with a cry and a dark cloud covered him roundabout and he clasped his bowels to him with his hands as he sank" (XX, 417-418). We may perhaps single out this objectivity as the chief element which held the later Greek world, at the height of Athenian culture, in thrall not only to Homer the poet, but, singular to say, to him as philosopher and scientist. In an argument an appeal, even in statecraft, was made to his poems. His was not only the first support sought in history, it was the last word and closed the question. He was appealed to even by Plato and Aristotle in matters about which it would be absurd to suppose he ever had the glimmer of an idea worthy of their more evolved intelligence. To this extreme we need not go, but we are quite justified in seeking in his lines traces of the commonly accepted view, vague though it must have been, not alone of the anatomy and physiology but of the underlying theory to which they made these conform.

It is quite apparent that when the soul as the

representative of life is loosed from the body it is omnipresent. It may flee from the limbs or the body or the head, but when the soul is to be identified with the mind and the emotions it finds its seat in the breast. When Peleus's son was in doubt whether to draw his keen blade from his thigh and "slay Atreides or to assuage his anger and curb his soul," the latter resided "within his shaggy breast" (Iliad VII, 188-9). The herald whom Atreides sent to Machaon, son of Æsculapius, to tell him to come to heal the wound of the golden haired Menelaos "aroused the spirit in his breast" (IV., 208). Priam, too, said, haranguing his Trojans, that his soul within his breast commanded him (VII, 389). The old knight Phoenix, not he who had arisen from his ashes, feared that glorious Achilles was thinking in his breast to let the ships of the Achæians burn (IX, 434-436). Everywhere it is not only the life soul but the thoughts which have their habitation in the thorax or more specifically in the heart. So also the conscience, for Oineus sinned against Artemis, the goddess of the golden throne—"sinned he sore in his heart"—and to ravage his lands she sent against him the Calydonian boar (IX, 537). And Meleager, who slew it, "grew full of wrath, such as swelleth the hearts of others likewise" (IX, 553) and in the same book (IX, 646) Achilles acknowledged "my heart swelleth with wrath." When Patroclus called his comrades shouting loud he "aroused each man's heart and courage," for in the heart dwelt valor too, "and all in a mass they fell on the Trojans" (XVI, 275). The thought, the soul, the courage all dwelt with the heart in the shaggy breast "where the midriff clasps the beating heart" (XVI, 482).

But from the skull, when the son of Telamon smote Hippothaös "brain and blood both spouted from the wound through the visor" (XVII, 297), but with them went neither sorrow nor joy, courage nor fear nor soul, nor did a single thought escape. The brain spouted like the blood in quite realistic fashion, if we attribute to the poet the idea that both were liquid. His realism was keen as usual but his anatomical conceptions did not always equally conform with reality. So when Demoleon's cranial bones were smashed by Achilles's spear the "brain was all scattered" but in the next line or two when the busy Achilles wounded Hippodamas in the back, presumably with the same spear, so rapid is the action, "he breathed forth his spirit with a roar" (XX, 400-403). Now these things are not accidental. They are not simply a poet's fancy. Unconsciously the mental conception is betrayed to us and we see it pointing backward to that of primeval man.

If we refer to the Odyssey (10) (XXIV, 318-319) in a modern edition we will find a passage near the end of the poem after the hero's twenty years of travel and adventure in which we can sympathize with an emotion most realistically described by a single phrase: When Ulysses saw his old father, the once lordly Laertes, laboring with his hands in the fields *θυμὸς* sorrow, anger, grief—came up like a sharp pang through his nostrils. As a prodrome to a burst of tears we less emotional

elders in these days may have to go back to our childhood, but the pang which shoots up into the nostrils is unmistakable. Whence comes it? Not down from the head but up from the fast beating heart. We shall find Aristotle, in spite of Alcamaeon who pointed out the function of the brain, still insisting all sensation recognition is in the heart. According to the account of the theories of the various philosophers in regard to the seat of the passions, the intellect and the soul, as given by Plutarch, mankind, was busy with the thought in Greece long after Homer but it is doubtful if the latter went very far in his mental analysis of such abstract questions. We only get a glimpse that the thought was familiar to Homer's audiences when he sung his lays, but there is hardly any justification for the remark of Daremberg (5) that *θυμὸς*, *φρόν*, *φύσις*, all meant life though it is quite true he did not attempt to define life, more wise in his generation than some later philosophers. The loss of any of the three was equivalent to death but ill defined though they are in Homer they have varying shades of meaning which later grew into conceptions differing from one another. This matter may be found more recently discussed in the excellent book of Seymour (6). The subsequent use of the word *pneuma* deprived them of much of their significance. To one of them we owe our word frenzy which partakes in itself of the idea of passion and of a disordered intellect, yet *φρόν* once meant both heart and the region about it and mind, the two being identified in Homer much more closely than mind and brain now are in our current thoughts, but the *φύσις* had its seat there too, vaguely competing with the others, but in the use of the word *θυμὸς*, just quoted, we do not find its sense included in the other two. The latter, beside having sometimes the meaning of the soul, usually represented the nobler passions rather than the envious desire and evil spirit, which we find elsewhere more often associated with the liver. In Babylon we found this apparently due to the bitterness of gall and of poison suggesting the idea.

All words I have thrown into their Greek forms have emerged into modern anatomical literature, sometimes with no apparent connection with their original application. The hepatic word has remained true to its derivation and so has the psyche, but *χολός*, though once in the Iliad used to indicate subsequent application when the wrathful Achilles was said by some disgusted Greek to have been suckled on bile, no longer dwells in the heart of the thymus gland but owes its name to the fact that there once, for someone, the soul dwelt. The phrenic nerve we know as well as the frenzy which resulted from an aberration of the *φρόν*. I shall make a small digression from the subject of the *pneuma*, only to return to it immediately, in order to make it evident that Plato's idea of the animal passions of the soul being seated in the liver had its prototype in Greek thought in the Homeric poems. The liver, *ἥπαρ*, itself is mentioned only in connection with wounds, but *χολός*, unlike the later *χολή* from which the nomenclature of hepatic anatomy derives some of its terms rarely but occasionally in early Greek sig-

nified the bile alone and it has interesting affiliations with our subject. I have been at considerable pains to search out how frequently the word is used to indicate wrath in the *Iliad*,¹ in the text of Monro and Allen (7), but I will refer specifically to only a few of them.

When we read (II. IX, 646) that the heart swells with $\chi\acute{o}\lambda\omega$ and our dictionary tells us that we must translate it wrath, the physician may do so with, nevertheless, a sudden recollection of his later anatomical name for the bile duct. Then he substitutes cholera for wrath. He reads on and finds (XVI, 203) Achilles accused of being reared by his mother on $\chi\acute{o}\lambda\omega$ and he has to translate it bile. Then that matchless objectivity of the old bard comes to his mind, and he realizes that, when they spoke of bitter wrath, they verily felt in their gorge that physical bitterness of which they sang, and their minds dwelt on the gall actually tincturing the contents of the chambers of the heart. "It swelled with bitter wrath." The bitter arrows remain in the text because, in the days when Troy still stood, they were tipped with poison. In the Babylonian script the sign for gall and poison was the same, which fact the expurgators of Homer in more civilized days did not know when they tried to remove from the text things to be ashamed of, so modern critics tell us (8). We can hardly suppose the gallbladder was named, or perhaps the gall had a name before the resentful wrath of the savage foe was remarked. Which was named after the other it is perhaps futile to seek to know, but we can see Homer stored that in the heart which Plato later removed to the liver, just as he removed the reasoning powers to the head (Timaeus, 73). Now, as I have said, the author of the *Iliad* stored all these things in the heart. When we turn to the much later poem, the *Odyssey* (XX, 13 ff), we find the hero's heart "growing within him" in wrath at the sight of his lecherous house wenches junketing with the wooers, but, as he had had to do when he outwitted Polyphemus, he communed with his heart and soul, and reason subdued the rash anger in his breast for more distant ends. All this, however, went on in the heart still, but I find no use of $\chi\acute{o}\lambda\omega$ in the *Odyssey*, with its seat in the heart.

These things were stored in the heart because it was there the pneuma held sway. From the external air the world spirit or pneuma is at first not differentiated at all, but finally some distinction was made. At any rate in an absence of any knowledge of the nerves it was the business of the pneuma not only to carry the impressions of the external world into the body, but to carry the orders of the mind throughout the body. In the heart passions arose, and thought was secreted from the pneuma, no more mysteriously than it is now secreted from the brain. There was the central reservoir of thought and emotion. There sat the soul and issued its orders which were borne by the pneuma in the air tubes—arteries—to the most distant muscle for execution.

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THE REEDUCATION OF HEMIPLEGICS AND THEIR PHYSIOTHERAPEUTIC TREATMENT.*

BY PIERRE KOUINDJY, M. D.,
Paris, France,

Ancien Chef du Service de Rééducation à la Salpêtrière et du Service de Physiothérapie au Val-de-Grâce.

At the International Congress of Medicine, held in Paris in 1900, we presented for the first time our method for the treatment of hemiplegics by methodical massage and motor reeducation. This was received with incredulity by the neurologists present who thought it strange that a paralytic could be made to walk in spite of the fact that he had absolutely lost the use of his muscles.

We followed the formula of Todd who, in the middle of the past century, spoke against the abuse of strychnine and electricity in the treatment of hemiplegia. This remarkable teacher said: "I know of nothing so profitable for the paralyzed members as a regular system of exercise; active when the patient is able to perform them and passive if he is incapacitated" (1). The difficulty has been to find a suitable system of regular exercises. It was not until the end of the nineteenth century that motor reeducation made its appearance, enabling us to establish our system of physiotherapy for hemiplegics, which we presented at the meeting as stated above (2).

The idea of treating hemiplegics by reeducation and methodical massage had been accepted by the majority of the neurologists and there followed a series of studies in support of our argument by leading physiotherapeutists in France, Germany, England, Austria and Sweden. The value of motor reeducation and methodical massage was recognized by all of the authors as the only therapeutic agents which fulfilled the requirements of Todd's "system of regular exercises."

"Rational massage," I stated in my communication at the Paris Congress in 1900, "or methodical massage is of enormous benefit to hemiplegics. It arrests the atrophy, prevents infiltration, makes

¹ I—283,387. IV—24,36. VI—126,336. VIII—461. IX—260,525. 646,675,678. XIV—50. XV—122,138. XVI—203. XVIII—119. I have not taken the trouble to scan the text of the *Odyssey* so carefully.

*Translated by Gregory Stragnell, M. D., formerly attending surgeon, Hôpital Militaire auxiliaire No. 36, Paris.

the joints more supple, distends the retracted elastic tissue, strengthens the muscular tissue which has been attacked by the paralysis and tends to help the muscle tissue to regain its lost strength" (3). Motor reeducation helps to restore the strength of the muscles and to reestablish the coordination of movement.

Since the publication of this paper a number of workers have confirmed our principle of the physiotherapeutic treatment of hemiplegics. Some of these were Guthrie (4), Lazarus (5), Menci re (6), Maurice Faure, Cauvy and others.

For the results obtained we give the statistics as gathered by my pupil and assistant at Salp tri re, Doctor Possard (7), which constitute a r sum  of the results found in the hemiplegics treated in our service in the hospital during the past five years. In three per cent. of the cases we obtained complete cures, in seventeen and seven tenths per cent. great benefit was derived, in sixty-four and seven tenths per cent. a notable benefit, and in seventeen per cent. the result was doubtful. These figures show that the treatment we described has proved its merit and is worthy of consideration. Since this time the number of hemiplegics treated by physiotherapy has been increased considerably but the proportion has remained the same. It should be noted that we have included in the groups in which the symptoms were ameliorated those persons who were enabled to resume their work and who could be considered almost cured. In the group which showed considerable amelioration we placed those who discontinued treatment and resumed their normal position in life.

The treatment is begun by methodical massage, but prior to the application of massotherapeutic maneuvers, we make a systematic examination of the paralyzed muscles, or a massodiagnosis, in order to determine the approximate tonicity of the various groups of muscles and their antagonists. The paralysis of hemiplegics never attacks all of the muscles at the same time. Ordinarily it attacks a certain muscle group, at times a single muscle; the others are spared at times entirely, at times partially. The muscular atrophy which frequently follows closely after paralysis, gives the exact topography of the progress of the paralysis, and with practice one easily arrives at the point where the degree of atrophy can be determined, for, as has been recently demonstrated by the work of certain neuropathologists, a paralyzed muscle contains islands of degenerated muscle fibres, islands of fibres in the process of degeneration, and islands of untouched muscle fibres. The more of these which are contained in the muscle, the more its vitality is conserved, the more it can manifest its degree of tonicity. In order to demonstrate the tonicity of a muscle, it suffices to place one or more fingers on the affected portion of the muscle and ask the patient to make the movement which corresponds to the activity of this muscle. The altitude of the movement and the degree of force used will be felt by the finger of the operator, through the shock produced by the muscular contraction.

Ascertaining the degree of shock constitutes the

principal element in diagnosis by massage. The absolute absence of shock will make the prognosis more gloomy and if after several successive explorations made at intervals no shock is found, one may be sure that the tonus of the muscle is just about lost; the muscle is atrophied and may be considered as useless.

This procedure lacks the precision of electrodiagnosis, but it has the advantage of being easily applied frequently during the course of the same methodical massage. It also has the advantage of allowing us to map out the topography of the paralysis in hemiplegics. Wernicke (8) and Mann (9) and later Clavey (10) have attempted to give a topography of the distribution of paralyzed muscles in hemiplegics. Unfortunately, it is difficult to generalize the topography described by each of the authors cited; for the hemiplegic does not always present the same group of symptoms. In the majority of the cases the upper extremity was attacked oftener than the lower, while the contrary is frequently observed in the clinic. Mann formulated the topographical disposition of the paralysis of the lower extremities as follows: The paralysis attacked the *psaos iliacus*, the *tensor fasci  late*, the *sartorius*, the *droit ant rieur*, the *jambier ant rieur*, and the long extensors of the toes. For the superior extremity Clavey gave as the muscles most frequently attacked: The muscles above and below the spine of the scapula, the subscapular, the central portion of the trapezium, the *grand dent l*, the deltoid and the brachial portion of the triceps; for the forearm, the long supinator, the short supinator, the *radiaux*, the flexor of the thumb and the *interossei*. The short abductor of the thumb is the muscle which retains the greatest degree of paralysis. This rule may be disputed, for in reality, each hemiplegic presents a separate topograph of the muscles paralyzed and, in addition, as Dejerne has justly remarked: "In a hemiplegic, all of the muscles participate more or less in the paralysis." It is only by massotherapeutic exploration that we have a method of finding out the distribution of the muscles which have been attacked in a hemiplegic.

The distribution of the atrophied muscles in a hemiplegic depends more upon the contracture of the antagonists than upon the paralysis. According to Professor Brissaud (11) the muscular atrophy in hemiplegia is always accompanied by contracture, which is followed by flaccid hemiplegia. Shafer (12) found muscular atrophy in sixty per cent. of the cases and Gille de la Tourette (13) reported seventeen cases of atrophy in twenty hemiplegics, while among our patients we found atrophy in every case of residual hemiplegia. The atrophy should be attacked as soon as possible. It has been seen to occur twenty days after the attack, therefore it is necessary to begin physiotherapeutic measures as soon as possible after the attack.

The massotherapeutic measures which are employed during the first part of the treatment include superficial and deep rubbings, light longitudinal and circular pressure at first followed by digital vibrations. Later we add percussions, progressive kneading and varieties of tapping. These

movements should be executed gently, and limited to the injured portion of the muscle. In massaging the nerve trunks we use combined manœuvres such as longitudinal superficial pressure with the hand and vibrations with the other hand. In the event of edema or other trophic troubles another manœuvre which has a double effect is pressure with one hand and rubbing with the other; rubbing with one hand and patting with the other. But in all these manœuvres it is most important to manipulate only the muscles which are atrophied or in other words the muscles which are hypotonic. In hemiplegics with contracture, and these form the largest group, the two antagonistic muscle groups possess a different degree of muscular tonus. If the contracted muscles are hypertonic their antagonists are hypotonic. An algebraic formula will render this explanation more simple. We will designate the contracted group of muscles by A, and their antagonists by B. A is greater than B. $A > B$. Now if we treat the injured member by massage, each session will augment the tonus. We will represent this by t, t^1, t^2 , etc. If we massage the two groups of antagonistic muscles in the same fashion we obtain $A+t+t^1+t^2$, etc., and $B+t+t^1+t^2$, etc. The equation always remains $A+t+t^1+t^2 > B+t+t^1+t^2$, etc. The contracture is not improved and the patient remains paralyzed. In order that the hypotonic antagonists may manifest their muscular power the equation should be made to read $A=B+t+t^1+t^2$, etc., that is to say, the elements t, t^1, t^2 , etc., are added to the group of muscles which are hypotonic and the hypertonic group of muscles remain at rest. This is the formula which we indicated in 1905, in our paper on the treatment of muscular contractures by methodical massage and which has been our procedure in the treatment of all forms of paralysis (14).

Therefore, we massage only the hypotonic muscles. When we feel that these muscles are capable of withstanding more vigorous treatment, we add mechanical percussions and other measures.

The massotherapeutic manœuvres are followed by passive and active movements. Occasionally passive movements in the hemiplegics cause great pain and they should be inaugurated with great precaution. In a general way the hemiplegic does not like to move his arms. But as he has a great desire to walk, he does everything possible to activate the functions of the paralyzed limb. This is the reason why in the majority of the patients the functions of the lower extremity return more quickly than those of the upper extremity. The passive movements should begin as soon as possible. This prevents the formation of arthritis, which is another cause of muscular atrophy in hemiplegia. In the execution of passive movements we should not extend them beyond the zone where the movement can be borne without causing excessive pain.

The active movements play a most important rôle. In the first place they give us a measure of the exact progress of the treatment and they serve as a guide in the exercises of motor reeducation. Without active movements it is impossible to

continue the reeducation. When the patient reaches the point of executing a few active movements, such as abduction and adduction of the arm, flexion and extension of the forearm, rotation of the arm, moving it forward and backward, we begin the reeducation of the movements. When the reeducation is properly done the patient should never be fatigued. This will in no way affect the lesion itself but only the existing active movements. The object is to transform the existing movement into a normal one. Frequently in the beginning the hemiplegic will move his arm away from his body while flexing the arm upon the forearm. In reeducation the patient should be taught to move his arm away from his body without flexing his forearm. In order to do this we have the patient elevate his affected arm by using a cane and placing his hand or wrist on our hand, which is placed at different heights, or place his hand upon shelves of different heights. In all these exercises the arm of the patient should be stiffly extended. The height of the object upon which he places his hand or wrist is increased up to the point where the patient flexes his elbow, that is to say, up to the point where the patient can control the flexion of the arm on the forearm. In this way we prevent fatigue on the part of the patient, and we train his centre, for this particular movement, to have active control of the movement.

When the patient can elevate his arm outward in a horizontal direction, we then have him place his hand on his shoulder of the opposite side, on his head, on his back, on his neck, etc. When he begins to open his hand, we have him grasp objects. At first we select objects which are easily handled, made of wood and very light; then we give him objects which are smaller, more complex; then we have him seize an empty tumbler, and finally a tumbler filled with water. When we finally bring him to the point of handling a filled tumbler we teach him to drink from it. In this exercise we note the regularity with which the tumbler is carried to his mouth. We consider the act now as accomplished. We do not attempt to correct the existing faults of this act until later.

In order to reeducate the patient to walk we utilize flexion, at first exaggerated flexion of the thigh upon the pelvis, and flexion of the leg upon the thigh. Following this the patient is directed to extend his leg to the degree that will enable him to place his affected foot on the floor when his leg is completely extended. He should place his paralyzed leg upon the floor prior to his placing the unaffected one. In this way he advances one foot before the other, as in normal walking, and contrary to the procedure of Erben, who always has the patient advance the unaffected limb first and then the affected one (15). This last procedure has a tendency to cause defects in the walking of the hemiplegic for he will always have a tendency to drag the affected limb. The result of our training results in the patient not dragging his affected limb; it also gives him a more solid base of support. This more substantial support enables the patient to overcome the other characteristic symptoms of the hemiplegic walk, of the mowing

movement of the leg. We frequently follow the exercises of walking by the exercises of reeducation, say of flexion. We have the patient sit down on benches or chairs of varying heights and then tell the patient to elevate his limb on to each of these benches, or onto the rungs of a ladder or the steps of a stairway. When the patient can do these exercises with ease we have him place his unaffected limb on the benches. In this way he becomes accustomed to using his affected limb as a base of support, which should always remain fully extended. In order to reeducate the gluteal muscles and the external rotators we use a series of exercises designed to teach the patient to bring the point of the affected foot progressively outwards. The formula walk with the toes pointed outward should be rigorously enforced during the entire period of the reeducation for walking. If the patient places his foot upon the external border, as was the case of the hemiplegic we cited in our paper (16), we arrange the walk in four movements, as follows:

1. Flexion of the thigh upon the pelvis. 2. Extension of the leg. 3. Exaggerated rotation of the foot outwards. 4. Displacement of the uninjured limb.

How do we explain the action of motor reeducation upon the cerebral centre of coordination? Is there a restoration of the centre? Is there a new supplementary centre of coordination formed? In our preceding paper (17) we stated that if the reeducative exercises did not succeed in restoring the cerebral centres they might have the effect of supplementing them. In residual hemiplegia it is almost certain that motor reeducation creates supplementary centres which replaces the centres of coordination which were destroyed.

In order to aid in the reeducation of the movements we use a series of simple appliances, such as a double inclined platform, a rolling chariot, benches of varying heights, traction appliances and above all the traction appliance with the double pulley. This apparatus is constructed of a vertical plank thirty cm. by twenty cm. in the centre of which is placed a quadrilateral, wooden, horizontal bar. In this bar are two openings, near its extremities, in which the pulleys are fastened. The cord which unites the two pulleys carries at one end a handle to be grasped by the hand, which can be replaced by a stirrup for the foot. At the other end of the cord weights of varying degrees are attached, one, two, or three pounds. These may aggregate from six to ten pounds. This appliance allows the hemiplegic to execute simple movements with his affected members, such as elevation of the arm, extension and flexion of the forearm, abduction and adduction of the extremities. Other simple appliances may also be utilized. We also use a series of appliances for the movements of the wrist, the knee and the hip, the foot and the fingers. The reader who is interested in the construction of these appliances will find a complete description of them in our book on physiotherapy (19). Heliotherapy, thermotherapy, balneotherapy are also useful adjuvants. Electrical treatment has been shown to increase the contractures.

In conclusion we may safely state that physiotherapy by methodical massage and motor reeducation is the treatment of choice for hemiplegics. The application of the treatment should begin as early as possible. It should be done by a specialist who is capable of applying the maneuvers of massotherapy, reeducative exercises and mechanotherapy correctly. These physical agents when employed with medical supervision give the most encouraging results.

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OSLER.

Some Comments and Cullings.

BY HOWARD S. ANDERS, A. M., M. D.,
Philadelphia.

Doctor Osler was too great and noble and lovely a medical scientist and practitioner and man; too outstanding and illuminating a beacon light of medical history and the humanities; too exemplary and inspiring a character to let his passing—through what Dr. Lyman Abbott has called the open door—end merely with the formal obituary notices and biographical sketches, or even with the splendid editorial tributes to his genius and masterly achievements.

His knowledge of the human body and its functions in health and disease, of the causes and processes of disease, and particularly his diagnostic skill and acumen—a veritable Sherlock Holmes in his inferences and inductions—were simply prodigious, and fascinating to a degree. In all departments of internal medicine (he was not a surgeon, as one newspaper writer fulsomely but wrongly stated) his versatility was as Roosevelt's in his sphere. Likewise his earnestness, energy, and enthusiasm were capital and constant; he displayed vibrant power, a sense of humor and a brilliancy

of wit, whether as consultant in home or hospital, as teacher or investigator or author. He had the buoyancy of youth, and the electromagnetic force and charm of a dynamo humming and scintillating in action. All this one has to write, and more if one could, to express the feelings of those who were taught by him and at times worked with him in medical and collateral circles, and so got to love and revere as well as admire him for what he so wisely said and magnificently did.

The writer, while a student in the University of Pennsylvania, had one college year at his clinical lectures (just before he went to Johns Hopkins University, in Baltimore, in 1889), and I think I speak precisely when I say that at no clinic did the students show such concentrated eagerness of attention and intellectual interest as at his. There was no waste of words in plausibility of interpretation in obscure or difficult diagnosis; there was always clarity, precision, and meaty sentences where knowledge was comprehensive—and that was usual; or there was the candor of intellectual honesty in the statement of limitations of diagnosis, prognosis and treatment.

Rumor had it years ago that Prof. Horatio C. Wood, who died only recently, was responsible for discovering Doctor Osler and bringing him to the University of Pennsylvania from McGill University, Montreal. In any event, Philadelphia was immensely fortunate in having him, for a short time even, in his capacity as a great teacher and consultant, where he manifested to the fullest to colleague, student, and patient the cheery attitude and radiation.

Occasionally, his fondness for classical allusion would suddenly speak up in clinical demonstration, as when a blacksmith with syphilitic and alcoholic lesions and symptoms was referred to as a disciple of Vulcan who had worshipped too freely at the shrines of Venus and Bacchus. Or, on another occasion, a man brought in with a scarlet rash on a perspiring torso was swiftly and playfully deduced as a case (superficially, at least) of erythema shirtii, because of the unescaped perception of a red flannel shirt that an assistant had previously removed simultaneously with the overshirt.

CULLINGS.

One could easily make up a two minute a day year book of edification for all with extracts from Doctor Osler's facile and fine writings. Oslerisms? I am not sure that he would like to have them so called; any more than he liked it when, in facetious mood, he quoted from Trollope, and was himself quoted widely and grievously as recommending the chloroforming of men at sixty. The coining of the verb, to oslerize, was a longstanding thorn of misrepresentation in his tender side, thrust there by a public only too ready to give oracular and sensational meanings to garbled statements.

Sir William Osler's writings expressly mirror forth the impress of his unique, distinctive personality, just as do those of Lincoln, or of Mark Twain or Russell H. Conwell fit the individualistic qualities and virtues of these men, respectively. Out of the mental pabulum of nearly a score of his addresses and essays (not technical or purely medical)

it is not easy to select, from so rich a table, a menu of cullings, wholesome and exhilarating, and at the same time equally palatable and assimilable to every hungry, or perhaps, surfeited, reader. Not a few of his medical works are richly garnished with apt classical quotations and original epigrams of variegated and balanced philosophy. From *Acquanimitas and Other Addresses* the choicest of about fifty selections reveal the thinker and the man; the practitioner and the teacher: his intellectuality; some philosophy, and spirituality.

I heard him deliver his famous valedictory address in the Philadelphia Academy of Music, May 1, 1889, before the graduates of the University of Pennsylvania: it was one of those milestone occasions and experiences that one forgets only with insanity or death—if one does then. Had the address never been printed, the pregnant, almost pungent, inculcation of imperturbability made an indelible impress upon the very soul of memory. Afterward, one hurried to the dictionary and a book of synonyms, eagerly desirous of knowing further the depths of definition and relations of similar words, like equanimity (latinized in the title), calmness, coolness, composure, placidity, selfpossession, tranquillity, presence of mind; keeping one's nerve in emergencies. "Imperturbability," said Osler—after giving it a peerless rank among the qualities of a physician or surgeon—"is most appreciated by the laity, though often misunderstood by them." It means "clearness of judgment in moments of grave peril, immobility, impassiveness" . . . "In full development . . . it has the nature of a divine gift, a blessing to the possessor, a comfort to all who come in contact with him." Again—"One of the first essentials in securing a good natured equanimity is not to expect too much of the people amongst whom you dwell": really practical wisdom and not at all a cynicism. Here is a characteristic takeoff on mammonism. "We forget that the measure of the value of a nation to the world is neither the bushel nor the barrel, but mind." In his address, *Teacher and Student* (University of Minnesota, 1892), what could be finer than the inculcation of these four precepts:

The Art of Detachment;
The Virtue of Method;
The Quality of Thoroughness;
The Grace of Humility.

In one of his most masterly addresses, *The Leaven of Science*, occurs this: "The great philosopher who took such a deep interest in the foundation of this university (Penna.), chained the lightnings, but who has chained the wayward spirit of man?" Again, "The leaven of science . . . strengthens—to use an expression of Epicharmus—'the sinews of the understanding.'"

Twenty years before the great world war he reminded the army surgeons of "the law that in man . . . mutability, variability, mobility, are the very marrow of his being." Also, in 1894, how like a forecast of things perceived and activated as never before, runs this: "Many things have been urged against our nineteenth century civilization—that political enfranchisement only ends in anarchy, that the widespread unrest in spiritual matters leads only

to unbelief, and that the best commentary on our boasted enlightenment is the picture of Europe in arms and the nations everywhere gnarring at each other's heels." There are only two sorts of doctors: those who practise with their brains, and those who practise with their tongues." This was some differential diagnosis.

In an address on *Nurse and Patient* he speaks of "the warped judgment of the sick man, for which I have the warmest sympathy, but no respect." Again, "Women can fool men always, women only sometimes." And universal suffrage only in its vestibular stage! Osler protests against the selfish sentiment that a nurse should not marry. "So truly as a young man married is a young man married, is a woman unmarried, in a certain sense, a woman undone."

He asserts that "there is no higher mission in this life than nursing God's poor." Think on this, and weigh it. Twenty-five years after leaving McGill University, Montreal, he tells them there that a measure of success was attributable to "enthusiasm, constitutional energy, and a fondness for the day's work."

One of the choicest things he ever wrote is from his *Books and Men*, thus: "To study the phenomena of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all"—a most happy and trenchant expression of the complementary value of the theoretical and practical; the literary and scientific approach; the deductive and inductive methods.

Doctor Osler was deeply interested in tuberculosis, which, he wrote, "takes the first rank as a killing disease." He also believed that dust was a great medium for the transmission of the tubercle bacilli.

It may arouse some general interest to note this statement made in 1901 (*Medicine in the Nineteenth Century*): "A new school of practitioners has arisen which cares nothing for homeopathy and less for so-called allopathy. It seeks to study, rationally and scientifically, the action of drugs, old and new."

His essay, *Chauvinism in Medicine*, was one of the most brilliant, scholarly, searching and inspiring evocations of all. His synthesis of the four great features of the guild of modern medicine, noble ancestry, remarkable solidarity, progressive character, and singular beneficence; and his coordinating analysis of nationalism, provincialism and parochialism in medicine made a deliverance hardly less than of classic power and sweep and lift. His thinking was of the international, league of nations, Christian missionary type. "Nationalism has been the great curse of humanity" . . . "For whom do the hosannas ring higher than for the successful butcher of tens of thousands of poor fellows who have been made to pass through the fire to this Moloch of nationalism? A vice of the blood, of the plasma rather, it runs riot in the race, and rages today as of yore in spite of the principles of religion and the practice of democracy. What I inveigh against is a cursed spirit of intolerance, conceived in distrust and bred in ignorance, that makes the mental attitude perennially antagonistic, even bitterly antagonistic to everything foreign, that subordinates

everywhere the race to the nation, forgetting the higher claims of human brotherhood."

"Inbreeding is as hurtful to colleges as to cattle," was stated in Osler's way of recommending interchange of professorships in various universities as stimulating and emancipating the teaching forces all around. One of his shrewdest and most blessed of observations was the ardent advocacy of avocations—intellectual pastimes, outside hobbies—to rest, refresh, cultivate and felicitate the mind and life. For him, too—and he exemplified it in his own career robustly and buoyantly—the "master word is work."

The vision and virtue of the true seer and practical idealist are shown in the statement: "Sanitary science, hygiene, or preventive medicine may claim to be one of the brightest spots in the history of the nineteenth century;" for he knew that the work already done was scarcely more than pioneering for the trend of preparedness along profounder and more permanent lines and expansions.

A resourceful, apt, and versatile quoter himself, Osler made few repetitions, and these mainly from Sir Thomas Browne, Montaigne and the earlier Greek classics, although biblical allusions were not infrequent. Perhaps he was most intellectually moved, as a master physician, by the words of Hippocrates, the father of medicine, which he quotes next to the prefatory note of his monumental *The Principles and Practice of Medicine*: "Experience is fallacious and judgment difficult." Aphorisms, I.

Three days before Osler died he cabled to his friends in America that he was making a good fight; all his life he had been doing that in service for others, scientific, dynamic, chivalric. Like Abou Ben Adhem, may his tribe increase.

1700 WALNUT STREET.

THE ETIOLOGY OF NEUROTIC SYMPTOMS IN A CHILD OF EIGHT.

BY ADOLPH STERN, M.D.,
New York.

There are a number of interesting and important facts which were brought to light during the course of the treatment of this patient which are worthy of record, in so far as they throw light on similar and allied conditions found in the psychoneuroses of the adult.

It is a matter of everyday experience, in the treatment of adult neurotics by psychoanalysis, to find that their symptoms are directly traceable to long forgotten (repressed) interests, wishes, and impulses present in early life, and that these impulses still possess motivating force, even though they may be unconscious. In the little patient under consideration, we find wishes, some conscious, others not, which are identical with or very similar to those which we find in the unconscious of the adult. In both child and adult they are important causative factors in the production of symptoms. In this sense, the findings in our patient furnish added proof, if any are still needed, to demonstrate the accuracy of the deductions made by psycho-

analysts as to the causal relation between unconscious mental processes and neurotic symptoms, and also as to the nature of the unconscious, and perhaps most important of all, that what we call the unconscious in the adult, has its origin in the child and is in the child, in many of its manifestations, quite conscious, before the period of repression sets in. Some further points of interest are the transference phenomena which are present in all individuals; also the relative value of heredity and environment in the causation of symptoms in the neurotic constitution.

When the patient, a boy eight years of age, came for treatment, he suffered from a tic involving the facial muscles, the head, the right arm, and the right leg. These symptoms dated back to the age of six. He suffered also from fear, manifested mainly in his attitude toward his boy companions and his father. Up to the age of four, while he was a somewhat timid boy, still he was rather free in the company of elders. Up to the age of six he had not been allowed to play freely with other children, being mainly in the company of his mother. He at no time showed an inclination to mingle with other children, nor was he allowed to go alone any distance from home, even to a neighboring store on an errand. At the age of six his parents moved to a neighborhood where "rough" boys lived, of whom even to this day the patient is afraid. It was at this time that he manifested the symptoms for which he was brought for treatment.

The first symptoms which the patient showed were a cackling or crowing sound emitted on all occasions. These continued more or less intermittently for about a year and a half, and were then augmented by the development of grunting and growling sounds, which then supplanted, to a great extent, the former symptoms. With the onset of the latter there were added blepharospasm and facial grimaces, with a tic of the head, right arm and right leg. Increased timidity and general apprehension were noted about the end of the fourth year.

The existence of a phantasy life, especially in children, is perfectly normal. It serves as a medium of satisfying desires and impulses which otherwise could not find gratification. It is rather the nature of their contents which indicates the pathogenic trend, and not the presence of the phantasies themselves. To the psychoanalyst, phantasies (day dreams) and dreams at night offer important fields for the study of those repressed wishes which enter so intimately into the causation of neurotic symptoms. The patient under consideration had a very rich phantasy life, which was reproduced in many details in his night dreams. These we shall now take up.

I mentioned above that the patient was a timid boy, who showed no spontaneity in his desire to mingle with other boys. As a matter of fact, however, he had a desire to play, but he feared to take the initiative. He had desires in other directions also; he had an active emotional life, but for various reasons, as we shall see, he did not give expression to them in activities, but chiefly in his day

dreams. The following are extracts from his day dreams. Upon analysis they will be found to contain the essential components of the neurotic symptoms.

"I see a tiger in the woods. I wanted to shoot him, and a fairy was near him. I was afraid I might shoot the fairy. She might put something in the mind of the tiger and he might disappear, or I might not see him." As a side remark the patient added: "The tiger was nice to the fairy; she thought he was in love with her, would bow to her and take her out. So I shot her, and I got terribly scared and I ran and he chased me. I ran away and got among a lot of animals, also a lion, and he growled, and they all shivered in their pants, and I too. I ran up a tree. He was on a tree next to me, and was mad; he then jumped on the tree I was on, and I fell down, and all the animals got on me, and bit me in the nose, in the pants, and legs. They ate me up." What follows is an extract from another day phantasy. It contains added elements of the neurosis:

"Once I had a bad father, that was long ago; now I have a good father. He was a lion and I was an animal. I lived in the woods. My father made me go out and hunt, and he used to take the good parts of the animals I killed, and he threw me the back and the tail, after all the meat had been taken off. He wouldn't even let me cook it, but made me eat it raw. Then I got big and I hunted a whole lot. I used to get the good parts. My father got the back and the tail. Then I went out and got a bear, got his fur and made a nice coat out of it. Then I had a fight with my father and stuck a knife into him. Before I killed my father I kicked his pants, grabbed his tail between my teeth and swung him around. He was sore and his tail was sore. Then I got a steamer and came to New York. There I found my real father, my mother, and my little brother; and they were all so good. I worked and gave them money."

On another occasion, when asked to repeat his previously narrated phantasies, he said, "The lion is not afraid of me when I aim the gun at him. He just growls and I get scared. When I fall from the tree, the lion swallows me, but when I get into his stomach, I cut it open and come out and he dies."

These extracts from the patient's day dreams contain the material from which we can gain an insight into the origin of the symptoms; or put more accurately, these day phantasies are the means whereby repressed wishes are fulfilled, and these wishes find expression, in a disguised manner, in the form of symptoms.

It will be recalled that some of the symptoms from which the patient suffered were the emission of growls and grunts, a tic of the facial muscles, and of the right arm and right leg. These symptoms indicate a repressed wish on the part of the patient to identify himself with certain animals, that he may enjoy privileges which they enjoy, i. e., to be able to frighten people and to possess power and strength. While narrating the phantasies, the patient went through the acts (symbolically) which he thought the animals would perform

on similar occasions. When telling, for instance, that the lion growled at the patient when the latter pointed the gun at him, the boy shook his right arm and right leg. When asked to explain what he did, the patient said, "When the lion is angry, he just shakes that way, and I get scared, and I shiver." If, as we are accustomed, we translate the fear in this instance into a wish, we say that the patient wishes to be an angry lion, and acts just as he imagines such a lion would act, under such circumstances (the lion also symbolizes the father). Though the child is frightened, it is interesting to note that he acts just as an imaginary angry lion would act. The patient also growled and grunted during the narration of the phantasies, as he put it, "just like a lion and a bear." The little fellow also made grimaces and blinked frequently, at the same time moving his jaws from side to side. The blinking, the patient explained, was the funny faces that monkeys made, and the moving of the jaws from side to side represented the chewing and tearing apart of the bodies of animals. This last explanation the patient gave in conjunction with another phantasy, in which a bear asks a deer to open his mouth, and when the bear sees that the deer has no teeth, the former grabs the latter in his jaws and chews him and tears his body into pieces.

In the analysis of adult psychoneurotics, we find that the part played by the father, as the patient sees it, is one of the fundamental factors in the formation of the neurosis. So is it also, in the case of the little patient under consideration. His attitude toward his father is vividly pictured in these phantasies, in his dreams at night, and in many phantasies which I cannot record here. In these his father is pictured as being dead, and his position, as far as the boy's mother is concerned, occupied by the boy. For instance, in these day and night dreams, the little fellow takes his mother out in an automobile, buys her nice clothes, bows to her and is very polite to her. These are things the child wishes to do for his mother, but feels that his father will resent any such attitude on the part of the boy. For instance, in the phantasy, "I see a tiger in the woods. . .," the tiger does this to the fairy, arousing thereby, in the little boy, something of envy, and as a logical step he takes it for granted that his father will feel envious of and hostile to him, if the patient were to do these things for his mother. In the mind of the boy, the doing of these things, i. e., being attentive to a woman, is a sign of manhood, a privilege of men only, and the assumption of such a state would be viewed by the father in a hostile spirit.

It is important to keep in mind that while the phantasies and dreams depict on the part of the patient a hostile attitude toward his father, yet this hostility is not felt as such by the patient, who in reality is very fond of his father, but of whom in a way he is afraid. This fear is evidence of an underlying (unconscious) hostility. In psychoanalysis a conscious fear has been frequently traced, at least as far as one of its unconscious sources is concerned, to an attitude of hostility or hate. In so far as this attitude of fear may be traced to an unconscious hate as one of its components, the hate

or hostility is found to be directed on the part of the weaker individual toward the stronger, i. e., the little boy and his father. It is as if the patient realized that if his father found out what was going on in his mind, he would be punished. As a matter of fact, fear of being punished was a great fear with the patient. Not that he was so very often or severely punished, but he feared punishment for the most trivial offense, real or imaginary, which he committed. The little fellow had a guilty conscience. This had no justification for its existence in fact, but in reality owed its existence, in part at least, to the existence of desires which found their fulfilment in the phantasies and dreams of the little fellow. The nature of the contents of these phantasies and dreams, the patient realized, were such as would not meet with the approval of his parents.

The patient has intense ambitions to be big, but feels that his father stands in the way of his realizing them. For instance, once he said, "They boss me all the time. If my father and mother would die, I'd marry, and have a fine time, buy my wife clothes, take her out in an automobile, and be a boss, and boss my kids, and have a servant, like you do."

The patient in his phantasies takes revenge on his father and turns the tables completely. This is evident in the extract from the phantasy beginning: "Once I had a bad father. . . ." The ending of the phantasy shows a kindly attitude of the boy to his family. One might say that inasmuch as the patient has disposed of his bad father to his own liking, he is more than willing to be kind to his good father, by way of recompense, and also as a reaction to the hostile impulses of the patient. A modification of this phase of the patient's attitude to his father in particular, is shown in thoughts which he expressed to me, that if he were his father's father, that is, if the patient and his father were to change places, he, the patient, would be kinder to the father, as the son of the patient, than the father at present is to the patient.

We see in the illustrations all the variations in the attitude of the boy to his father, from the most kindly to the most hostile. The conflict resulting from the hostile wishes was responsible in a measure for the fear of the father on the part of the boy. For instance, during the course of the treatment, the little fellow realized that the growling of the lion was to him the harsh, threatening voice of the father. While the boy is not more disobedient than most children, yet he allows some of the discontent, due to his supposed unjust treatment, to find outlet in misbehaving in school, doing careless and inefficient work therein, even though he is a very capable child.

Some of his general apprehension, and a certain symptom, a cackling noise, have the following as their cause: They relate to the event of the birth of a little brother, the thoughts aroused by the occasion, the various explanations he heard as to where babies came from, and his own attempts to arrive at some satisfactory theory as to the origin of babies. The father of the patient informed me that soon after the birth of the patient's little

brother, i. e., when the patient was three and a half years of age, he was curious to know where the baby came from, and the father states that the little fellow's curiosity never seemed to have been satisfied in this direction, for he very frequently asked questions in regard to the matter. The patient was told at one time that babies came from Heaven; that the mother prayed to God and a baby came; he was also told that the doctor brought babies in a satchel. The patient was also told by his parents that the whole process was a secret, and that he must not ask any questions about it. At one time the patient decided to try out the validity of one of the theories, i. e., that the mother prayed to God, and that a baby would be sent to her. Only instead of asking God for a baby, he reasoned by analogy that if a prayer were effective in bringing a baby, it should be equally effective in producing results in other directions also. He therefore prayed one night that God should bring him a much desired toy, and expected that he would next morning find the coveted article beside him in his bed, as he had heard happened in the case of a mother's prayer for a baby. On his waking in the morning, the desired toy was absent, to his great surprise and disappointment, for he had believed in the efficacy of a prayer.

He did not now wholly believe in the other things he had heard, and in his efforts to arrive at a satisfactory conclusion built some theories of his own. The very first was that the baby was in the stomach of the mother, and that the stomach was cut open, the baby taken out, and the stomach quickly sewed up. This is symbolically represented in the phantasy of the patient's being swallowed by the lion, and cutting his way out again. Later he tried to make his own theories fit in with what was told him, and he conceived that the baby was built part by part in Heaven, and when complete came down silently to the bed of the mother. The patient said that this did not explain things in a satisfactory way, and since no further information was forthcoming, he stopped thinking about it altogether. However, when he attended school, he learned from his nature studies that hens lay eggs, and that in the act of laying the egg the hen makes a cackling noise, and further, that from the egg the chick is hatched. It was at this time that the cackling noise made its appearance as a symptom. In this symbolic way the patient identified himself with a hen, and in a way solved the mystery as to the origin of babies.

The fear which the patient manifested so markedly at the age of six made its appearance soon after the birth of his little brother. When informed that he had a little brother, the patient requested to be taken to him. The first words to which he gave expression were, "I don't like him." He began to stamp and cry, and instead of sleeping with his mother for the night, because he was afraid. The patient could not be quieted for the greater part of the night. The little fellow told me that he lay awake much of the night, worried that he now would have to share his things with his baby brother, and feared that some of his things would be taken away from him entirely. What concerned

him most was that now he could not spend as much time in his mother's company as heretofore. He at once conceived a secret dislike for his brother, to whom he gave the derisive name of *kummerlemmel*. It so happened that the little brother grew into a fearless, strong boy, whom in the past year and a half the patient could not tackle with impunity. They are good friends, they frequently fight in fun, but the patient states that his little brother can hit very hard. An added factor in the general apprehensiveness shown by the patient was brought about at the age of six. At this time the family moved into a neighborhood of rough boys, of whom the little brother stood in no awe whatsoever, but who were a source of great trouble to the patient. They called him names, chased and frequently beat him. He ran away on all occasions, without offering any resistance, or putting up a fight. Ashamed of his timid attitude in the presence of the boys, he compensated in a way, when taunted with it by his father, that he would beat up the boys if he caught them, or if they ever attempted to beat him again.

The patient suffered from a feeling of inferiority, which ordinarily has several components. In this connection it is very evident that in an individual in whom this complex is well developed, it will not tend to resolve and be replaced by a feeling of adequacy under constant repetition to the individual of his shortcomings. In the patient, contrasting his timidity with his younger brother's bravery, it served to emphasize and impress on the patient his inferiority as compared with an individual smaller than himself.

As to his father, so also to his little brother, the patient bears at the present time an attitude of hostility, which is now almost wholly unconscious. Toward the little brother also, the patient has an attitude of fear, though to a more moderate extent only. Some evidence of this hostility is seen in the phantasy of a bear chewing the body of a deer that has no teeth. The patient, at the time he narrated it, said that the bear resembled his own little brother, when the latter was an infant, without teeth. Secretly he envied the bravery and fearlessness of his little brother, and longed more than ever for the time when he would be big.

Another symptom was a jerking up and back of the head. In his phantasies the patient sees that the angry lion does this; a balky horse also does the same thing, the patient said. How well disguised a hostile wish can be rendered, and at the same time given expression, is shown in his day and night dreams, wherein a horse, drawing a wagon with a driver in it, becomes balky, runs away, upsets the wagon, and causes the injury and sometimes the death of the driver. The driver, on investigation, had characteristics which identified him with the father of the patient.

The fear which the patient felt for his father has still further determinants, and is portrayed in his phantasies in the form of a wish. In the phantasy, "Once I had a bad father. . . . He was a lion and I was an animal. . . .", the patient, before killing his father (the lion), grabs him by the tail, and swings him around until his tail is sore. The

tail is quite commonly used as a penis symbol. The patient had a great curiosity concerning the sexual organ of his father, which he saw on several occasions; also regarding his own, which to him appeared so much smaller than that of his father, a fact which aroused in the little fellow a great deal of envy. The patient also envied animals for their long tails, and frequently wished he had one, and on more than one occasion expressed a desire to possess one. He asked his father if men do not possess tails, for he had once seen in an art store what he described as a figure with four legs and a tail, and a human face. In answer to his query he was told, in a joking way, that men had tails, but that they lost them because they sat so much. There was brought out in this connection the question of masturbation. The patient was a masturbator, and had been detected in the act by his father, punished for it, and warned that continuing the practise would make his penis very sore, and that it might have to be cut off. This aroused a great fear in the boy, for handling his genitals gave him a great deal of pleasure, and the temptation to indulge was very strong. Fear of discovery, with the consequences involved, acted as a deterrent.

After a good many years' experience with children, both neurotic and normal, and also with adults of both classes, I am tempted to look upon masturbation in the child almost as a normal, physiological phenomenon, certainly if it is not excessive. This attitude is one that is coming to be generally accepted. In cases where masturbation is excessively indulged in, it is advisable to seek some cause for it, in some local condition, in the phantasy life of the child, or its associations with other children. Threats are not the best means of treating the condition, for very often, as in the case of our patient, they but add to his difficulties.

In the phantasy quoted in the preceding paragraph, the patient takes revenge on the father, and does something to the father with which the latter had threatened the boy; namely, the patient is making the tail of his father, his bad father, sore. This implies that the patient thinks that the father had done something which deserves punishment, namely, something with his penis. As a matter of fact the patient watched his father making love to his mother, an incident which always aroused in the boy envy and anger. He (the patient) always watched in secret, taking great pains not to be discovered, fearing punishment if he were discovered. He regarded this lovemaking as being not right; for on one occasion when he had yielded to the request of a little girl playmate to make love to her, to put his arms around her and to kiss her, he experienced, to his great surprise, pleasant sensations in the region of his genitals, and his penis became erect. The patient had begun to masturbate before this incident, and the incident led to repeated acts of masturbation. He came to the conclusion that his father forbade him doing that in which the latter himself indulged, for the patient reasoned that, as in his own case, so also with his father, the process of lovemaking was accompanied by sexual manifestations. As to the wrongness of the act were the facts that the patient was told

so by the parent, and the added observation that his father made love to his mother only on occasions when they thought themselves unobserved. For the patient, a very keen observer, had noticed that on one occasion when he accidentally came into the bedroom of his parents, and saw them in the act of making love, they at once ceased when they saw the boy.

In this rather brief and somewhat disconnected presentation, I hope that I have been able to demonstrate the causal relation between desires, wishes or impulses, some conscious, others unconscious, and the symptoms from which the patient suffered. Also that psychoneurotic symptoms are not isolated, unexplained phenomena, but that they are intimately connected with the emotional, repressed life of the individual, and are the compromise manifestation or outlet of a conflict between a desire, which for some reason or other the individual regards as wrong or prohibited, but which urges the individual to gratify it, and a counter impulse seeking to suppress the former impulse, or at least not to yield to the gratification of the wish as such. Neither of the strivings is successful, and as a result a symptom is created from the conflict. To those familiar with the analysis of psychoneurotic symptoms in the adult, the almost superficial, causal relationship between wish and symptom in the little patient is at once apparent. The same causal relationship is established in the adult neurotic only with the expenditure of much time and labor.

A summary at this point of the attitude of the patient toward his father may serve us as an introduction to the next part of the paper, namely, the very interesting and important subject of the transference (1 and 2) seen during a psychoanalytical treatment.

It will be recalled that as far as the patient consciously knew, as far as he consciously felt, his attitude was, in the main, friendly to his father. In reality the patient liked his father very much. Perhaps one finds it somewhat difficult to realize that the phantasies, which indicate such apparent hostility on the part of the patient toward his father, can take origin in the psyche of an individual who manifests at the same time an attitude of an opposite nature. Yet such an occurrence does as a matter of fact take place. The hostile nature of the contents of the phantasies is not evident to the patient, exactly as in the case of the phantasies of the adult. There is, however, some difference between the conception of the nature of a hostile wish, for example, in an adult and in a child. To a child, especially to one of six years of age or younger, as in the case of our patient, right or wrong does not carry with it any great sense of moral obligation or responsibility. As Freud has indicated regarding the concept death, to a child being dead presents itself as an absence, a going away, being on a journey. A child does not realize what death means in the sense that the adult does. We do not on that account look upon the child as bad, but view it rather that such a state of affairs is inherent in the nature of the process of development, through which a child must go in his growth into the adult state. So with our patient

the hostile, envious attitude is not recognized as such by him, and at times the patient gives expression to some of these wishes, as such. Nor is such an attitude at all incompatible with a feeling of genuine liking, love and respect on the part of the boy for his father.

Envy, jealousy, fear of his father; a desire to emulate him, to possess the privileges which the father enjoyed, yet which the boy feared the father prevented him from obtaining; an intense ambition to grow up, to be a man, and to be able to do what men are privileged to do; resentment against his father for telling him untruths about the origin of babies; resentment also that the parents indulged in such sexual things which he had been told were wrong, and for which he would be punished, if he were caught indulging in them; a strong desire to be rich, that he might buy things for his wife, and take her out, just as his father did; all these feelings and desires were such as the patient felt unable to fulfill, and in their summation constitute an attitude which the patient bore to all men who in any way or in all of these respects resembled his father.

The technical term transference has been given to this mechanism. Transference in this sense means the carrying over, in a wholly unconscious way, of an attitude which for instance our patient bore to people in his immediate environment, to such as stand (to the patient) in a situation which seems in some respects identical with previous ones; the patient then reacts to the latter individual or situation just as he did to the former, even though actual circumstances about the latter do not warrant such an attitude on the part of the patient.

It is more than likely, at least to an extent more moderate than in the present case, that the same mechanism holds good for most of us, and is responsible for the sudden formation of likes and dislikes, and also enters into the choosing of love objects, the formation of friendships, associates, etc. The positive phase of the transference, the opposite of that described in the text, is that which discloses the distinctly friendly, respectful, social elements in this phenomenon.

It will be seen that this attitude, if one is justified in combining so many wishes which enter into its composition into one attitude, has wishes and feelings which the patient seeks to hide and keep secret, for evident reasons. The patient does not under such circumstances take to the individual or situation in question, an attitude which on analysis proves to be friendly. The patient himself recognized the unfriendly nature of this attitude. Such a transference has been termed a negative one, because it contains such elements as of necessity bring about unfriendly attitudes and on analysis discloses wishes that are in essence hostile, unfriendly or prohibited. As such they constitute the asocial or antisocial part of the makeup of the psyche. This negative phase of the transference the patient manifested during the treatment, not as a hostility or unfriendliness, but in ways similar to those by means of which he gave evidence to his own father of the wishes that go to make up this phase of behavior or attitude toward his father.

Fear was an emotion, as I mentioned, very readily aroused in the patient. Owing to his mischievous ways while under treatment, and to long periods during which the patient could not be induced to talk, and also to the fact that I found more difficulty in bringing about a cure than I anticipated, I at times became irritated. Though I strove to hide my irritation, yet no doubt it manifested itself in some ways, and this anger on my part increased the patient's ordinarily great difficulty to talk to people. He showed it by increased silence; the reaction being the same as that produced when his father would in an angry voice demand that the patient tell something which the latter felt unable or unwilling to do. Such occasions would be when the boy had misbehaved, and when asked to explain, deep silence would be the answer. Even though afraid of punishment, yet the patient would do things which he knew would annoy people, and as he once told me, he would do so on purpose. For instance, at times when he found it difficult to talk to me, he would look cautiously at me from the corners of his eyes, at the same time toying with things in his jockets. He would then take out some objects, watching me the while. I suggested to the patient that he might be wanting to annoy me or that he wanted to know what I would say or do to him if I caught him. He assented readily, and said he frequently did such things at home to annoy or to tease his father. Especially would he do things like that in school, when his teacher would not grant some request he had made. In little ways he annoyed his teacher, as he said, to "make her do things my way." The following incident will illustrate the most constant attitude of the patient to his father, the factors underlying it, and the transfer of that attitude to me, the whole process being, however, unconscious in the patient in the sense that though he told me his thoughts or phantasies, their meaning was not evident to the patient.

During one session, after a prolonged silence, I said to the patient, "What is the matter today?" and he replied, "I dreamed I was a doctor in my office (indicating my office as the one to which he had reference). I saw many patients, the room was full of them, and I charged each one twenty-five dollars a visit, and I got tired of taking so much money. You had only a few patients, and you went up to my house and lived there, and did not have a big practice. You left your servants for me. I got married to my prettiest aunt." This dream needs no interpretation. The desire to be wealthy, according to his boyish conception, the envy, the desire to possess that which gives to an individual privileges which the patient covets, and to possess which he is not willing to wait till he reaches manhood, these are all nicely portrayed in the dream. He cannot wait until he grows up to marry, so he simply ousts me from what he considers an enviable situation, and occupies it himself, putting me at the same time into the unenviable position which he had previously occupied. He takes my practice and my servants, and gives me instead his home, and then he marries his prettiest aunt. It is interesting to note the exaggeration in the dream. For instance, there are very many pa-

tients present, he gets tired of taking so much money, he takes my servants (note the plural number), he marries his prettiest aunt. In this way the patient perhaps gives expression to the intensity of the wish.

The practical value of the recognition of the existence of the transference lies in the fact that on the nature of this transference depends the manner of reaction of an individual in relation to certain situations or people. Such situations or people will cause in a neurotic a reaction which in reality is not necessarily due to the situation at hand, but may be due in whole or in part to the fact that the individual is reacting as if the present were identical with a past situation, even though the latter may only in a very minor detail resemble the former.

The attitude of the patient to me, as indicated, was determined not only by what he saw in me or by the privileges with which he endowed me and which he sought for himself, but in the main because he believed that I was like his father, at least in that one respect, that I possessed wealth, which the patient coveted for what advantages it might have brought to him. He would then take an attitude toward me that he would to his father under the same circumstances. He would react to any other individual who in this respect was a father reproduction. The important consideration was that the reaction was determined by unconscious factors.

In connection with the history of the patient, the question of the inheritance of a neurotic constitution comes up. I believe that the importance of heredity as a factor in the transmission of functional nervous diseases occupies at present a less important position than in the past, and I hope to be able to point to some factors in the present case to bear out this view. Not that one may with much show of injustice attempt to apply in a general way deductions made from a single case. The deductions seem to me however to be generally applicable.

Freud has mentioned that the offspring of syphilitic parents are especially prone to psychoneurotic manifestations. The father of the patient under discussion is a syphilitic, and to that extent bears out Freud's observation. However, I doubt if Freud himself now gives so much weight to syphilis in a parent as a causative factor of neurosis in descendants. Neurosis, or a neurotic disposition in the parent, is a more direct causative factor, but not in the hereditary sense, as we are accustomed to use the word heredity. Direct transmission, in an environmental sense, is what I believe takes place, somewhat in the following way:

The father of the patient was himself neurotically inclined. As a boy, he told me that he resembled his son in many ways, especially in peculiarities which he considered a great detriment to himself and a source of disgrace. For instance, he as a boy was shy, timid, fidgety, and seclusive. These characteristics in his boy, as he saw them, were to him a source of humiliation, irritation, and anger. He sought to cure the boy of his timidity or fear by beating and shaming it out of him. No doubt the anger of the father at what he thought

were such defects in his son, was in part due to a projection of his attitude regarding qualities in which he unconsciously felt himself to be deficient. The anger directed against the boy was in reality meant for himself. The result as far as the boy was concerned was increased timidity, and a more ready response in the way of a fear reaction. In this way the treatment of, or rather the attitude of the father toward the patient regarding these fear provoking phenomena, serves in a measure to fix this emotional state, and make of it a constitutional element in the psyche of the patient.

There was another series of incidents that seemed to the patient to emphasize his weakness, in contrast to the strength of his little brother. These incidents also served to impress on the boy the fearlessness of the little brother and his own great fear in general. The father repeatedly, in the presence of both children, contrasted these states, to the great humiliation of the patient. The father told me on several occasions that the younger brother was his ideal of a son, for in addition to the above qualities, the little fellow was very affectionate and lovable. As far as I am able to judge, without being able to prove it, I feel that the father, whether he was aware of his attitude in the matter or not, showed unconsciously, but in ways unmistakable to the patient, that he preferred the younger to the older brother. The patient had felt already, at the time of the birth of his brother, his position as the only child in the family was now a thing of the past and that this change was to bring with it a state of affairs by no means as desirable as that which had existed previously. There was a feeling that he was not as well liked as he had been. The events which followed these first impressions seemed to impress on the patient that he had been correct. Moreover, the patient, from the attitude of his father to him, felt an increasing sense of inferiority and inefficiency. He felt that he was not liked and was not wanted.

This series of incidents enters into the causation of fear as a constitutional component of the patient's emotional life somewhat in the following way: Fear is an instinctive emotion and one employed in the preservation of the individual. It is present in all beings. Especially is it brought into use by the weak and defenseless, urging flight from the source of danger. Our patient had it impressed on him, at least so he felt, that he was weak and inefficient. Added to this was the feeling that he was not liked as well as formerly. Being liked or loved implies to the child that he obtains at least protection and the means of sustenance from the loving or loved person. The deprivation of these, especially in the case of one so young as our patient, gives rise to fear. Actual deprivation is not necessary. The possibility of its taking place is sufficient to arouse fear. Fear is a normal, physiological emotion. It is not the presence of it in the patient that is an evidence of a pathological condition. It is the fact of its being so readily aroused that is significant, and also that fear is aroused in a degree higher than that required by the occasion; also the fact that fear is aroused in situations in themselves not necessarily fear producing.

We are prone to ascribe to heredity things that are environmental causes in the production of the neurotic constitution, perhaps because so many of these influences are brought to bear on the individual at a very early age, an age in which we do not give sufficient consideration to the child's receptive and responsive capacity. In this connection I would like to make mention of some observations in the case of neurotic children and their parents. I have observed that those children in whom fear is a well developed factor in their makeup or in their neurotic manifestations, have as parents such as show an undue anxiety about things, and as a rule are unduly irritable and easily aroused to anger. This is significant in that infants even under the age of a year show facial and bodily changes indicating a fear reaction to evidences of feeling or to gestures on the part of the parents or those in the immediate environment. An irritable mother or father, perhaps in that irritable state owing to some untoward happening at the time, arouses in the child, instinctively, reactions to her or his attitude. Such occurrences repeatedly taking place may well help lay the foundation of a neurotic constitution, in so far as the fear reaction is concerned. This neurotic constitution predisposes to a psychoneurosis. The formation of this neurotic constitution taking place so early in the life of the individual, may well lead us astray in ascribing to it a hereditary origin, instead of an environmental one.

What are directly inherited as far as the emotions are concerned are the primary emotions that accompany the instincts. The neurotic constitution may perhaps be viewed as a secondary characteristic, and as such, generally recognized as an environmental attribute rather than a hereditary one. In this sense all individuals are to an extent neurotically inclined, or are at least potential neurotics, for all are born with instincts and their accompanying emotions. The early environment has much to do in deciding the manner of reaction of the individual to these emotions, and what enters into this decision one may view as factors forming a neurotic constitution, in case these factors tend in that direction. This seems to me a very important field, which will yield much information that can be used from a therapeutic point of view with much benefit.

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40 WEST EIGHTY-FOURTH STREET.

Studies in Bone Growth.—Fred H. Albee and Harold F. Morrison (*American Journal of the Medical Sciences*, January, 1920) were unable in any of their experimentations with rabbits to produce pseudoarthrosis by repeated massive exposure to the röntgen ray, by removal of bone, or by various degrees or splinting. Frequent massive exposures to the röntgen ray of fractures, with or without loss of bone, in no wise inhibited callus formation. Apparently the röntgen ray exerts no appreciable influence upon bone growth.

THE VENEREAL PROBLEMS IN THE NAVY.

By JOHN A. McGLINN, M. D.,
Philadelphia.

In the crisis just passed, men both physically and mentally fit were essential to the success of our arms. It mattered little how sufficient was material if personnel was not efficient. Man power; men alert, strong, capable of withstanding physical hardships, contented, with the spirit of sacrifice deeply engraved on their natures, were necessary to success. To the medical department of the Navy fell the task not only of caring for and curing the sick, but the greater task of keeping the men well. To care for the sick and to protect the well is at all times a difficult problem. In time of war the task is overwhelmingly greater, because when large numbers of men are brought together, epidemic diseases are enormously increased, and also because advanced preparations can never keep pace with enrollments.

Naturally, the department has been deeply interested in the control and cure of venereal diseases from a purely military viewpoint, if for no other reason, because next to infectious diseases of a non-venereal character venereal infection in the personnel does more to lessen military efficiency than any other one cause.

During the first year of the war venereal infections were responsible for 281,254 sick days, or 14.4 per cent. of the total sick days of the entire complement of the Navy; 21,786 men, or 8.9 per cent. of the personnel, were admitted during the year to the sick list as a result of venereal infection. Realize what this means. When every man was needed for the urgent and necessary duties of the service this immense number of men were incapacitated for a quarter of a million days by an absolutely preventable infection. Is it any wonder that the Navy by every means in its power, even to taking over the policing of cities both in this country and abroad, attempted to minimize the incidence of this scourge? There has been some criticism of the Navy for usurping the police powers of municipalities, but the ends sought justified the means. When this procedure was adopted the municipalities were either unable or unwilling to cope with the situation and give the men the proper protection. We were at war, the most just war that was ever waged, a war upon the decision of which hung the fate of mankind, and it was no time to consider the sensibilities of professional politicians. The war had to be won, and to win it we had to have men 100 per cent. efficient.

Figures for the second year of the war are not available at the present writing, but if the same proportion of cases existed as during the first year the figures are more startling. With the great increase in personnel there were lost to the service approximately 850,000 days. The men lost in pay, as the result of checkage, over a million and a quarter dollars; the Government spent in caring for the men affected at least two million dollars. The actual damage done figured as men lost to the service during the war amounted to 2,151. Vener-

eal infection was just as costly as if we had lost a battleship in action with its entire crew and a thousand men in addition. While these figures may be appalling, let it not be supposed that the Navy is a hotbed of gonorrhea and syphilis. On the contrary, conditions in the Navy are much better than in civil life. The surgeon general stated in his report: "The figures now obtainable for men examined for induction into the Navy under the provision of the selective draft act indicate most convincingly to all, what medical officers of the Army and Navy have long recognized, that the percentage of men in either service infected with venereal disease is lower, year after year, than the percentage of males of corresponding ages in civil life." It has been noted in a previous report that the percentage of applicants examined for reenlistment in the Navy and Marine Corps in former years who were rejected for genitourinary disease of venereal origin was very small, about 0.5 per cent., compared with more than 1.5 per cent. of men rejected for this cause upon application for first enlistment. Presented in this way, although the ratio is more than three to one in favor of the trained service man, the figures are not so striking as those obtained by computations based on the report of the provost marshal general on the first draft, whereby it appears that there were 445,000 syphilitics and 2,225,000 men infected with gonorrhea among registered men who were not called in the first draft.

All that has been accomplished in the control of venereal diseases in the Navy is the result of a well defined campaign which includes not only medical prophylaxis, but an extended moral and educational propaganda as well. The moral and educational phase of the campaign consists of systematic instruction and punishment. The regulations require that medical officers, afloat and ashore, shall give due warning to all persons in the naval service of the danger of acquiring venereal disease through illicit intercourse and of the serious consequences of such disease. In the instructions given on health and personal hygiene they are required to emphasize the sin of impurity and the necessity of pure living for the fullest enjoyment of health and happiness and for the best and most loyal service to the country. Placards are displayed in conspicuous places on board ship and at shore stations which set forth the evil consequences of venereal infections. Participation in athletic sports is encouraged even in war time, and while the prime object of this policy was to keep the men fit, and there probably was no thought of the prevention of venereal infection, to my mind it was as potent as any one other factor in lessening the incidence of infection.

Competition in athletics brings out the best in any boy. It makes him clean in mind as well as body. The desire to win is instinctive, and he soon learns that he cannot excel if he is not fit. Consequently, he will not do those things which will lessen his efficiency in any way. With few exceptions he is neither a smoker, drinker, nor fornicator, and best of all, the habits which he has formed in youth persist in adult life.

The prohibition of alcohol to men in uniform has

probably been the most potent factor in lessening the incidence of infection. There is no question that indulgence in alcohol influences a man's judgment. Many boys would leave the ships with no thought of sexual indulgence, and after taking a few drinks would lose all moral restraint and judgment and fall easy victims to preying harpies. It was a common experience in foreign stations where men could obtain drinks *ad libitum* for this to occur. These men would regretfully acknowledge their fall from virtue. Fine, clean cut boys, who would no more jump overboard than cohabit with common prostitutes when sober, were easy victims when intoxicated.

The Navy threw every protection possible about the men to keep them away from prostitutes and prostitutes away from them. In many of the large cities in this country the Navy took over in part the policing of restricted districts, and the same was true at foreign stations. In France, marines and sailors patrolled the restricted districts, and men in uniform were not allowed to enter these districts, and no man in uniform was allowed on the streets after nine o'clock at night unless he had a special pass from his commanding officer. These methods prevented a large number of infections, but there was a class of women whom they did not reach. I refer to the so-called snap or occasional prostitute. In a study of a large number of cases of venereal infection at the Naval Hospital, League Island, I found that about seventy-five per cent. of venereal infections were acquired from women of this class. In this connection too much praise cannot be given to the various organizations which provided clean and wholesome amusement for the men and enabled them to meet the kind of girls that they knew and associated with at home. It is to be expected that in spite of every safeguard men will become exposed to infection, and medical officers are enjoined to enforce early and appropriate treatment for venereal disease whenever discovered, as the result of periodical inspections of the crew or otherwise.

Men returning from liberty to ship or station have the right to report exposure to possible infection and request prophylactic treatment. While medical prophylactic treatment is to be applied early and efficiently in all cases where exposure is admitted, the line is drawn sharply between such treatment on board ship or within the naval station and the issue of preventives for individual use. Provisions have been made whereby no man in the Navy may be allowed to remain ignorant or misinformed as to the nature and proper care of each of the venereal diseases, and of the serious consequences which may follow infections, and it is against the policy of the service to do anything which would give a false sense of security to men and thereby aid or abet in any way a lapse from the high standard of morals set for the men. If in spite of instructions and entreaty men disregard the moral law and laws of health, the regulations state that the disease is contracted not in the line of duty but due to his own misconduct, and provide procedures that are in part punishments and which look to the safety of other members of the crew.

All men with venereal infections must be admitted to the sick list. Venereal patients are granted liberty only under exceptional circumstances, and they cannot be transferred from one station to another except in an emergency, when a full report of their condition must accompany them. Venereal patients are not allowed in landing parties and cannot be detailed in kitchens or as attendants upon other patients. Venereal patients have their pay checked while they are under treatment. However, the family allotments are not affected. Men whose pay is checked can be assigned to working parties under the direction of the medical officer in charge of the ward. Of course he sees the work assigned is of such a character that it would not endanger other members of the crew or have an injurious effect on the affected men.

It is not the purpose of this paper to discuss in detail the treatment of the various venereal diseases. I desire, however, to set forth briefly the scope of treatment. Every man who enters the Navy has issued to him when he enlists a health record which becomes a full history of his physical condition during his entire enlistment. No matter where the man goes his health record goes with him. In this way every medical officer under whose supervision the man may come has a complete record of the man's previous state of health. In the case of syphilis a special yellow sheet is inserted in the health record. This sheet sets forth the full history of his infection; it gives the dates and findings of his serological examinations, the dates and character of treatment instituted, and the progress of his case. The color of the sheet being distinctive the medical officers of a ship or station know at a glance that the holder of this particular health record is a syphilitic. Even though the man is apparently free from the infection, it is the duty of the medical officer to make repeated examinations of the man and to institute treatment if he shows at any time any evidence of having the disease. We do not believe that we can cure syphilis with a few doses of salvarsan and the purpose of the Navy is to treat the man thoroughly until he is cured, if possible, and not turn him loose on the community to become a menace. We have found that it takes a long and comprehensive course of treatment to free an individual from syphilis. I am afraid that this fact is not fully appreciated in civil practice and too many men are given a clean bill of health on one or two negative Wassermann reactions after a course of salvarsan or other allied drugs.

In the cases of gonorrhea no man is considered cured as long as he shows the least trace of the disease. As stated before, men with active venereal infection are not allowed liberty. This regulation is not designed so much as a punishment as it is for the protection of the civil community. It should be stated emphatically that the vast majority of the men of the Navy and Marine Corps are as fine a body of men as it would be possible to find. In the first part of my paper I stated that 8.9 per cent. of the men became victims of venereal infection, but this means that ninety-one per cent. of the boys went straight. That is a record that cannot

be equalled in any other walk of life, and to me is an irrefutable argument for compulsory military training for our boys.

In studying venereal disease in the Navy one is struck with the fact that the majority of the men infected are of a different breed from the majority of their fellows. They are the men who are repeatedly reported for infractions of discipline; they fail to advance in the service; they are not the spic and span individual who types the service; the venereal wards do not reflect the same general clean atmosphere of the rest of the hospital; in other words, they are the men who, as a rule, have been born in and developed in an unhealthy moral and physical atmosphere. No campaign which fails to recognize proper housing and environmental conditions can succeed in the control of venereal infections.

The Navy is not satisfied with the wonderful record which it has made in its own domain, but purposes to put its resources to the aid of the civil authorities in helping to stamp out or at least curtail, as far as possible, the incidence of venereal infection. Together with the Army and Public Health Service under the act of Congress creating the Interdepartmental Social Hygiene Board and a division of venereal diseases, it purposes to spend \$41,000,000 in aiding the various states in their fight on venereal diseases. With the cooperation of all the states and the various medical and lay organizations interested in public health fighting these diseases, we can confidently look for a great improvement in the next few years. Legislation looking to the control or the elimination of prostitution will help some, but it will be a mistake to depend too much on that phase of the problem alone. Common prostitution is after all only a minor source of propagation of infection. It is too much to expect that sexual desire is going to be eliminated or that men and women are not going to satisfy their desires. Men with active venereal infections are just as much of a menace as are the women and they need to be controlled equally with them; it is not just or good sense to place the whole burden of guilt on women.

Education will prove the most potent factor in controlling this scourge. No one who has reached the proper age should be left in doubt as to the nature and consequence of venereal infection and the dangers of illicit intercourse. I venture the opinion that fools are in the minority and the majority of mankind will not knowingly expose themselves to dangers, the dire consequences of which are fully appreciated by them.

Zinc Oxide in Diarrhea.—G. Durand and Dejust (*Presse médicale*, January 21, 1920) state that zinc oxide acts better than the astringent agents generally prescribed in acute diarrhea. Its effect is rapid and progressive, and is due to its precipitant action on mucin and serum albumin. It also possesses antispasmodic properties. Its beneficial effects are likewise exerted in mucous colitis. It acts well in combination with opium, in cases in which the latter is indicated owing to pain.

GROUP STUDY FROM THE VIEWPOINT OF THE INTERNIST.*

BY ORRIN S. WIGHTMAN, M.D.,
New York.

Before taking up the subject of group study from the viewpoint of the internist, let us first consider the definition of group practice. It may be designated as a careful and intensive study of the same patient by a number of qualified specialists who, under favorable surroundings, render combined expert opinion. The intent of this opinion is to get a correct and scientific picture of the patient's symptoms and to discover such abnormalities as may be present. Inasmuch as the Medical Society of the County of New York is not only interested in the scientific study of medicine, but has also a keen interest in its economic-phases, I think it wise to consider group practice from a number of angles.

First, from the viewpoint of the specialist. I am assuming now that this system is feasible and that under group practice the specialist would be favorably located where he could see a large number of cases daily and where he would be part of a working system which kept careful and scientific data relative to the patient. This would naturally involve properly made out blanks and literature for permanent filing. The specialist in the course of time sees so many cases presenting similar symptoms that they become routine, and unless he strikes a case which is abnormal, his interest is likely to wane. If the ailment from which the patient suffers is unusual, his observations may be of great value; if, on the other hand, the abnormality is slight, he is still compelled to make notes of the same upon his report, which to a nervous individual may be a source of worry. I think we are all agreed that monotony dulls the edge of one's enthusiasm. A constant repetition of the same thing tends to make the average person careless, he loses interest, and his work assumes the character of dispensary practice. When he thus takes on the drudgery of the dispensary and remains long enough at it to lose his enthusiasm, he begins to go down hill. On the other hand, could the members of any group system assemble in general consultation after the day's work, taking their cases seriatim, going through them with the greatest care and having their results properly tabulated and outlined for the direction of the individual case, great good might result.

The general practitioner of the present day who is abreast of the times has already developed his own system of group study; he has a man to look after his surgery, his gynecology, his nose and throat work, and so on. He refers his cases to these men promptly and as often as necessary. The general practitioner is the clearing house, where patients coming for advice and medical counsel receive careful consideration. He is in the best position to know the peculiarities of his patients, how to save them from shock, and from the unnecessary annoyance of disagreeable facts, which under his guidance can be tactfully told, and the patient pre-

pared accordingly. He is the man in whom his patients believe, and his counsel is necessary for things which are not pathological but have a distinct bearing on the patient's health and well being. After he has made a careful study of his patient he immediately sends him where he can secure the needed advice, instead of having him pass through a long and trying series of examinations which must be a part of the group system if it is to be carried out in its complete form. Many of the abnormalities which a general practitioner finds never give rise to symptoms, and the patient is better off in ignorance of them. Occasionally the unexpected is observed, but the proportion of cases in which this happens does not warrant the extra expenditure on the part of the patient. I am assuming, of course, that the specialist who gives his time to this work has spent years in preparation and is thoroughly competent as an expert to pass upon the conditions under consideration.

When we consider the subject from the patient's point of view, we find that the results of the examinations of men who applied for service in both Army and Navy, and the statistics of life insurance companies, show that the absolutely normal individual is practically unknown. Sometimes valuable information is secured, although minor ailments, as interpreted by the specialist, occasionally give rise to unnecessary alarm. We must remember that the average sick person gets well without medical service, and that many of the smaller ills never prove a source of annoyance. If a physician is compelled to examine a large number of patients, the time allowed to the individual is necessarily limited. The patient passing from one physician to another becomes confused, both as to his ailments and what he is expected to do in the line of treatment. We must realize that patients are human beings who come to us sick and unable to help themselves; they need the clear vision of a disinterested person who can average up their physical woes and guide them accordingly. There must be one man in charge, one man to advise, otherwise the multiplicity of opinions will nullify the good that is supposed to accrue to the patient.

Looking at it commercially, if group study is to be seriously considered from an economic viewpoint, it follows as a matter of course that the individual fee to each specialist must be considerably below what he is in the habit of receiving, or else group study loses its economic value. Reduced to its final dimensions, to work most successfully it must mean large business with small profits.

Inasmuch as people have always resented being treated as a commodity, will they take kindly to any system which gives them limited attention, no matter how expert that attention may be? Will the physician lose interest when his case becomes institutional instead of individual; when his patients are reduced to case numbers instead of names? There is another phase which might be a temptation to many physicians, namely, to feed the clinic instead of curing the patient. It is questionable whether any good man can give his full interest and enthusiasm to a case for a minimum fee. We find that lawyers are paid large fees in proportion

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to the importance of the task, the weight of their opinion, and the questions involved. Corporations have been formed, backed by employers of labor who would be very glad to live within the law, viewing the care of their sick from no angle but the commercial, and willing to sacrifice the long suffering physician to cover the legal requisite.

Corporate medicine, which is an extension of the group system, has found its way into public life, but up to the present, aside from the few well known names which are kept for advertising purposes, the rank and file of these medical bodies are composed of young men who are recent graduates with no way of getting started, and are glad to obtain experience, with a reasonable stipend, and to hold these positions just long enough to be able to build up a practice. They frequently pass as experts. The reputation and advertising ability of the institutions they represent is their chief asset in the way of reputation. The paraphernalia and standing are always in keeping with the institution's advertising ability. This type of practice may well suit insurance companies and people who have to guarantee the health of their employees, but can hardly meet the requirements of the people as a whole.

Group medicine is an excellent way to commercialize a dignified profession, when it is linked with the advertiser's art. That it can be and is made noncommercial is proved by the usual procedure of every general practitioner in having his own series of men with whom he correlates in a perfectly satisfactory way both to himself and to his patients under the present order of things.

The attitude of the State toward group medicine is entirely economic, legislators having welcomed anything which would take care of the sick, irrespective of fundamental facts: "Keep the people well at so much per capita," has been the slogan for a number of years. The intelligent physician does not require that the State law shall tell him when he has reached the limit of his skill. As a natural evolution physicians in various parts of the country have worked out centres of international reputation where an intensive study and diagnosis may be made. No one now need recommend the Mayo clinic; Johns Hopkins has well earned its place in the profession, but these centres have endeavored to lead the way in medical thought and are not meant, with their elaborate methods, to meet the physician's daily needs. They are schools of study and experiment, the results of which are gladly given to the profession.

Finally, do the people want group studies? Time alone will solve this. I do not agree with those who believe that if the profession does not recognize this need, the State will. In times gone by religion at the point of the bayonet was never a success. The prospective student in medicine of today should know now whether it is wise to devote years of preparation to a profession which is purely economic. Capital demands a reasonable return on its money; labor, both skilled and unskilled, confiscates business so that there will be no doubt about it. The physician alone carries his pail, hoping and praying that he will secure from his fellow man a few residual drops of the milk of human

kindness, and that the benevolent association or his life insurance will be sufficient to bury him respectfully.

Group practice, except in closely populated districts, cannot meet the need of the people. People will not be handled like a commodity, they demand to be treated like individuals; they want the physician's undivided attention, they want his counsel, they want to feel that somebody really cares whether they are sick or well, they want somebody with the human touch, who can feel with them, sympathize with and help them, and they rightly feel that they are insulted when their ailments are handled like machinery. When one loses the family physician who has brought him into the world, has advised, counselled, controlled and censored him, he has lost a friend whose value cannot be replaced by any state law or legislation.

3 WEST EIGHTY-FIRST STREET.

STAMMERING.

BY ERNEST TOMPKINS, M. E.,
Pasadena, Cal.

Doctor Kenyon's (1) candidate's thesis deserves attention not only on account of the import of the discussion but also on account of the standing of its author, who seems to be the logical candidate for Doctor Makuen's mantle as dean of the American medical authorities on speech defects. This review is a constructive criticism. That such criticism is desirable will be evident to the careful reader of the thesis, who will find some apparent contradictions which if not reconciled will unavoidably mar its value. The method followed will be, a, to outline Doctor Kenyon's argument; b, to show the contradictions; c, to reconcile the contradictions.

In the consideration of the argument we will be helped by the objectively good definition of stammering which Kenyon gives "... stammering as a technical term applied to the definite physiological disturbance designated by that name, has no application excepting when peripheral muscular action undergoes perversion. In other words, in stammering a peripheral attempt is made and this attempt is perverted by distorted muscular action." This definition properly disposes of such misleading terms as Bluemel's mental stammering. Since stammering necessitates peripheral action, and since central organs do not include peripheral organs, there can be no stammering in the central organs. Mental confusion, or any other mental state or action, is positively not stammering. It is well to remember, however, that a stammerer may avoid the facial distortion provided he declines to try to talk when the fear possesses him. Although he has all the inclination to stammer, he can by writing or by signs or by substitution of a synonym or by silence avoid the indulgence of the inclination.

One discrepancy—possibly not contradiction—can probably be eliminated before we take up the argument, for in reality it is eliminated by the argument. That is the contention that stammering

is a developmental disorder. Doctor Kenyon's own words are, "For stammering, in the author's view, is to be classified frankly side by side with the articulative disorders, as another, albeit quite different, manner of upset in Nature's well laid plan for normal speech development." It is true that most stammering begins shortly after speech acquisition; but that it is a developmental disorder is negated by many facts, among which may be mentioned the fact that it is intermittent and not constant, as are lisping and other developmental speech disorders; by the fact that some stammering is acquired in mature life; and by the fact that certainly much of it, if not most of it, is due to accidental or incidental causes, and not developmental causes.

Doctor Kenyon's argument is based on two fundamental propositions, the first of which is that stammering practically always arises from a social emotion, to use his term; and the second of which is that everyone at times experiences the same social emotion; and the unavoidable conclusion is that the stammerer must be different from other people, and that difference is pronounced to be a susceptibility. Let Doctor Kenyon state these points in his own words. Regarding social emotion he says, "Under different circumstances we call it shyness, embarrassment, or stage fright." Regarding the alleged identity of all social emotion he says, "First, let it be understood that the perturbed state of mind in the stammerer is identical to the minutest detail to that of the social emotion of the nonstammerer. In other words, when the stammerer stammers his state of mind is identical with that of the nonstammerer who is experiencing emotional disturbance described as social emotion." Now comes the conclusion. "Stammering, then, is a peculiar susceptibility to spasmodic disturbance of the peripheral musculature of speech, manifested under certain causes which arouse this susceptibility into activity."

Considering now the apparent contradictions, we find the most glaring one to be, ". . . any theory as to the cause of stammering based on the conception of a fundamental weakness in the peripheral musculature is certainly, 1, on unsafe ground, and 2, is at best a partial explanation." Note that Kenyon asserts "a peculiar . . . susceptibility of the peripheral musculature . . ." and practically denies "a fundamental weakness in the peripheral musculature." So, according to his own words, if susceptibility is the same as weakness, he denies his own deduction in regard to stammering; and if that deduction stands at all, it stands only to the extent to which susceptibility is not weakness. The *Century Dictionary* and *Webster* do not define pathological susceptibility; but *Gould* says, ". . . liable to become affected with a disease," and the *Standard* says, "A lack of resistance to pathogenic infection." Lack of resistance certainly comes close to weakness, if it is not equivalent to it. Moreover, careful observers—Fletcher and Kenyon, for instance—have somewhat recently gone on record to the effect that the stammerer, except for his defective speech, is not different from other people.

Kenyon (2) says, ". . . excepting for the effect on character resulting from the stammering, the stammerer does not differ from other people." This is an insurmountable bar to the susceptibility, which is set up as a cause and not an effect. But the very foundation of the susceptibility is practically removed, and removed by its author. He says, "The more fundamental problem, that relating to the origination of the susceptibility of stammering, is made very difficult because opportunity to study the very beginnings of this disturbance of the speech are scarce, and these opportunities are also not of sufficient closeness and duration for the solution of so difficult a problem." Still more than this, no attempt was made to prove susceptibility. We were given a strongly drawn picture of the complexity and delicacy of the speech processes and a good picture of the social emotion, and even before susceptibility was alleged we anticipated that the strong emotion might disturb the delicate speech processes. But that is not scientific procedure: there is a swiftness about it which is out of place in serious discussions. Without anything further in this line, it will probably be agreed that some reconstruction is in order.

To reconcile these discrepancies and contradictions we need to turn to the social emotion. Speaking broadly, Kenyon is right when he pronounces it the same for both stammerer and nonstammerer, because for both it is fear—fear of our associations. We are not so far removed from barbarous times that we do not still shake hands to convince each other that we are unarmed; and even when the fear of bodily injury is allayed we generally count on the mental injury which comes from criticism or slight. But when Doctor Kenyon says, ". . . the perturbed state of mind in the stammerer is identical to the minutest detail to that of the social emotion of the nonstammerer," he is far wrong; and from that mistake follows the susceptibility, which is also a mistake. What is the state of mind of the stammerer? Scripture says, "If the question is asked of a patient in the fright stage, 'Why do you stutter?' he will answer, 'Because I am afraid I will stutter.'" (Note, Scripture calls stammering stuttering.) Fletcher says, in a discussion of this subject, "Makuen, for example, says that 'many persons stammer under certain conditions, largely because they think they will. All their past experiences with speech have combined to confirm in them the thought and it soon becomes a sort of fixed idea.'" In short, the stammerer fears the humiliation which society visits on abortive speech. He expresses his fear as fear of stammering; but what he really fears are laughs, stares, pointings, mockery, and all the other hatefulness which every stammerer knows and which many would almost—some do—die to avoid. Now this perturbed state of mind is the exclusive, although undesirable, possession of the stammering class. The others do not have it. If they did they would be stammerers.

Since susceptibility to stammering, inherited or acquired, is constantly reappearing—it is not original with Doctor Kenyon—and since it should not be resurrected, let us show how dead it ought to

be. We have already shown how Kenyon, immediately after supporting it, fails even to attempt to prove it, admits that its origin is without foundation, practically denies it on the page following the assertion of it, and had previously made a sound declaration which totally bars it. Then we have shown that one premise used in the deduction of susceptibility must be amended, and that the amendment does away with any need of susceptibility. Possibly that point was not made sufficiently clear. Doctor Kenyon asserted that the emotions of both the stammerer and the nonstammerer were alike, in which case some difference in the two classes was necessary, because they react differently to the same emotion. But now it has been shown that their emotions are different, therefore no difference in the two classes is necessary. Moreover, the peculiarity of the stammerer's emotion—the fear of stammering—induces him to make the misdirected efforts which constitute the stammering. He fears speech difficulty and in his strenuous efforts to avoid the difficulty he blocks his normal speech and makes the difficulty. Do not blame him for not seeing that he is making his own difficulty, for very few of the authorities can see it, in spite of repeated explanations. In short, there is no susceptibility.

Since there is no susceptibility to stammering there can be no origin of such susceptibility, and, as we have shown, Doctor Kenyon admits that the evidence of an origin is too obscure to admit of a solution; but in spite of this he attempts to give origins, and of necessity they are fallacious. One alleged possible origin is Doctor Guttmann's neurosis view, which is, of course, a weakness view; and since Doctor Kenyon himself has already disputed that, there is no need of our disputing it further. Another alleged possible origin is the Doctor Bluemel amnesia view, the phoenix of stammering discussion in America, constantly reappearing after every demise, a wonderful example of the persistence of error due to mistaken regard for authority and for a book, instead of regard for the merit of what the authority or the book says. The amnesia view (3) has been refuted so often that it would be superfluous to refute it here. Another alleged possible origin of susceptibility is Doctor Swift's asthenia view. Fletcher classes this with the Bluemel theory, remarking of them, "The theories criticized seem on their face to be so palpably wrong that a lengthy investigation into their merits seems unnecessary." However, those who desire to investigate are referred to Fletcher's discussion (4). Two other alleged possible causes of susceptibility are confusion and general cerebral upset, but the former is no more than the already alleged stage fright and can not be valid, because everyone would stammer in that case; and the latter would be a weakness, which Doctor Kenyon himself has barred. Among the alleged possible origins of susceptibility are given two valid inducing causes of stammering, namely, the childhood habit of repeating words, and nervous shock (5).

A review of the discussion to this point shows that both the alleged susceptibility and the alleged origins thereof pass out. What remains is habit,

and the nature of the habit. The impression conveyed by Doctor Kenyon's discussion is one of a selfintensifying habit, due to a susceptibility induced by various possible causes; but by his own words, largely, both the causes and the susceptibility are wiped out. The selfintensifying habit is all that remains; and it is that which should be reserved and advanced, for in that is the merit of the thesis.

Doctor Kenyon says, "Mr. Ernest Tompkins, (5) in 1916, published a monograph in which he offers as the explanation of stammering the substitution by the child of a wrongly directed conscious effort to produce speech, in place of the normal subconscious effort," and he adds in a footnote, "Mr. Tompkins was the first, so far as I know, to express in print the idea that stammering might be incited by voluntary effort." My persistent advocacy of the speech interference theory of stammering has undoubtedly given Doctor Kenyon—and may give others—the idea that I am the undivided author of it. But I must give the credit for the best tenable description of stammering, as I have already frequently given it, to the person to whom I believe it belongs, namely, Dr. Albert Liebmann (6), of Berlin, Germany. He says of the stammerer, "If he has to speak, he becomes excited and makes voluntary efforts intended to bring out the difficult sound, but which actually obstruct it." I do not find that Doctor Liebmann proved this view nor that he derived from it all the momentous consequences; but he has backed it up by a consistent rational practice and has resolutely adhered to that practice in spite of the competition of those practices which depend on a temporary improvement and are ultimately injurious. Before I even knew there was a Doctor Liebmann, I had defined stammering as a conscious effort at speech, but his distinction between voluntary speech and automatic speech enabled me to fully develop my views on the origin of stammering; the principle of recovery, both spontaneous and otherwise; the nonimmunity of the female; an efficient treatment; the injuriousness of the conventional exercises; the means of extirpation; and so on. Most of these views are outlined in the monograph to which Doctor Kenyon refers.

A word here about Doctor Liebmann. If he should die before he gets adequate recognition for this great discovery of his, then he will suffer one of the greatest injustices, and the discredit for it will be an indelible stain on the medical profession. How can the profession expect the support of the public, how can it overcome the competition of superstitious medical cults, how can it pretend to be scientific, when it ignores its own real scientists and buries their work under a perennial crop of wild guesses and illogical discussions? It is an uncontrovertible fact that the speech defects branch of the medical profession, in all its various ramifications of power and influence—excepting the medical press, which has shown pleasing liberality—is a stumbling block in the path of progress, keeping the stammerers from the relief for which they agonizingly pray and keeping the greatest figure in its ranks from the credit which he has earned.

Doctor Kenyon criticizes my presentation of the speech interference theory in the following words, "To offer this conscious misdirected effort as an explanation of stammering, without explanation of the more difficult and subtle psychological and physical phases of the disorder that must underlie and complicate such conscious effort, seems but to state a fact (if it is a fact) connected with the disorder without explaining that fact or explaining the disorder." But what is a scientific deduction but a simple statement of fact, the simpler the better? The populace, of course, think that what they cannot understand is scientific, but is that the belief of modern scientists? Karl Pearson (7) is certainly an authority, and he says, "Step by step men of science are coming to recognize . . . that all science is description and not explanation." Why do we at one time describe a phenomenon as mysterious and subsequently as simple? Because at the one time we do not understand it and at the other time we do. So, the characteristic of being mysterious or simple is not a characteristic of the phenomenon but of our conception of it. Consequently, when we describe it as difficult and subtle and complicated, we are really saying that we do not understand it. An adequate description of stammering is very simple—note Doctor Liebmann's description just given. But he did not describe the origin of the emotion. I did describe it in my monograph. The origin by repetition of words has already been referred to. On page 157 is described the origin by some other causes, "When the child is recovering from fright or illness, control of the will returns before control of the speech organs, and the child, noticing its deficiency, makes a conscious effort to speak; but this effort, being misdirected, is a stammer, so the child believes it cannot talk properly. Once this false belief is instilled in the child, it will stammer; for it will make the conscious effort to overcome the difficulty." Doctor Kenyon must have overlooked this passage, or must have been controlled by his view that the emotion precedes the stammering. But how can that be the case when the emotion is the fear of the result of stammering, the fear of humiliation? He himself has made a notable contribution to the subject in his statement that he "believes . . . the stammering finds its inciting cause in the social emotion present, and the social emotion is also much augmented by the embarrassment resulting from the peripheral phenomena (2). In that he describes the development of the emotion, and I had previously and repeatedly described the origin of stammering by accidental or incidental means. Since we have the origin of the emotion and its means of augmentation, what more is needed?

Kenyon makes so many remarks on the subject of the obstructive voluntary efforts and their habituation that a review of them all would be tedious. Many of them need to be pruned of the erroneous views which have already been disposed of; but when they are so pruned they stand as ample verification of the speech interference theory. He says, "Adult stammerers sometimes declare that it seems to them that they hold their own throats and prevent their own speech." The truth is that all stam-

merers obstruct their speech in some way, not necessarily by holding their throats, but by holding the mouth open or shut, holding the breath, expelling the breath, pressing the tongue against the upper teeth or the palate. Not all of them testify to this, because they do not realize it; but it is evident to a careful observer. Doctor Kenyon says, "What may at its incitation have been at least partly voluntary becomes through involvement in these serious developmental habit processes, chiefly, if not entirely involuntary." This needs considerable pruning. The qualification may be eliminated, because the evidence on the subject is too strong to admit of doubt. The original effort is voluntary. The involuntary must be eliminated, also; for stammering never becomes involuntary. How do we know it? By numerous facts, but we may mention one which ought to be convincing. What is the first instruction which a stammerer gets at a stammering school? "Cut out your stammering, drop it, quit it." And the instruction is followed, at least when the professor, doctor, principal, or what-not is around. Would that instruction be given if it could not be carried out, or would it be carried out if it were not possible to do so? Certainly not. When Doctor Kenyon states that the effort becomes involuntary, he is letting his theory get the best of his experience, for there are few features of stammering more patent than the ability to desist from the effort. The emotion, of course, is no more controllable than any other fright. He substantially admits the voluntary nature of the effort, for in the next sentence he says, "All this constitutes one side of the terrible habit feature of stammering." But habits are voluntary, and since this is a habit feature, it can not be involuntary. The succeeding remarks regarding the other side of the habit feature are good, and need no pruning. "But on the emotional side a still more terrible developmental habit process goes on. Once the beginning stammerer becomes cognizant even to a partial and childish degree of the terrible predicament into which his disturbed speech has precipitated him, the attacks of social emotion are bound to become progressively more and more easily produced and more and more intense." Yes. And our public schools, at the instigation of a small group of individuals who profit from the existence of stammering, continue the oral work for stammerers, thereby forcing them into this terrible habit and the resulting lives of misery, 300,000 of them at a time, and new ones coming as the confirmed ones leave.

When Kenyon comes to apply his theory as he formulated it, he, of course, gets into obvious difficulties. The cases originating after the period of speech development bother him, because they can not well be made a developmental disorder. The difficulty increases with adult cases, for they are obviously not developmental. The failure of the theory to cover these cases, of course, militates against the theory, and that alone would have been sufficiently fatal if Doctor Kenyon had not judged one of these cases to be hysteria. This theory runs a parallel with the Bluemel theory, although it does not run so far. The Bluemel theory started out to be one thing, but in the attempts to make it in-

clude all the phenomena involved, it had to be revised and revised until it turned out to be about six different things, and even then it failed to cover half the field in the author's own opinion—in reality it covered none of it. No, stammering is not a susceptibility, nor is it hysteria—it is a complex habit of a most tenacious nature.

In the further application of the original theory, the manifestations of stammering, fluency in singing and whispering, and the apparent exemption of the female sex, are squared with the theory. Corresponding logic is used in both, and the latter, being the simpler case to consider, will probably suffice for an example. Doctor Kenyon says, "The boy is expected to be brave and manly, because he is a boy; the girl is expected to be fearful and effeminate, because she is a girl. Therefore, one may presume that the embarrassments of social emotion react upon the boy nature more profoundly than upon the girl." No, just the reverse. The girl, being the more fearful, would be expected to stammer more, which is contrary to the facts. The argument which Kenyon gives is not original with him. It is one of the most familiar arguments that stammering is nervousness, and girls, being more nervous than boys, stammer less. And the interesting part of it is that the argument generally convinces the reader, such is the hypnotism of authority. However, this is not much against Doctor Kenyon. Some other fellow invented the argument; and Doctor Kenyon after giving it felt something to be wrong with it, for he added, "In short, only an insight profound enough to analyze intimately the different sex psychology can explain the relative exemption of girls, as compared with boys, from stammering"; and since Doctor Kenyon abandons the argument, we may also. In passing we may remark that this apparent exemption of the girls is the rock on which all theories of stammering, except the speech interference theory, have made shipwreck. You may see these theories, carefully guided by their respective skippers, sailing along so smoothly and beautifully in the clear courses which those skippers select for the try outs, but never has a structural theory, an organic theory, a lack theory of any kind, ever been able to pass this apparent immunity of the girls. The fact is that there is no immunity. Little girls contract stammering as much as little boys do, but the greater consideration which they receive and the greater opportunities for spontaneous speech which they have, enable them to recover to a considerable extent. The real explanations of the stammerer's fluency in singing, of the divergence of the sex ratio from unity, and many other characteristics of stammering will be found in the monograph to which Doctor Kenyon refers.

Doctor Kenyon's summary is so true and so altruistic that like much other altruistic truth it is a disappointment to hard working and sorely tried physicians whose living depends on the existence of human affliction. A portentous fact, and one far more general than stammering, should be faced in this connection. Since stammering is a self intensifier—which, also, is an indication of its habit nature—and since it is most tenacious, it should be

stopped before its inception or as quickly as possible after its inception; and that does not seem very promising for the physician. But what is more, many other ailments are to be stopped similarly; and the present world upset is hastening that change. Therefore, some change is necessary in the means of compensating the physician, and that change should be developed, for prevention and early correction of all disorders subject thereto is surely on the way.

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610 N. EL MOLINO AVENUE.

THE UNITY OF ACTION OF NERVES, CIRCULATION, AND RESPIRATION.

By P. A. KANE, M. D.,
Chicago.

The heart and lungs normally work in unison at the ratio of one to four. Every time I perform a full respiration my heart beats four times; twice during the inspiration, once during expiration, and once while at rest. This ratio holds true under all circumstances—normal and pathological—with a few exceptions, the most common of which would be in diseases of the lungs and heart.

Any disease of the heart that would weaken its muscle force would lessen its muscular contraction, and so lessen the amount of blood thrown into the lungs and systemic circulation. The heart would try to overcome this fault by increasing the frequency of its beat—but now two feeble beats only handle the same amount of blood as one normal vigorous contraction and there is no increased pressure on the lungs; thus, frequency of breathing would not have to be increased. In valvular diseases of the heart where there is regurgitation, where the blood flows back into the heart after each beat, two or more heart beats handle less blood than one formerly did. In this condition breathing would not have to increase in frequency.

In pulmonary diseases, such as tuberculosis, where a part of both lungs, or perhaps one whole lung is destroyed, the thoracic pressure would decrease upon inspiration, and hence, less blood being forced toward the left auricle, would cause increased frequency of respiration. There is one other common general condition—the attempt to stop breathing, or the slowing of that function on account of pain in the abdominal or thoracic cavities.

In the study of materia medica and therapeutics, the following is a typical narration relating to the action of drugs on the human body: On central nervous system.—The cerebrum after small doses is

stimulated, and later there is a depression of the central nervous system. On circulation.—Small amounts quicken the pulse and raise blood pressure and later the heart action is slower. On respiration.—At first it is stimulated and later becomes normal or slowed down.

The conditions described above hold in every case of drug action. Any drug that stimulates the cerebral centres by its tonic effect will increase nervous exhilaration, which increases the number of heart beats and necessarily forces the acceleration of respiration. The increased flow of blood to the lungs forces their increased action. There may be a few exceptions to this rule, but that only proves what I say to be true. Anything that exhilarates nervous force increases the number of heart beats, with a consequent increase of respiration. If one has been unable to obtain food say for from twelve to twenty-four hours, and then comes to some place where food is obtainable, the thought of the consummation of relieving the hunger increases the nervous tension with an increased pulsation and respiration. The thought of gratifying any pleasurable desire has this same effect. On the other hand, any drug that depresses the nervous system slows the number of heart beats and also respiration. Potassium bromide depresses the nervous system with a resultant slowing of the heart and breathing. Opium does likewise, and in its terminal stage of poisoning the heart beat is reduced to sixteen times a minute and respirations to correspond to that rate are only four to the minute.

Every illness that increases the number of heart beats also accelerates respiration. There are, I believe, two great exceptions to this rule. Any disease of the heart itself that weakens the heart muscle would lessen its force of contraction; hence, to perform its proper function, it would be forced to accelerate its contractions. Any disease of the heart with regurgitation would put more work upon the heart and increase its number of beats, but the lungs being unaffected would not necessarily have to increase their pumping power. Any disease of the lungs that reduces their size or power would increase the number of respirations in order to care for the blood pumped into it by a normal heart. Physicians tell us about patients struggling for air, or gasping for breath, and state that this is done for the sake of obtaining oxygen in the blood. This, I positively assert, is not true. Oxygen is necessary for the body and must be obtained through the respiratory passages. When patients gasp for breath they are chiefly making efforts to obtain the power of air, fifteen pounds to the square inch. They are struggling to get the pumping power of the lungs. The heart is propelling blood out of the right ventricle into the lungs. This blood cannot get into the left ventricle—which equalizes pressure on both sides—without pumping power of air through the lungs, which squeezes the blood out of the lung capillaries into the left auricle and ventricle. Let us take a case to elucidate my meaning: Professional runners while at the post making ready to run are exalted, nervous tension is increased, and increased frequency of heart beat and respiration must follow. They start running and soon

feel an increased weight on the heart and then the mouth is wide open, breathing is fast and strained. This breathing is done to relieve the weight of blood around the heart, and the action is physiological. What takes place in the human body to cause an increase in the number of heart beats and respiration while running?

If I take anything compressible in my hand, say the teat of a cow, then by closing my hand (muscular action) I squeeze that object and all the loose liquid would be forced out. The milk shoots out in a large stream and the lymph would follow, but the skin keeps it in place. Professional runners harden all the muscles of the body, especially of the legs. At each step the ankle, the knee, and hip are flexed and contracted. This muscular action shoots the blood in streams out of the soft veins of the legs up into the abdominal vessels, lessens blood pressure on the arterioles, and forces blood through the arteries of the legs into the arterioles. This as a natural sequence increases blood pressure on the right side of the heart and lessens it on that of the left, but nature made no direct interchange of reciprocity between them. She placed the lungs as a great large valve between, and then made ample provision for the proper function of the same by supplying its pumping power through air pressure. If the lungs were not there, acting as a control, it is conceivable that the heart would run away with itself and stop only through complete exhaustion and consequent death of the victim.

About a month ago I witnessed the death of a young lady upon the operating table. The operation was a thyroidectomy, the thyroids were very small. After the operation she stopped breathing, her face was flushed but cyanosed, showing that there was plenty of blood in her head. The surgeon ordered the lowering of her head—she had been in the horizontal position—his assistant began artificial respiration, as taught by the profession—eighteen times a minute. The surgeon told him several times to go more slowly—as though he was not going too slow already—and the victim died. Now what happened? When the head was lowered and the heart was beating feebly, then every bit of blood pumped out of the right ventricle went into the lungs and remained there on account of specific gravity. The inert lungs did not force the blood back into the left auricle, and certainly the heart at its best would never pull blood up from the lung capillaries. The lungs became full to overflowing with blood, dammed the heart, and caused it to stop; and the girl died, drowned in her own blood.

In summing up this article I wish to impress upon you the unity of action of the nerves, the circulation and breathing. Anything that stimulates the nerves increases the flow of blood, makes the heart beat faster, and consequently speeds up respiration. Some drugs, such as ammonia gas, are inhaled; their first action is on the lungs, and due to irritation, breathing becomes more rapid. Strychnine's first action is on the heart, which increases the frequency of its beat, but immediately forces one to breathe faster and deeper.

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THE VITAMINES, NUTRITION, AND PUBLIC HEALTH.

While there is yet much to be learned concerning the vitamins, enough is known to state definitely that they are indispensable for proper nutrition and that they are dominant factors with respect to public health. It is impossible at the present time to attribute absolutely all the so-called deficiency diseases to lack of vitamins. In fact, the only way to prove this point is by the method of exclusion, and even this method does not show certainly that a deficiency disease is due solely to a lack or absence of vitamine content, but only demonstrates that if the vitamine element is absent or lacking in a diet ill health will ensue. There are diseases which are almost entirely caused by these accessory food factors being absent or being present in insufficient quantities, and it may be stated that they are essential constituents of a properly balanced diet. A great deal of investigation has taken place and much has been written recently concerning vitamins, and there is beginning to emerge from the obscurity a clearer conception of their nutritive value.

Among the latest contributions to the literature is a paper on the subject by Dr. J. F. McClendon published in the April issue of the *American Journal of the Medical Sciences*. The principal reason given by the writer for making public his views on the subject is that while serving with the Division of Food and Nutrition, Medical Department, U. S. Army, he was impressed with the wide differences of opinion that existed concerning vita-

mines, and, therefore, since January 1, 1919, with the assistance of ten students, he has devoted nearly all his time to investigations in this field, the results of which are being published in the *Journal of Biological Chemistry*. It is interesting to note that he states rickets to be the most common deficiency disease, an opinion by no means universally held by authorities in Great Britain, an influential minority contending that it is more largely owing to unhealthy environment than to defective diet, and the majority are not unanimous as to its being a vitamine deficiency disease, that is solely or even mainly due to that cause.

The most striking part of the paper is that which refers to war edema, which has been ascribed to lack of the antirachitic or fat soluble vitamine or some other element in the diet. Although the fat content of the diet in the war edema is not accurately known, Guillermin and Guyot state that the total ration was sometimes as low as eight hundred calories, that it contained a very small proportion of fat, and that a decrease of forty per cent. in body weight was common. Park has shown that it is readily cured by a return to the normal diet. It is also stated that edema occurs when there is a decrease in blood plasma proteins, and hence that decrease of protein in the diet may cause edema. McClendon draws attention to the point that edema occurs in various deficiency diseases, and that therefore some confusion may arise in the classification, but the large number of cases of war edema that have occurred recently, indicate that it is a separate disease.

Trench foot is attributed by Bruntz and Spillmann to lack of vitamins associated with life in the trenches, the predisposing cause being the diet, and the water filled trenches causing the acute symptoms in the feet. Cantlie classes sprue as a deficiency disease and is probably correct, for its treatment is essentially dietetic. Successful treatment is only possible when a vitamine containing diet is administered.

Undoubtedly there are diseases directly and wholly due to dietetic deficiency, and it also seems more than probable that an absence or lack of the vitamine element is the factor mainly responsible for the condition. In some of these diseases other dietetic factors play a part. The absence or lack of the vitamins is not the only cause, but the evidence gathered goes to show that it is the chief cause and in two or three diseases is the largely predominating cause. There are other vitamins to be isolated, and there is much investiga-

tion to be done before the subject is mastered. It may also be pointed out that too much importance must not be attached to the results of experiments on animals. Some investigators appear to pin their faith almost entirely to the outcome of animal experimentation. The tendency is to be deprecated. Animal experimentation is valuable up to a certain point, but dietetic experiments on animals are not applicable in many respects to those on human beings, and discretion must be used in placing an estimate on their value.

THE MEDICAL TREATMENT OF TUBERCULOUS PERITONITIS IN CHILDHOOD.

The various forms of tuberculous peritonitis are well known at the present time, but there is still some difference of opinion as to treatment. Medical treatment consists of rest cures, forced feeding, altitude or seaside sojourns, and heliotherapy. In the chronic types of tuberculous peritonitis of childhood surgical treatment should be rejected, except in the fibrocaceous form with abscess formation and in certain instances of unilocular suppurating peritonitis. Surgical intervention may also be required in some cases where a too rapid cicatricial sclerosis provokes phenomena of intestinal occlusion.

Puncture, followed by injections of various substances, such as iodoform, should be discarded; this is a blind and ineffective measure, not always without danger, because there is considerable risk of wounding the intestine which is frequently adherent to the anterior abdominal wall. All things considered, medical treatment is the one of choice. There is no specific treatment nor climate which can assure a cure, but the possibility of complete recovery is admitted at the present time, since Grancher showed that the tubercle itself contained the germ of cure. Therefore, the physician should endeavor to give strength to the patient and stimulate the process of cure possessed by the organism against tuberculous infection.

During the last few years the seaside treatment has been employed to some extent in France in the treatment of chronic tuberculous peritonitis. This treatment consists of sea baths, or salt water baths, hot or cold, body exposure on the beach, or sailing. Brilliant results have unquestionably been obtained in all chronic forms of the process—ascitic, fibrocaceous or fibroadhesive. These patients can be sent to the seaside without reference to other bacillary lesions present, pulmonary or otherwise, and without waiting for a drop in the temperature or an amelioration of the acute manifestation.

Heliotherapy has likewise given remarkable results and can be employed in all the forms of tuberculous peritonitis, and in high altitudes its results are not less appreciable. Both treatments—seaside and heliotherapy in a high altitude—naturally necessitate two very different climates and the question of climate in the treatment of tuberculous is both delicate and much mooted. As Huchard once said: "Climate, a complexus of physical agents, is a powerful medicament and as such, requires measured doses like any other." It is for the physician to decide whether or not a certain form of the process is susceptible of improvement or cure by treatment at the seaside or in a high altitude.

However, chronic tuberculous peritonitis in childhood appears to act somewhat differently from pulmonary tuberculosis and clinical results show that it does well in either of the two climates. Finally, although only of recent date, is the association of both methods, thalassotherapy and heliotherapy; in other words, a heliomarine cure may be indicated in certain cases and everything tends to show that the results of this treatment are excellent, thanks to those two marvelous therapeutic agents—the sea and the sun.

THE INDICATIONS FOR THERAPEUTIC PNEUMOTHORAX.

The great praise given to surgical pneumothorax by Forlanini's method in cases of pulmonary tuberculosis will be remembered, but it is clear that this method cannot be indifferently applied in all cases. It has its own indications, that have been very well studied at the Hauteville Sanatorium in France by Dumarest and Murard. Pulmonary tuberculosis furnishes almost all the cases suitable for artificial pneumothorax. If in this disease the general indications are considered, they will be found to increase from the fibrous to the caseous types and from the torpid to the active forms of the process. In reality, the operation should never be thought of in benign abortive tuberculosis, or in slow saprophytic forms nor in the fibrous type of the affection. The diffuse types with bronchial distribution, accompanied by extensive inflammatory epiphenomena will rarely benefit by it. Artificial pneumothorax is indicated in the extensive localized ulcerative forms and in congestive caseous types in young subjects, having a destructive evolution and frequently with hemoptysis. After these come the fibrocaceous forms which are usually unilateral, where it is necessary to weigh the risks inherent to the interference with those of the spontaneous evolution of the process.

Finally, come the acute types, the pneumonic and bronchopneumonic with a lobar distribution, in which the patient has nothing to lose by the operation and in which one frequently observes a surprising arrest in the progress of the lesions following artificial pneumothorax. Frequently these arrests are only momentary and as Renon has pointed out, the result is merely a delay in the progress of the disease. In the granular forms artificial pneumothorax will never be successful. In these cases the question of the degree of the tuberculosis should never be taken into consideration. The minute that the spontaneous evolution of the affection makes the patient run greater risks than those of the operation itself, the latter should outweigh all else. The question of degree is of little importance because an early operation has many advantages which are especially evident from the fact that adhesions have not formed, that new localizations are thus prevented, and finally that the patient's resistance becomes greater.

In order to operate with success the lesions should be unilateral, not from the pathological viewpoint but from that of evolution. On the one hand a single lung is hardly ever alone the seat of the disease, and on the other, a pneumothorax done for lesions in full evolution in one lung often acts favorably on the lesions just beginning in the opposite lung. In hemoptyses and particularly severe pulmonary hemorrhage from ulcerating cavities which, in themselves or by the infectious complications they bring about, may result in death, artificial pneumothorax is the only sure means at our disposal for controlling this complication, as it stops the hemorrhage just as a ligature does. A spontaneous pneumothorax in a case of tuberculosis should be continued and when it is only partial it should be made complete. Tuberculous empyema is another indication for making an artificial pneumothorax. To sum up, it can be said that surgical pneumothorax is indicated in every case where there is a menace to life from extension of a local lesion and that it is frequently successful.

OCCLUSION OF THE ARTERIES IN DIPHTHERIA.

Occlusion of an artery of a limb is a rare complication of diphtheria, but it would appear to be somewhat less exceptional since the introduction of antidiphtheritic serotherapy, because the use of serum in large doses prolongs or saves the patient's life so that certain late complications are now more common than formerly. Occlusion of large arterial trunks occurs exclusively in the malignant forms of diphtheria complicated by cardiac accidents and up

to the present time has only been met with in children. This complication occurs suddenly during the second or third week of the disease in subjects offering all the signs of the secondary syndrome of malignant diphtheria. The lower extremities are usually involved but the upper ones may suffer, sometimes on one side only, occasionally on both.

Clinically, the complication offers a symptomatic *ensemble* indicating a sudden cessation of the circulation in a more or less extensive portion of one or several limbs, such as violent pain, sometimes with cramps, earthy paleness and coldness of the limb which soon becomes covered with cyanotic patches; abolition of the sensibility and the reflexes, muscular impotence, absence of the arterial pulsation in the segment below the occlusion. The evolution of the process varies. Sometimes death ensues from cardiac accidents a few hours or days after the occurrence of the vascular occlusion whose consequences have not had time to show themselves. At other times the circulation becomes reestablished in a few hours or days, but the transient ischemia is usually quickly followed by a lasting one, due to another occlusion involving other arteries of the same limb or in another limb which progresses toward gangrene. However, the commonest cases are those in which the circulation becomes imperfectly reestablished; dry gangrene invades a portion of the limb, usually requiring amputation of the segment involved.

Occlusion of the large vascular trunks of one or several limbs may be preceded, accompanied, or followed by accidents indicating occlusion of other arterial trunks and particularly the pulmonary or cerebral arteries, the abdominal aorta, splenic, renal, or hepatic arteries.

The prognosis of this complication is invariably serious; in nearly fifty per cent. of the cases death occurred from a continuation of the diphtheritic cardiac intoxication. In the remainder all had gangrene and recovery was only obtained by amputation. The diagnosis is usually easy. It is important not to mistake gangrene following arterial occlusion for other gangrenes of different cause which may arise in diphtheria, notably symmetrical gangrene and disseminated gangrene of the skin resulting from an anaerobic microbic septicemia.

From the viewpoint of pathogenesis, occlusion of the large arterial trunks of the limbs in diphtheria is the consequence of an embolus starting from the heart. The emboli originate in a cardiac thrombus, so common in malignant diphtheria, and they furnish the best possible argument that can be invoked to prove that cardiac thrombosis takes place during life and not during the agonal period

as has been so long maintained. They are consequently the result of myocarditis and apical endocarditis which provokes intracardiac coagulation of blood profoundly changed by the diphtheria.

Marked arterial hypotension, constant in malignant diphtheria, explains the insufficiency of the collateral circulation, which never can, even in children with healthy arterial systems, become sufficiently established to prevent gangrene. The treatment should be prophylactic. The early and intensive use of the serum will usually ward off the serious cardiac complications. When the embolus has occurred an attempt to limit the gangrene as much as possible should be made by the use of hot air and avoiding secondary infection. Amputation must be done when the line of demarcation has formed but not before the diphtheria is completely cured.

HEALTH CONDITIONS ON SUBMARINES.

An interesting account of health conditions on United States submarines is contained in the annual report of the surgeon general of the Navy for the fiscal year 1919. During the period mentioned, the usual schedule covered eight days at sea and seven days in port. During the eight day patrol periods all men under treatment for venereal disease were not only retained aboard the tender but were considered as admitted to the sick list, although they were detailed to perform duty if not incapacitated. During the spring epidemic of influenza a considerable proportion of the submarine crews were infected while on patrol—on certain boats one third to one half of the personnel. The torpedo and forward battery compartments in four submarines have been provided with a positive air supply. This arrangement has afforded relief, but there is still some complaint of offensive odor and general stuffiness. The air should be kept in motion. Particular attention is paid to this feature in the British submarine service.

The deleterious effects of oil fog in the engine room, originating in the cylinder relief valves and crank pits, predispose men on watch to conjunctivitis and catarrh of the nasal passages. Oil fog appears to be a negligible factor in British submarines equipped with the four cycle engines. The chief complaint among officers and men was with reference to the ear. The symptom complex in general was that of a mild middle ear catarrh. It is believed that the air supply to the engines through the conning tower and induction valve is not sufficient to prevent a slight alternate air suction and release throughout the boat, inducing a slight pull on the ear drum.

A large number of cases of asthenopia or eye strain prevailed toward the end of a series of patrols. It is believed that this situation resulted from four factors, excessive use of the eyes, defective lighting, refractive errors, and glare. The majority of the personnel were constipated during patrol, due to lack of muscular activity and excessive consumption of an overconcentrated diet. The chief desideratum for improvement is a proper

proportion of roughage. The bulk of the personnel did not have access to the open air during the entire patrol period while at sea, and daylight was not seen during this time. Deterioration of officers and men gradually developed as patrols proceeded. While in general not of a serious nature, it was indicated by loss of weight, pallor, and general loss of tone.

Obituary.

H. HOLBROOK CURTIS, M. D.,

New York.

Dr. H. Holbrook Curtis, otologist, laryngologist, and rhinologist, died of Bright's disease on Friday, May 14th, at his home in New York. He was in his sixty-fourth year. Doctor Curtis was born in New York and was educated at Cheshire Academy, Connecticut, and at Yale University, graduating in medicine in 1877. There followed a period of post-graduate study in Vienna, London, Paris, and Berlin. He was the friend as well as the physician of many notable opera singers, and from his long study of the human voice and its treatment and control he wrote a book, *Voice Building and Tone Placing*, which he dedicated to Jean de Reszke. Aside from his profession he was deeply interested in art and in the social sciences. He was one of the founders of the National Academy of Arts and Letters, from which sprang the American Academy. Since 1884 he had been vice president of the American Social Science Association. He was a fellow of the Royal Society of Medicine of England and a founder and one of the secretaries of the National Institute of Social Science.

News Items.

Appointment of Doctor Wechsler.—Dr. I. S. Wechsler has been appointed adjunct in neurology at the Mount Sinai Hospital, New York City.

Disabled Veterans of War.—Figures given out by Dr. W. C. Rucker, chief medical adviser of the Bureau of War Risk Insurance, indicate that there are 641,900 veterans of the war dependent on the bounty of the U. S. for future existence, at an annual cost of \$325,000,000.

Portraits Given to Johns Hopkins University.—At the recent commemoration day exercises at Johns Hopkins University, a portrait of Dr. J. Whitridge Williams, dean of the medical school, was presented to the university by Prof. William H. Welch, and a portrait of Dr. Florence R. Sabin, professor of histology, was presented by Prof. William H. Howell.

American Officers of the Great War.—The American Officers of the Great War, an organization made up of commissioned officers who served in the Army, Navy, or Marine Corps, is organizing a New York Chapter. Dr. Howard Lilienthal, 52 East Eighty-second street, New York, is chairman of the committee to interest the medical profession, and is authorized to receive application blanks and dues.

Nurses' Bill Signed.—The Mullian bill, abolishing the designations of trained, certified, and graduate nurses and creating instead two distinct grades—trained attendants and registered nurses—has been signed by Governor Smith.

Cancer Crusade.—A cancer crusade of two weeks' duration, under the leadership of thirty medical men, has been initiated in New York. Public meetings will be held in the public schools for the purpose of acquainting people with the peril of neglecting cancer symptoms.

Wood Alcohol Poisoning.—A recurrence of wood alcohol poisoning has broken out at Toledo, Ohio, where at the time of going to press two persons were dead and a score reported ill or dying. It is said that several of the victims became suddenly paralyzed while walking on the streets.

American Climatological and Clinical Association.—The thirty-seventh annual meeting of this association will be held June 17th to 19th at Philadelphia, under the presidency of Dr. Lawrason Brown, of Saranac Lake, N. Y. Headquarters will be at the Bellevue-Stratford Hotel, and sessions will be held at the College of Physicians.

Fort McHenry Hospital Closes.—Fort McHenry has ended its days as a U. S. Army hospital. The patients, thirty-one litter patients and 188 sitting patients, were taken in a special hospital train to the Walter Reed General Hospital at Washington. The hospital will be taken over by the U. S. Public Health Service.

Health Information.—A public health information bureau has been established by the New York County Chapter of the American Red Cross at 119 West Fortieth street, New York. Information regarding public health agencies will be given away; pamphlets on public health topics will be distributed, and persons calling at the bureau will be directed to the proper agencies for advice and care.

Personal.—Dr. George A. Knowles, of Philadelphia, has been elected treasurer of the board of trustees of the State Hospital at Norristown.

Dr. Louise Pearce, of the Rockefeller Institute for Medical Research, has sailed for England and Belgium *en route* to the Belgian Congo for the purpose of studying the chemotherapy of African sleeping sickness.

Dr. Fritz B. Talbot has been reelected president of the Baby Hygiene Association, of Boston.

Local Societies.—The following local medical societies will meet during the coming week:

TUESDAY, May 25th.—New York Academy of Medicine (Section in Obstetrics and Gynecology); New York Dermatological Society; New York Medical Union; Metropolitan Medical Society of New York City; New York Otological Society; New York Psycho-analytical Society; New York City Riverside Practitioners' Society; Valentine Mott Society; Washington Heights Medical Society; Clinical Society of the Hospital and Dispensary for Deformities and Joint Diseases.

WEDNESDAY, May 26th.—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Society of Internal Medicine; Brooklyn Pediatric Society.

THURSDAY, May 27th.—Hospital Graduates' Club, New York; New York Physicians' Association; Ex-Intern Society of Methodist Episcopal Hospital.

FRIDAY, May 28th.—Academy of Pathological Science; Audubon Medical Society; New York Clinical Society; Society of New York German Physicians; Brooklyn Society of Internal Medicine.

German Doctorate of Dentistry.—Prussia and Baden have decided to create a doctorate of dentistry (*doctor med. dentariae*), necessary qualifications for which will be an academic education, eight terms' study, and the license in dentistry.

Oldest British Practitioner.—Doctor Logie, of Kirkwall, in the Orkney Islands, celebrated his centenary on May 11th. He is the oldest physician on the English medical register. Doctor Logie was graduated in medicine at the University of Edinburgh in 1842.

Italian Pediatricists Meet.—The Italian Society of Pediatrics will meet September 23rd to 26th at Trieste. Subjects to be discussed are: vaccine treatment of children's diseases, introduced by Professor Di Cristina, of Palermo, and Professor Caronia, of Naples; infant welfare, introduced by Professor Allaria, of Turin, and Professor Modigliani, of Rome.

Rudolfinerhaus Reequipped.—The Rudolfinerhaus, the oldest and best known training school for nurses in Vienna, founded by Doctor Billroth, has been reequipped by the American Red Cross. The end of the war left the once famous hospital on the brink of financial ruin, with no funds to make urgent repairs, no bed linen, no fuel, and the nurses half starved. The hospital is under the direction of Dr. Robert Gersuny.

Antiopium Society in China.—A systematic effort to check the importation of narcotics into Shanghai, China, has been undertaken by the Antiopium Society. A report compiled by Dr. Wu Lienteh states that importation of morphine into Shanghai has increased in the last five years from fourteen to twenty-eight tons annually; that large quantities of opium are being smuggled into Shanghai from the western province of Szechuen by way of Hankow and from Fukien by way of Wenchow. By reason of increased production of opium from new poppy fields in Szechuen and Fukien, the price of the drug has fallen to \$3 an ounce. The Antiopium Society has appealed to the customs and administration authorities in Shanghai for cooperation in its campaign.

New Medical Periodicals.—The *Giornale di Clinica Medica*, founded in January, is published in Bologna under the editorship of Professor Umberto Gabbi. Beside original communications there are many abstracts from foreign sources arranged under headings such as therapeutics, infective diseases, cardiology, endocrinology, and tropical pathology; there are also notices of new books and items of general medical interest.

Acta Societatis Medicorum Fennica "Duodecim" is an independent Finnish journal published by a group of Finnish scientists. Communications are in English, French, or German, according to the linguistic capacity of each author.

Wiener Archiv für innere Medizin made its first appearance in Vienna on March 1st, under the editorship of Professor W. Falta and K. F. Wenckebach. The scientific staff includes the names of the most eminent professors of medicine and its allied subjects in Austria. The contents are to deal with the clinical and experimental sides of the whole subject of internal medicine.

Opposition to Chiropractors' Bill.—Medical men of New York State are uniting in opposition to the Ames bill to license chiropractors. Dr. Hermann M. Biggs, State Health Commissioner; Dr. Augustus S. Downing, of the State Education Department; Dr. Wendell Phillips, representing the American Medical Association, and Dr. Charles L. Dana, for the New York Academy of Medicine, spoke against the bill at a public hearing before Governor Smith.

Saranac Plans Municipal Milk Plant.—Through the efforts of Dr. C. C. Trembley, health officer of Saranac Lake, an investigation is being made as to the advisability of establishing a municipal milk distributing plant. By means of such a plant the dairymen would receive the same price for milk as at present but would be saved the expense of delivery, which would have the effect of stimulating production. A municipal milk plant, through the use of modern sanitary equipment and methods, and the abolition of useless duplication of investment and effort in delivery, would be able to handle the milk much more economically than at present.

Infant Mortality.—Figures compiled by the Department of Health of New York City are to the effect that the infant mortality rate continues higher than that for the corresponding period of last year. Up to the week ending April 10th, the infant mortality rate was 111 to a thousand children born, as compared with ninety-nine for the corresponding period of last year. This rate for 1920 represents a numerical increase over last year of 356 infant lives. The week of April 10th showed an increase of twelve in all infant deaths, and an increase of eight from diarrheal diseases. The situation thus far this year shows that there is a marked increase in the deaths from contagious diseases, respiratory diseases, and diarrheal and other diseases of infancy. Strange to say, congenital diseases, which have always ranked high in the list of babykilling diseases, are the only ones in which there is a lower number of deaths for the first fifteen weeks of the year.

Pharmacopœial Convention.—Officers elected by the Pharmacopœial Revision Convention, held recently in Washington, D. C., are as follows: President, Dr. Reid Hunt, of Harvard University; first vice-president, Dr. F. B. Power, of Burlingame, Cal; second vice-president, Dr. M. H. Fussell, of Philadelphia; third vice-president, L. E. Sayre; secretary, Dr. Lyman F. Keblor, of Washington, D. C.; assistant treasurer, W. W. Stockberger; treasurer, S. L. Hilton; trustees, J. H. Beal, Dr. H. M. Whelpley, of St. Louis; F. J. Wulling, Dr. G. H. Simmons, of Chicago; Dr. J. Solis-Cohen, of Philadelphia. Of the forty-three members of the revision committee, twenty-four are medical men, as follows: Dr. J. F. Anderson, Dr. C. L. Alsberg, Dr. H. G. Barbour, Dr. W. A. Bastedo, Dr. J. Culley, Dr. H. A. Christian, Dr. A. R. Craig, Dr. A. H. Clark, Dr. J. Diner, Dr. C. W. Edmunds, Dr. B. Fantus, Dr. L. Hamburger, Dr. R. A. Hatcher, Dr. E. R. Hodge, Dr. E. M. Houghton, Dr. I. E. Leonard, Dr. H. M. Johnson, Dr. H. Kraemer, Dr. G. W. McCoy, Dr. L. G. Rowntree, Dr. A. Schneider, Dr. T. Sollman, Dr. E. R. Stitt, and Dr. Horatio C. Wood, Jr.

Legislation in New York State.—Among the bills enacted by the 1920 New York Legislature and signed by Governor Smith, were several of particular interest to medical men. Among them were: Senator Sage's bill repealing the statute which provided for sterilization of certain criminals; the Jenks bill appropriating \$1,600,000 for salary increases for the lower paid employees in State hospitals; two child welfare bills, one providing for the appointment of a joint legislative commission, to be appointed by the Governor, to examine all laws relative to child welfare and propose remedial legislation; the other changing regulations governing allowances and appropriations by local boards.

Missouri Medical Conference.—The sixty-third annual meeting of the Missouri State Medical Association was held the first week in April at Jefferson City. The following officers were elected: President, Dr. W. J. Ferguson, of Sedalia; vice-presidents, Dr. R. L. Neff, of Joplin; Dr. T. J. Rigdon, of Kennett; Dr. T. C. Chowning, of Hannibal; Dr. W. C. Gayler, of St. Louis; Dr. J. G. Chambers, of Kansas City; councilors, Dr. O. C. Gebhart, of St. Joseph; Dr. W. D. Vandivert, of Bethany; Dr. J. B. Wright, of Trenton; Dr. J. R. Bridges, of Kahoka; Dr. J. W. Martin, of Kirksville; Dr. T. J. Downing, of New London; Dr. G. W. Hawkins, of Salisbury; Dr. Spence Redman, of Platte City; Dr. G. D. Allee, of Lemar; Dr. Guy Titsworth, of Sedalia.

American Association of Anesthetists.—At the convention of the National Anesthesia Research Society, held recently in New Orleans, the following resolutions were adopted:

WHEREAS, The American Association of Anesthetists is committed to the advancement of the science and art of anesthesia in all that relates to the welfare of humanity, through the medical and dental professions; and

WHEREAS, The advances in medical science are making it increasingly clear that the administration of anesthetics is a factor of practically equal importance with diagnosis, treatment, and operation; and

WHEREAS, There is an increasing disposition on the part of a few surgeons and hospitals to commit the administration of anesthetics to nurses, office assistants, and others without adequate qualifications, exploiting such services to their commercial advantage, according to testimony adduced before this association, thus jeopardizing the health and welfare of patients, and increasing the death rate in operations; and

WHEREAS, Anesthesia is in a state of evolution, and those who advocate lay anesthesia administration would defeat any further progress in this branch of medicine, therefore be it

Resolved, That the American Association of Anesthetists places itself on record as unalterably opposed to the employment of lay anesthetists, nurse anesthetists, and all other types of anesthetists who shall not have been graduated from recognized medical colleges and have been licensed to practise medicine or dentistry; and be it further

Resolved, That the American Association of Anesthetists will inaugurate and prosecute legislation to protect the medical and dental professions and the public from such inadequately educated and trained anesthetists whenever such action is necessary.

The following officers were elected: President, Dr. Joseph E. Lombard, of New York; vice-presidents, Dr. F. L. Richardson, of Boston, and Dr. Eleanor Seymour, of Los Angeles; secretary-treasurer, Dr. J. H. McMechan, of Avon Lake, Ohio; executive committee, Dr. John J. Buettner, of Syracuse, N. Y., and Dr. Paul Lux, of Kansas City.

Book Reviews

NEUROLOGY AND PSYCHIATRY.

Diseases of the Nervous System. A Textbook of Neurology and Psychiatry. By SMITH ELY JELLIFFE, M.D., Ph. D. Formerly Professor of Psychiatry, Fordham University; Formerly Adjunct Professor of Diseases of the Mind and Nervous System, New York Postgraduate Medical School and Hospital; and WILLIAM A. WHITE, M.D., Superintendent of St. Elizabeth's Hospital, Washington, D. C.; Professor of Nervous and Mental Diseases, Georgetown University; Professor of Nervous and Mental Diseases, George Washington University, and Lecturer on Psychiatry, U. S. Army and U. S. Navy Medical Schools. Third Edition, Revised, Rewritten, and Enlarged. Illustrated. Philadelphia: Lee & Febiger, 1919. Pp. ix-1018.

The third edition of this textbook, rich in material as in its stimulating conception, well accords with its original aim. It had been the purpose of the authors to present the subjects of neurology and psychiatry in a vital dynamic form which would give the student a conception of this important division of medicine as a study of a large written record of human development and the ills and hindrances to which such development is subject. In such a way they view neurology and psychiatry rather than as any merely static division of the study of medicine. One has only to examine the wealth of material treated in this book to realize that the topic is in itself large enough to demand the time and the energy of a life specialty, yet the authors would have the student everywhere reminded of its larger relation. There can be in neurology and psychiatry least of all any grouping of phenomena of health or disease apart from the larger considerations of personality or of the evolutionary development and the combined structure and functioning of the organism. The first aim has been to impress upon the student the realization of the dynamic unfolding in an organism of the mental and nervous functioning and the nervous system to which this has given rise, and then a view of the disturbances of a nervous and mental nature as also belonging in this broad and vital conception. Such a type of textbook must naturally embody in repeated editions the progress in the understanding of mental and nervous diseases which the latter years have rapidly brought.

The writers have maintained the former order of treatment as consistent with the purpose and spirit of the book. This provides first, a preliminary treatment pertaining to the technical approach to any disorder, matters of examination, history taking, both in regard to the nervous system and to psychiatric therapy. After this the general principles outlined in the introduction are carried into the various divisions of the subject matter. These divisions are merely practical workable ones—the writers seek to avoid all hampering static method—which maintain the thesis that the nervous system and the normal psychic reactions inextricably interwoven with it are the result of an orderly development. This is evident in the deeply laid automatic nature of the physicochemical processes which lie far below the control of consciousness and are manifest in the vegetative or visceral neurology; in the advance through the sensorimotor system by

which an effector mechanism has been developed to satisfy the organic needs registered by the vegetative system; in the development of a psychic or mental interpretation of these needs, and of the means and effort of their satisfaction. This the authors have called the psychological or symbolic division of their presentation.

The book admits of no sharp division between these systems nor any hard and fast conception of their separate functioning or disease involvement. Emphasis is rather laid continually upon their interrelation and dependence one upon the other as they all express products of different evolutionary ages and of the growing need of the human organism as it realizes itself in its environment. Altogether they represent the personality in its increasing needs and the fuller development of power and mechanisms to meet these needs. Yet each division is distinct in serving individual ends in this common organic integration. Thus the disturbances to which each is subject are necessarily given separate treatment in well defined chapters. These grade from the treatment of the oldest and earliest division of the nervous system to that of the higher and more recently developed portions of the central nervous system and the broader psychic life which our consciousness recognizes as superseding the mere physiological mechanism even of the higher nervous system. Yet after all it is the presence and interaction of the psychic personality in the form at least of organic needs and the affective states associated with them that permeates and pervades all divisions of the organism and which therefore makes a necessary background of interpretation for this entire study.

The keen interest manifested at the present time in the study of the automatic and sympathetic nervous systems, the divisions of the vegetative and the endocrine systems, and the interrelation of these with the mental or psychic wellbeing, has afforded new material of great value in this division of the book. There has been a no less rich gleaning in the matter of the injuries in regard to the sensorimotor neurology. This has come about largely through the war with its great variety of injuries to peripheral nerves, brain injuries and increase of knowledge and experience with actual brain disease. The time has been equally ripe for putting into practice and enlarging experience in the consideration and treatment of functional psychic disorders which may be grouped under the psychoses and psychoneuroses. Therefore each territory of the book has been carefully considered and new material has been conscientiously introduced. There has been an effort to give a still more comprehensive and interpretative presentation of the larger psychic problems both as to their understanding and treatment. There has been always the searching idea of the union of the personality in its effort after satisfaction and expression and the close relation of the various anatomical and physiological portions of the organism and their interrelation therefore through the psychic life, conscious and intellectual or unconscious and affective. Disturb-

ances of one nature or in one division have been studied always in relation to those in other divisions and of another form.

Much remains to be said because much remains to be tested and discovered. There is room also for still greater correlation of the various fields. But the greatest service which a book of this sort can render, textbook though it claims to be, is the awakening of the student to the nature of his subject, that of a vast and as yet scarcely explored field. Neurology and psychiatry are presented perhaps as nowhere else yet to such a degree, comprehensively in the details belonging to these subjects but dynamically as well, impressing upon the student something of the immeasurable extent of the field. It is a field limitless as human capacity, and intricate as the relation of mind and body. This requires and stimulates to endless work for the future in further exploration, cooperative study of the various fields and a quickening and deepening appreciation of the viewpoint of the nervous and psychic personality as a whole. To all this even this comprehensive third edition is only a suggestion and a guide.

PHYSIOTHERAPY.

Physical Reconstruction and Orthopedics. By HARRY EATON STEWART, M. D., Captain, Medical Corps, U. S. Army. Authorized for Publication by the Surgeon General of the U. S. Army. Illustrated. New York: Paul B. Hoeber, 1920. Pp. 1-240.

One of the vital things that the surgery of the war has given to medicine, to be retained permanently, is the use of physiotherapy as a medicinal agent. We can trace the use of physical measures in medical history back through antiquity, but somehow in the busy rush of our lopsided development we have grown to rely more and more on the rapid action of various drugs and the more dramatic results of surgical procedures. Great patience is required in order to apply properly the various physical methods at our disposal. They also require a certain definite knowledge for, as in other therapeutic measures, much harm can come from the careless or ignorant application of physical measures.

In Stewart's book we have as complete and readable a book as has been presented in English. He has incorporated his war findings and in a far-seeing way showed how they can be applied in a practical manner to the injuries and deformities arising in civilian life. We have the accidents of industrial life, the aftereffects of tabes, of poliomyelitis, and rickets; we have the fractures, dislocations, diseases of bones, arthritis, atrophied muscles, spinal deformities, and other bodily deformities which are more amenable to well directed physical measures than to any other form of treatment.

The subject matter has been handled in a most constructive manner. The general welfare and psychic condition of the patient has been carefully considered. The subjects of massage, hydrotherapy, diathermy, electrotherapy, exercise, and vocational therapy are all outlined in a fashion that make them readily assimilable. All in all the author has presented a valuable contribution to our therapeutic armamentarium.

THE PREVENTION OF SURGICAL SHOCK.

Surgical Shock and the Shockless Operation Through Anociassociation. By GEORGE W. CRILE, M. D., Professor of Surgery in the School of Medicine, Western Reserve University; Visiting Surgeon to the Lakeside Hospital, Cleveland, and WILLIAM E. LOWER, M. D., Associate Professor of Genitourinary Surgery in the School of Medicine, Western Reserve University; Associate Surgeon to the Lakeside Hospital, Cleveland, etc. Second Edition, Revised. Edited by AMY F. ROWLAND, B. S. Illustrated. Philadelphia: W. B. Saunders Company, 1920. Pp. vii-272.

A careful reading of this second edition of Crile and Lower's well known work brings to attention the great advance in surgery which the past ten years have brought, and much of this advance is due to the exhaustive experiments and studies of Crile on the subject of surgical shock.

The author aims to do away with, or at least to minimize, surgical shock, nausea, vomiting, gas pains, backache, nephritis and pneumonia, by the process which he describes as anociation—formerly called anociassociation and which he defines as prevention of shock. In addition to the general anesthesia, to which subject, by the way, considerable attention is given, the operative area is first blocked off with a local anesthetic before the general anesthesia is given. The nerve impulses are thus blocked, and the cells of the brain, the suprarenals and the liver, are thereby protected against the traumatic or psychic exhaustion which we know under the name of surgical shock.

American surgeons need not be told of the work done in this field by Crile and his associate, Lower. Suffice it to say that this work represents Crile at his best, and gives us his latest thoughts on this most important subject. No man who practises surgery can afford to ignore this highly interesting and useful addition to surgical technic, and it becomes a pleasure to bespeak for this fine work the wide influence that it deserves.

GEORGE BERNARD SHAW.

Heartbreak House, Great Catherine, and Playlets of the War. By BERNARD SHAW. New York: Brentano's, 1919. Pp. v-294.

More is written about Shaw than by him. A lengthy criticism in the *Revue des deux mondes*, of value chiefly to the author, if he was paid for the space it occupied, went on to explain what Shaw meant when he said this or that or the other. The critic did not agree with Shaw but admitted him to be clever. He also praised the binding of the book; so many authors have been made immortal by artistic book work! It requires boldness to criticize Shaw but no valor to say this particular critic did not understand Shaw or any of his writings. But our purpose is not to avoid the more difficult task of attempting an analysis of *Heartbreak House* and the other plays in the volume. Shaw himself stumbles on the scene with an apologetic introduction in which he takes stinging blows at civilization. In his polite, contemptuous sneer he brings the blush of shame when he holds up the damning errors of society which have been brought about by a hastened evolutionary process. If the accusations are true we will not react wrongly by acknowledging the false architecture of our

social structure and the warped psychological adaptations with which we accommodate ourselves to it. And the conditions he shows are true. It would have been better from the artistic point of view if he had remained Shaw instead of trying to be Tchekov-Shaw in *Heartbreak House*. In spots he is Shaw-Tchekov and in other areas he may even be called near-Shaw. Evidently he thought he could gain in iconoclastic power by borrowing the false beard of the Russian symbolist. But any one who has seen his own growth pointing horizonward from his Hibernian chin after a biting remark at a labor meeting would concede him vitriolic enough and forceful enough without borrowing from his Slavic literary comrades. But Shaw felt the urge, perhaps a fraternal feeling, following from the upheaval in Russia, with which his sympathies are very keen, or again it may have been an earlier call and only a recognition of the influence of Tchekov's power on the entire field of literature.

One never understands why Shaw is constantly being accused of not meaning what he says or why so much searching is done to uncover some hidden jest just around the corner. Why? There is quite enough on the surface for most of us poor mortals to digest. Perhaps it is not always palatable. Nevertheless there is no use dodging. They tried to in *Heartbreak House*. It was no use. In this so-called all too clever introduction he has his side fling at the physician, the lawyer, and all of the usual victims of the clever penmen from the time when healers and writers inveigled society into supporting them.

In *Great Catherine* Shaw is himself again and at his best. In his flighty frolic he invades the bedroom of the Great Catherine for the setting of his play and his great Russian buffoon Patiomkin furnishes amusement to the audience and a mouth-piece for Shaw.

In *O'Flaherty, V. C.*, his humor does not desert him and he has O'Flaherty show the constant desire for flight from home which is so frequently found, even in well regulated *ménages* on more fertile soil than Ireland.

In some of the minor plays of the series the fallacy of truth is made obvious. Reality has a similar fate. But what matter? What are truth and reality when Shaw has a message to deliver, when he wants to show us the true state of affairs, when he wants us to see how false they are?

DE MORGAN'S LAST BOOK.

The Old Madhouse. By WILLIAM DE MORGAN. New York: Henry Holt & Co., 1919. Pp. 567.

The curtain has risen on the last of De Morgan's writings. All the reading public are gathered, for the title is attractive. The doctor is there to whom the word mad has engendered some half dozen ill-lucid conditions; the morbidly inquisitive are present who enjoy having what they term the creeps; the excitable, who read into the title all those mysteries in which Miss Braddon reveled—the insane or criminal relative shut up in a remote room along a long, long corridor, but likely to escape and horrify a guest by peering from behind a heavy velvet curtain at, inopportune moments.

All read attentively, but find the madhouse a vacated private sanitarium for the insane, into which a robust schoolmaster comes to view its desirability as a dwelling for a youthful married couple, and is never seen any more from Chapter I to the last chapter, when his bones are found at the foot of a well in the inner hall, a well destined to give patients a healthy shock by their treading on a spring and falling in! "This narrative aims at psychology," says the author, and weaves a romance concerning the effect of the disappearance on the mental calibre of his characters, and, incidentally, on their marriage, divorce, the effect of the lover trying to reduce passion to cold friendship. The ghostly reappearance of the schoolmaster to the husband, the ultimate triumph of passion, and its failure when the treacherous friend and the wife are settled in Switzerland (that land of fugitive lovers) and the husband is married to a friend of his youth, all centre round the mysterious disappearance.

In and about all these happenings floats this mystery, and only De Morgan could sustain the interest right through to the end, though, to the doctor, the suggestions are too slightly dealt with; yet, in these days when psychologists are intruding into the commercial world, mentimeterizing even the junior office boy, novelists are perhaps justified in gathering up the scientific scraps they leave behind, and fashioning out of them an attractive story. It is well known that the author died before the last chapter was written. It was finished by his wife, but no revision by De Morgan was possible.

OPPRESSED PEOPLES.

Darkwater. By W. E. BRUGHARDT DU BOIS, Author of *The Souls of Black Folk*, *The Quest of the Silver Fleece*. New York: Harcourt, Brace & Howe, 1920. Pp. 1-276.

Thoughtful Americans will not be surprised at this protest of our own oppressed race, the American negro; what may give them pause is its intensity, its defiance, its articulate wrath. Mr. Du Bois has not spared us in this indictment. He marshals a host of facts, an army of pointing fingers, to his support, and with this evidence he voices the wrongs not only of his own people but of all the darker races of the world. And he does more. He shows the tragedy of a man more scholarly and with keener sensibilities than many of his detractors, condemned by the accident of color to a continuous fight against prejudice and insult.

In his youth and upbringing Mr. Du Bois was spared some of the bitterness which is the lot of the Southern negro. Born in New England and educated at Harvard, he devoted two years to further study in Europe, and then "dropped suddenly back to 'nigger' hating America." The sharp contrast quickened his revolt against "the new religion of whiteness," and since then as educator and later as research director of the National Association for the Advancement of Colored People, and editor of the *Crisis*, he has fought the battle of his race.

The scope of the book is broad. It is not merely a plea for social equality; all the economic ills of the world, and the damnation of women as well, cry out in its pages. The author protests against East St. Louis, but he goes back of individual outrages

to the conditions that produce them. His bitterness is against "the doctrine of the divine right of white people to steal," against "the white man's burden of liquor and lust and lies." He strikes white Europe (and America) at her most vulnerable point—her assumption of superiority, and the following excerpt shows how well he drives this point home:

But may not the world cry back at us and ask: "What better thing have you to show?" . . . Paint with all riot of hateful colors the thin skin of European culture—is it not better than any culture that arose in Africa or Asia?" It is. Of this there is no doubt and never has been; but why is it better? Is it better because Europeans are better, nobler, greater, and more gifted than other folk? It is not. . . . Run the gamut, if you will, and let us have the Europeans who in sober truth overmatch Nefertari, Mohammed, Rameses, and Askia, Confucius, Buddha, and Jesus Christ. . . .

The greatness of Europe has lain in the width of the stage on which she has played her part, the strength of the foundation on which she has builded, and a natural human ability no whit greater (if as great) than that of other days and races. . . . Why, then, is Europe great? Because of the foundations which the mighty past have furnished her to build upon: the iron trade of ancient, black Africa; the religion and empire-building of yellow Asia; the art and science of the "dago" Mediterranean shore, east, south, and west, as well as north. And where she has builded securely upon this great past and learned from it she has gone forward to greater and more splendid human triumph; but where she has ignored this past and forgotten and sneered at it, she has shown the cloven hoof of poor, crucified humanity—she has played, like other empires gone, the world fool!

Darkwater is not written in the minor key in which oppressed people usually voice their woes. It is scholarly and defiant, bitter and yet full of faith, and in its breadth it transcends the limits of individual persecution and becomes the tragedy of a race. It should be widely read.

New Publications Received

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

The Contemporary Drama of Italy. By LANDER MACCLINTOCK, Ph.D. Boston: Little, Brown & Company, 1920. Pp. i-321.

The Fear of Living. By HENRY BORDEAUX. Authorized English Version by RUTH HELEN DAVIS. New York: E. P. Dutton & Company. Pp. i-384.

The House of Baltazar. By WILLIAM J. LOCKE. Author of *The Rough Road*, *The Red Planet*, etc. New York: John Lane Company, 1920. Pp. ix-312.

The Road to En-Dor. By E. H. JONES, LL., I. A. R. O. Illustrations by C. W. HILL, LL., R. A. F. New York: John Lane Company, 1920. Pp. xvii-375.

The Dark Mirror. By LOUIS JOSEPH VANCE. Author of *The False Faces*, *The Lone Wolf*, etc. Illustrated. Garden City: Doubleday, Page & Company, 1920. Pp. iii-368.

A Textbook of Histology. By HARVEY ERNEST JORDAN, A.M., Ph.D., Professor of Histology and Embryology, University of Virginia. Illustrated. New York: D. Appleton & Company, 1920. Pp. i-857.

Moons of Nippon. Translated from Poets of Old Japan by EDNA WORTHLEY UNDERWOOD. Chicago: Ralph Fletcher Seymour, 1920. Pp. v-111.

Letters of Anton Chekhov. With Biographical Sketch. Translated by CONSTANCE GARNETT. New York: The Macmillan Company, 1920. Pp. i-416.

The Problem of the Nervous Child. By ELIDA EVANS. Introduction by C. G. JUNG, M.D., LL.D. New York: Dodd, Mead & Company, 1920. Pp. i-299.

An Honest Thief and Other Stories. By FYODOR DOSTOEVSKY. From the Russian by CONSTANCE GARNETT. New York: The Macmillan Company, 1919. Pp. i-325.

The Golden Whales of California and Other Rhymes in the American Language. By VACHEL LINDSAY. New York: The Macmillan Company, 1920. Pp. iii-181.

Early Persian Poetry. By A. V. WILLIAMS JACKSON. Professor of Indo-Iranian Languages in Columbia University, etc. Illustrated. New York: The Macmillan Company, 1920. Pp. i-125.

Über Sozialismus, Kommunismus und Anarchismus. Zwanzig Vorlesungen von KARL DIEHL. Dritte, unveränderte Auflage. Jena: Gustav Fischer, 1920. Pp. i-492.

Your Psychic Powers and How to Develop Them. By HERWARD CARRINGTON, Ph.D. Author of *Psychical Phenomena and the War*, etc. New York: Dodd, Mead & Company, 1920. Pp. i-358.

The Power of a Lie. By JOHAN BOJER. Author of *The Great Hunger*. Translated from the Norwegian by JESSIE MUIR. With an introduction by HALL CAINE. New York: Moffat, Yard & Co., 1920. Pp. iii-311.

Functional Pathology of Internal Diseases. By ALBION WALTER HEWLETT, M.D., B.S., Professor of Internal Medicine and Director of Clinical Laboratory, University of Michigan. Illustrated. New York: D. Appleton & Company, 1917. Pp. i-686.

A Practical Treatise on Ophthalmology. By L. WEBSTER FOX, M.D., LL.D., Professor of Ophthalmology, Medico-Chirurgical College Graduate School; University of Pennsylvania, etc. Illustrated. New York: D. Appleton & Co., 1920. Pp. i-831.

Arteriosclerosis and Hypertension. With Chapters on Blood Pressure. By LOUIS M. WARFIELD, A.B., M.D. (Johns Hopkins), F.A.C.P., formerly Professor of Clinical Medicine, Marquette University Medical School, etc. Third Edition. Illustrated. St. Louis: C. V. Mosby Company, 1920. Pp. xv-265.

Arbeiten aus dem Institut für Experimentelle Therapie und dem Georg Speyer-Hause zu Frankfurt A.M. Herausgegeben von Dr. W. KOLLE, Direktor des Inst. für Exp. Therapie und des Georg Speyer-Hauses, o. Honorarprofessor an der Universität Frankfurt A.M. Heft 10. Zur Theorie und Praxis des Serologischen Luesnachweises mittels Ausflockung. Jena: Gustav Fischer, 1920. Pp. v-74.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

RECENT GLEANINGS IN DIPHTHERIA PROPHYLAXIS.

By LOUIS T. DE M. SAJOUS, B.S., M.D.,
Philadelphia.

(Continued from page 832.)

In the serum treatment of diphtheria carriers it is specified that if the serum is to induce the desired effect it must be kept in contact with the mucous membranes for a considerable time. Inhalations of powdered antidiphtheric serum have been employed by Dopfer to remove the bacilli from the nasal cavities. Legroux, again, mixes bland powders with the dried serum and uses a powder blower to apply the mixture in the mouth and pharynx. Ravant has presented definite figures illustrating the value of a mixture of serum and arsenobenzol, similarly used; with this combination removal of diphtheria bacilli from the pharynx of carriers was obtained in an average period of sixteen to nineteen days. According to Ravant these figures show satisfactory progress over the customary results from expectancy, and indicate that treatment of this nature is worthy of further clinical study.

Nasal and pharyngeal insufflations of a powdered antimicrobial serum prepared at the Pasteur Institute of Paris were found by Roskam, 1918, from protracted clinical experience, to constitute the best measure available for rapidly ridding diphtheria carriers of their infection. A somewhat surprising observation made was that in treating a number of diphtheria carriers with insufflations of powdered antimeningococcic serum, the results obtained were as good, if not better, than with powdered antidiphtheric serum. According to this, Roskam concludes that the advantage of the serum treatment or Martin method over treatment with antiseptics should not be ascribed to a specific action of the serum administered. He thinks the powdered serums may instead act, to some extent, in a mechanical manner by attracting phagocytes to the surfaces of the mucous membranes, or possibly also by enhancing the defensive functions of the system through local change in the colloidal equilibrium of the tissue fluids.

Cultures of germs other than the diphtheria bacillus were originally recommended by Schiötz, of Copenhagen, in 1909, who used cultures of staphylococci for the purpose. Preparations of the aureus species of staphylococcus were sprayed into the nasopharynx, with asserted good results. Although various other observers have experimented with this procedure, the general conclusion reached has been that the effects, while sometimes apparently good, are not always dependable. As L. Martin, 1918, points out, it would be rather difficult to account for any favorable effect of the staphylococci in directly eliminating the diphtheria bacilli, for *in vitro* no antagonism between these germs is demonstrable. One fact to be borne in mind in this connection is that in diphtheria carriers, when the

colonies of diphtheria bacilli are becoming reduced in numbers, staphylococci reappear in the throat secretions.

According to Martin, this suggests that at the time when the staphylococci reappear the secretions of the buccopharyngeal glands have become so restored or improved as to favor development of these germs while exerting an inhibitory influence on the diphtheria bacilli. Along these lines, Martin thinks a special study might with advantage be made of the drugs that modify the local secretions—rendering them, for example, more acid or more alkaline. In this way some procedure might be found which would definitely hasten disappearance of the diphtheria germs.

Of late, bacterial therapy of diphtheria carriers has involved special trial of lactic bacillus preparations as a factor directly antagonistic to the development of diphtheria germs. This measure appears to be an improvement over the earlier method of employing staphylococci for the same purpose, and the well known influence of lactic organisms in modifying certain harmful states of the intestinal flora would seem to afford a rational basis for similar treatment in unfavorable bacterial conditions in the throat. According to some, indeed, gargling with or local applications of lactic bacillus preparations or derivatives, constitutes the best means at hand for overcoming diphtheria carrier infection.

Dried and finely powdered kaolin, blown into the nose with a rubber bulb, has been used with asserted good results by Rappaport, 1916. Six treatments are given every day, at intervals of two hours. Before each insufflation the kaolin remaining from the preceding treatment is removed by means of a mild alkaline spray, e. g., a solution of two per cent. each of sodium bicarbonate and sodium borate. Where kaolin fails to bring about the desired sterilization, Rappaport counsels removal of the tonsils—a measure already found by other observers to yield success in many obstinate carrier cases.

According to William Ewart, 1915, a coating of oil applied to the nasopharyngeal, pharyngeal, and tonsillar mucous membranes is of distinct service in overcoming pathogenic infection of these membranes. Diphtheria infection is included among those which are thus benefited, and the measure hence might be used with advantage in the treatment of diphtheria carriers. As a nonirritating oil for local use Ewart prefers the oil of jasmine to all others. Where the nasopharynx is believed to be particularly involved, his procedure is to have the patient lie down and tilt the head well back, whereupon half a medicine dropper full of the oil is introduced, drop by drop, into the nostrils. After it has been allowed to run back for one minute, the oil is diffused over the lateral nasal and pharyngeal surfaces by turning the head first to one side and then to the other.

Removal of the tonsils and of adenoid tissues has proved, in the hands of a number of observers, to be an effectual means of eliminating obstinate carrier infection. Brown, 1916, made a detailed bacteriological study of the tonsils of diphtheria carriers in order to ascertain to what extent a rational basis existed for this measure. The study was conducted in seven carriers, all of whom had been giving positive cultures from the nose or throat for a period of at least twenty-one days, and in fourteen other cases in which tonsillectomy had been performed for causes other than the carrier state. The tonsils having been fixed, cut into sections, and stained, six of the seven diphtheria carriers showed large numbers of gram positive, beaded bacilli in the tissue examined. The organisms were found chiefly in the crypts and the thin epithelial layer lining these recesses. On the other hand, only two of the fourteen control pairs of tonsils studied showed any gram positive bacilli. Nearly always the cultures taken after the operation were negative for diphtheria bacilli. In one instance, however, in which gram positive bacilli had been found in the tonsils, positive cultures from the throat were obtained for four days, and from the nose for nineteen days, after tonsillectomy and removal of adenoids; in this case a focus of multiplication of the germs elsewhere was thought to have existed. The general conclusion from the investigation was that the tonsils do constitute an important focus of infection in diphtheria carriers, and that the favorable effect of tonsillectomy on the infection in such cases is due to the elimination of this focus. Ruh, Miller, and Perkins, 1916, had already pointed out that no unpleasant results followed surgical removal of the tonsils and adenoid tissues in carriers, even though virulent bacilli were present, while Friedberg, 1916, had reported several cases in which disappearance of diphtheria bacilli occurred within two days after the operation.

Squeezing out plugs and secretions from the crypts by a partial crushing of the tonsils has been tried by the elimination of carrier infection by Kretschmer. The procedure was resorted to particularly in diphtheria convalescents, the tonsils being squeezed out from one to nine times. The results are said to have been favorable, especially in patients with readily accessible tonsils. Diphtheria infection was eliminated in from seventeen to thirty-eight days after the beginning of the illness.

(To be continued)

Emergency Treatment in Cranial Trauma.—P. Santy (*Lyon médical*, March 10, 1920), applying war experience to gunshot wounds of the skull in civil practice, states that in wounds involving the dura and brain, expectant treatment is never permissible. Even delay for twelve or twenty-four hours is unwise, giving time for latent infection carried in with the missile to develop. Ample excision of the margins of the scalp wound is required, even if subsequent flap mobilization to close the gap is entailed. The opening in the skull made with bone forceps should extend well beyond the field of bone injury and should expose healthy dura at least one centimetre beyond the dural

wound. Radiating fissures in the bone need not be followed very far if the operation is done early. In exploring the brain for the projectile, excessive brain trauma should be avoided. A good method of mechanical detersion is to run in warm saline solution under moderate pressure, as counselled by Martel. An eye curette may then be cautiously used to remove deeply embedded bone splinters. The prime factor in the surgery of severe cranial and cerebral trauma, however, is immediate closure of the scalp over the skull injury—a procedure definitely established only during the last stage of the war. Any other procedure exposes the wound to infection. On the other hand, suture of the dura and immediate obliteration of the osseous orifice are superfluous where not easily effected. Neither should a deeply embedded, inaccessible missile prevent primary suture of the scalp. The risk of brain infection from doing so is less than that attending drainage of the wound. Where hemorrhage is troublesome, a small tampon may be used, but when it is removed the opening for it in the scalp must be closed at once. In wounds due to purely accidental trauma and not to firearms, the severity of the associated symptoms and the prognosis depend particularly on superadded lesions of the base of the skull and upon possible remote foci of brain contusion. In these cases lumbar puncture is of service.

Medicated Urethral Drains in Urinary Surgery.

—Paul Lutaud (*Journal de médecine de Paris*, February 5, 1920), in a number of cases of chronic gonorrhea, used a rubber drain eighteen centimetres long perforated with numerous openings, into the lumen of which was passed a thin bougie wound with cotton tissue, the latter previously rendered highly absorbent by a special process. The drain was sterilized, dipped in twenty per cent. argyrol solution, and sealed in a glass tube until needed. The prostate having first been massaged and the glans and urethral opening carefully cleansed, the drain was passed completely into the urethra, removed a few minutes later and dipped again in argyrol, then reinserted. During its introduction massage of the urethra in its entire length was practised, in order to press out secretions from the glands. In the first patient, treated three times a week, gonococci disappeared after four treatments and the succeeding nongonococcal discharge after four more sittings. In six later cases treated, gonococci uniformly disappeared within eight treatments, in spite of dietetic and hygienic indiscretions meanwhile committed. Results from the treatment were expedited by progressive dilatation of the urethra with drains of increasing calibre—19 to 24 French. Three cases of chronic nongonococcal urethral discharge proved more difficult to cure than the gonococcal cases. As argyrol failed, drains impregnated with ten per cent. guaiacol and even gomenol were substituted. Such agents as protargol, collargol, thigenol (forty per cent.), ichthyol (twenty per cent.), zinc peroxide, and resorcinol might likewise be used. In cases of cystitis, especially of the neck of the bladder, longer drains, properly curved and medicated, might prove serviceable.

Treatment of Catarrhal Jaundice.—B. B. Vincent Lyon (*American Journal of the Medical Sciences*, April, 1920), after the duodenal contents have been aspirated for study, introduces through the tube fifty to 100 c.c. of twenty-five per cent. saturated solution of magnesium sulphate with which to bathe or douche the duodenal mucosa. By connecting the duodenal tube with a low pressure vacuum bottle some magnesium sulphate remaining in the duodenum is first aspirated, and shortly afterward this clear solution will be seen to be tinged with bile. Later nothing but pure bile is obtained. The first bile obtained must come from the common bile duct. As the gallbladder contracts and expresses its contents through the cystic duct it washes out the common duct bile, so that presently we get only bile from the gallbladder, with perhaps a few drops of liver bile; after the gallbladder contents have all been expelled and we continued to aspirate, we recover bile freshly secreted from the liver cells, emptied into the hepatic ducts, thence to the common duct and finally, via the duodenum, out into the vacuum bottle. Treatment should be given every day until the bile duct has been freed, and then every second to fourth day, as indicated in the individual case. Following the biliary drainage the duodenum should be disinfected with potassium permanganate or silver nitrate solutions of the same strength as used in the stomach, continued as long as the microscopic evidence of duodenitis exists. He introduces from 100 to 200 c.c. of these solutions into the duodenum, lets it remain there from three to five minutes, and then recovers what he can, but has never seen any bad effects produced by what is left behind.

Surgical Treatment of Spinal Cord Tumors.—Charles A. Elsberg (*American Journal of the Medical Sciences*, February, 1920) says that if an extramedullary tumor has been exposed by laminectomy and incision of the dura its removal does not, in most instances, present any technical difficulties. If the growth lies on the posterior surface of the cord and is not adherent to that structure it can often be "picked out" of the spinal canal with the division of perhaps only a few fine adhesions. If, on the other hand, it lies under a nerve root or in front of the dentate ligament or the cord itself the manipulations must be very carefully accomplished. It is always inadvisable to attempt to pull out a tumor from under a nerve root, as such a procedure might cause serious injury to the cord. Either the nerve root or roots must be carefully raised and pulled apart by fine strabismus hooks, or if sufficient room cannot be gained the roots must be divided.

Similarly the surgeon should never attempt to pull out a tumor from under a slip of the dentate ligament. The slip should be divided and retracted in order to expose the new growth. When a tumor is to be removed from in front of the cord the following procedures are of value. By the division of one or two slips of the dentate ligament and, if necessary, of one posterior nerve root, the cord can be pulled well to one side. This should be done with forceps which grasp the slips of the dentate ligament which have been divided and not by direct

pressure upon the cord. The operator should never make the attempt to pull the cord to one side by means of traction on one or more nerve roots. A pull on a nerve root sufficient to draw the cord to one side is almost certain to injure the cord itself.

Another important detail in the exposure and removal of tumors which lie in front of the cord is to remove much more of the laminae on one or other side, so that the access to the front of the cord from that side is made more direct. If the neoplasm is found to be closely adherent to the cord the greatest possible gentleness should be used in separating it from that structure. Tumors which have originated from the pia mater on the cord are sometimes so firmly adherent that in their removal a small layer of cord tissues would come away with the growth. If the adhesion is a very firm one it is preferable to leave behind a small piece of the capsule of the growth. If the neoplasm is not found at the exposed level a careful search must be made for it. The appearance of the veins on the posterior surface of the cord is very characteristic when there is an obstruction to the return flow of blood at a higher level. In addition a probe should be carefully passed upward and downward on the posterior and anterior aspects of the cord. An elastic resistance is often felt when the end of the probe impinges upon a tumor higher up or lower down than the exposed area. Mistakes may occur, however, when the end of the probe is caught in a nerve root, in an adhesion between the arachnoid and the dura, or is obstructed by a swollen cord or one of the normal curves of the vertebral column. If there is no escape of cerebrospinal fluid from above and such an elastic resistance to the progress of the probe is encountered, especially if there is a venous congestion of the cord, a tumor at a higher level than that exposed is very probable.

Induction of Labor by Modified Champetier De Ribes Bags.—A. F. Maxwell (*American Journal of Obstetrics*, November, 1919) discusses Reed's two series of 100 cases each in which labor was induced by bags, with the result that the average duration of labor for the entire 200 cases was eight hours, a record without parallel in the literature. Among 2,750 house cases analyzed by the author, all cared for at the University of California Hospital, bags were employed for more or less classical indications to induce labor in sixty cases. The average duration was twenty-seven hours in primipara and twenty hours in multipara. This discrepancy in the duration as compared to Reed's series is ascribed by the author to a relative lack of uterine irritability in the sixty cases, as evidenced by the fact that seventy-nine per cent. of these had demanded treatment because of cessation of pains or weak and inefficient contractions, whereas in Reed's largely unselected, normal cases uterine irritability was likewise normal. The bags remained in the cervix for an average of thirteen hours, although the majority were expelled within ten hours. The average time before pains followed insertion of the bag was over five hours, whereas in Reed's cases they set in in from a few minutes to half an hour. Apparently the uterus is less irritable both in premature cases and in all toxemias than in other cases at term—

with the exception of placenta prævia. Many of Reed's patients had castor oil the night before the bag; oil often seems to exert no influence on the uterus until the following day. Nine children died among the author's sixty cases and twelve among Reed's 200 cases. Various abnormalities such as prolapsed cord, hemorrhage, nephritic toxemia, prenatal death, hemophilia, asphyxia, etc., account for these fatalities. Maxwell believes it demonstrated that induction of labor in normal cases at term cannot be judged in the light of cases treated with bags for classical indications, the former having normal uterine irritability and others not. Reed's results show that the method is worthy of trial in institutions, the need being now recognized of making labor as easy as is humanly possible.

Treatment of Vomiting of Pregnancy.—C. E. Turner (*Ohio State Medical Journal*, April, 1920) advises a careful search for any reflex cause. Remedies which have a sedative or hypnotic action are the best. A dram of sodium bromide in a siphon of carbonated water, a draught every four hours, is useful. Cocaine, in a dose of one quarter grain, may give temporary relief, or the pharynx and nares may be sprayed with a one to two per cent. solution. Morphine by hypodermic injection may be required. Adrenalin in ten drop doses of a 1-1000 solution by the mouth, twice daily, has proved successful. For the constipation, cascara is best. Stomach lavage with a one per cent. sodium bicarbonate solution, allowing 500 c.c. to remain, has proved of value. Diet is not of supreme importance. Acids are to be avoided and alkaline drinks are advisable. If the patient vomits on arising it might be well to take a cup of coffee or a piece of toast before assuming the erect position. Serum taken from the blood of a pregnant woman near term has been injected hypodermically and colonic irrigations of salt solution have also been used. Placental extract, grain five, three times daily, by mouth, and intramuscular injections of corpus luteum extract have been tried with some success.

A New Arsenical Compound for Treatment of Syphilis.—Commander B. L. Wright and Lieutenant L. A. Kennell, United States Navy, and L. M. Hussey (*Medical Record*, April 10, 1920), make a preliminary report on what they consider an ideal arsenical compound. The chemical term is disodium monoethylarsone with the formula $\text{CH}_3\text{CH}_2\text{AsO}(\text{Na O})_2$, and for brevity this compound has been called monarsone. It is decidedly less toxic than the arsphenamine compounds, it is perfectly soluble in small amounts of hot or cold water, and may be administered without danger in solutions in which each c.c. represents two hundred milligrams of the solid. It has the singular property of having no hemolytic action on the red corpuscles. It requires no special apparatus for its administration; it contains seven per cent. more arsenic than arsphenamine. The solutions of monarsone are so stable that they completely resist oxidation or decomposition when boiled or subjected to the higher temperatures of the autoclave. While monarsone is designed to be given intravenously, extravasation need not be feared, as leakage causes no untoward effect.

Adrenalin in Asthma.—George H. Hoxie and H. T. Morris (*Endocrinology*, January-March, 1920) give a history of a case of six years' duration in which the patient had taken approximately seven c.c. of adrenalin daily, for the most part with a hypodermic needle. She had occasionally used morphine and chloroform. Sudden death occurred. Aside from collapsed right lung and beginning aortic sclerosis, the chief postmortem findings were congestion of the abdominal viscera, similar to that found in animals dead from adrenalin administration.

Treatment of Mercury Poisoning.—Edwin Schisler and Howard Brashear (*Medical Council*, March, 1920) report a series of one hundred and forty-one cases of mercury poisoning. They find that the method of neutralization by magnesium oxide and sodium bicarbonate is the best, not only on account of its simplicity but also from the excellent results obtained by its use, namely, ninety-two per cent. of cures. The magnesium oxide is given in doses of thirty to sixty grains every three or four hours. This method has been used in conjunction with gastric lavage, milk and eggs, and the administration of seventy to one hundred c.c. of a saturated solution of magnesium sulphate as emergency treatment, followed by stimulation or sedatives as indicated.

Treatment of Trachoma.—Robert Lockhart (*Ohio State Medical Journal*, April, 1920) recommends grattage under ether in children. In adults a four per cent. solution of cocaine is instilled into the conjunctival sac at intervals of five minutes for four or five doses. The larger follicles are scarified with a scalpel and rubbed with a toothbrush soaked in 1-2000 bichloride solution. This operation can be used in all stages of the disease, whereas in expression the follicles must be ripe before it can be done. The aftertreatment consists of using one drop of a twenty per cent. solution of argyrol every three hours for six days following the operation. At the end of this time the reaction has usually subsided. One grattage is, as a rule, all that is required.

Prevention of Slipping Thread in Intestinal Suture.—R. Olivier (*Presse médicale*, December 27, 1919) comments on the surgeon's unpleasant experiences from slipping of suture thread out of the needle in intestinal suture, and describes a simple procedure by which this may be avoided, even in the absence of needles specially made for the purpose. After the suture has been threaded through the needle, the latter is passed directly through the thickness of the suture in its short end. The needle having completely traversed the suture, the latter is drawn down so that its penetrated portion comes to rest against the butt of the needle. The suture is thus fastened at the needle hole by a species of knot, but without the thickness of an actual hole, the needle and suture slipping through the tissues as easily as if the needle had been threaded in the usual way. Catgut and linen sutures lend themselves particularly well to this procedure. The needles should be threaded before the time of operation, wrapped in gauze, and the whole sterilized.

Proceedings of National and Local Societies

NEW YORK ACADEMY OF MEDICINE.

*Special Meeting in Memory of Sir William Osler.
Held Saturday Evening, February 28, 1920.*

The President, Dr. GEORGE DAVID STEWART, in the chair.

Dr. GEORGE DAVID STEWART, the president, prefaced his introduction of the speakers of the evening with a short eulogy of the personality of the late Sir William Osler. It was his opinion that a man brings his personality into the world with him, and his biography is merely the catalogue of the thoughts and actions of this personality. By looking over these, one reached the truth concerning him. Every man brought into the world as a part of this personality a certain amount of force or strength and to this, and to his skill in using it, his accomplishment was exactly proportioned. If a man strove for political power, he might be compelled to subscribe to the doctrines of Machiavelli; but if the blow he struck was strong enough, a competency, a peerage and, eventually, Westminster Abbey might be the reaction. Should he work for financial eminence he might succeed, but if he strove without conscience he became a Dives and must contemplate the sores of a Lazarus. That wonderful personality, the late Sir William Osler, had achieved great fame and a permanent place in the memory of mankind. His motto was:

"To love no darkness,
Sophisticate no truth,
Nurse no delusion,
Allow no fear."

His course was always upward but it was along peaceful paths and the blighted hopes of others did not mark his way. He excited no envy and when he had "reached the height of land" those who might have been his rivals were his warmest friends. To pay tribute to his personality and his memory was the reason for this meeting. The motive was ennobling, the theme inspiring, the occasion so solemn that one might well exclaim, "Lord, it is good for us to be here." The remark of that skillful but cynical orator at Cæsar's funeral, "The evil that men do lives after them," was not true. Not only did the good that good men do live after them, but the strong and good man became a prophecy of the future.

Dr. FRANCIS J. SHEPHERD, of Montreal, spoke of Osler's early medical career, for as a fellow student and colleague for many years and a life long friend, he felt that he could dwell on this with some knowledge. It was, however, difficult to express adequately the great loss the profession of medicine had sustained, not only on this continent but also in Europe. As a student, William Osler was a slim, keen eyed, active young fellow of medium height. He was full of energy and industry, was devoted to his microscope and could always be found in the autopsy room or in the wards of the hospital. Lectures did not trouble him much and he took no high place in his class, but he received a special prize for his graduation thesis on

account of its great originality. After two years abroad where he studied in London, Berlin and Vienna, he returned to his alma mater as professor of the Institutes of Medicine. He often said he had never expected anything more than a lectureship, but the faculty appointed him a professor at the early age of twenty-five. In those early days he had a most joyous temperament; he always thought the best of everybody and everything and was continually making new friends though never forgetting the old ones. His was a very stimulating personality and very suggestive. Hundreds of young men looked up to him, revered him as a father, and loved him. It was the power of evoking the love of his fellow workers that most distinguished him. He was beloved by all children and in his McGill days his progress up the college avenue of a morning was often interrupted by meeting and greeting his many children friends on their way to school.

In every city the medical men are divided into groups, more or less antagonistic, especially where there are rival medical schools. While in Montreal he harmonized these factions and they worked peacefully together at the Medico-Chirurgical Society, in consequence of which this society did much good work. At the Veterinary School he did much to introduce scientific methods of teaching, at the same time improving his knowledge of comparative pathology. He was the first pathologist to the Montreal General Hospital and in the university he made morbid anatomy, a most important subject. He taught clinical medicine in the wards of the hospital in a most interesting and instructive manner, making the student take an active part in reporting and observing the cases. Osler was always the friend of the student and the young practitioner, advising them as to lines of work and suggesting ways and methods, always being personally interested. He infected them with his own enthusiasm and love for science, for he was most inspiring and his energy was untiring. His incursions into all forms of classical and ancient literature were extensive and his retentive memory always furnished him with an apt quotation or a suitable application. He was steeped in the wisdom of Plato, Marcus Aurelius, and Sir Thomas Browne, and he knew the Bible better than many clergymen.

He gave little attention to private practice while in Montreal, though he had an office, but he acquired quite a considerable consulting practice. His weekly demonstrations on morbid anatomy, human and comparative, were very popular and were attended by numbers of medical men as well as students. He was one of the first to insist on the contagiousness of tuberculosis, also the possibility of transferring bovine tuberculosis to man. His decision to accept the call to Philadelphia was deeply regretted, for he was much beloved by his associates. Still the spirit he had infused in them remained behind and so did his methods. Throughout his life he never lost his interest in his alma

mater, and as a touching token of his love he bequeathed his rare and valuable library of old medical books to her and requested that his ashes be deposited with his books in the McGill medical library. His addresses to medical men and students were always most illuminating, full of humor, but with a foundation of serious advice and sensible direction as to conduct and ethics. His biographical essays pointed out continually that the way of success was by work and persistent work with, of course, a basis of latent worth. His influence on medicine was enormous in Canada and in the United States, not only by his immediate example but through the number of trained disciples he sent out to preach his gospel and to pass on the Osler traditions. He was beloved by all, and all who knew him felt that in his death the world lost not only a great physician but a great man.

Dr. THOMAS MCCRAE, of Philadelphia, delivered a sketch of the life of the late Sir William Osler. His early environment was primitive in one sense, but cultured in another, for many of the family associates in his early youth were graduates of universities of England and Scotland. His mother was a woman of admirable and lovable qualities, and his earliest teacher a man of sterling character. Early destined for the Church, and indeed with this end in view on entering Trinity College in Toronto, he forsook this career for the field of medicine and entered the Toronto Medical School in 1868, completing his course at McGill University, from which he graduated in 1872. After this he spent two years abroad, working especially at physiology and histology in London, Berlin, and Vienna. In 1874 he was appointed to the chair of the Institutes of Medicine, which included physiology and pathology, at McGill. After four years he went again to London to take the membership of the College of Physicians. On his return to Canada, his appointment to the Smallpox Hospital in Montreal and to the staff of the Montreal General Hospital gave him clinical facilities but his most important work at this period was done in the postmortem room, where his industry and thoroughness are still evidenced in the records which are written in his own hand and in great detail. The experience gained there was used all his life. Subsequently he taught physical diagnosis and clinical medicine and in 1884 spent some months again working abroad with Weigert in pathology and with Wagner in clinical medicine.

He moved to Philadelphia in 1884. At that time, apparently, clinical medicine and pathology were his chief occupations; practice came third so far as the evidence showed. Several monographs were published by him at this time which were permanent additions to the knowledge of the subjects treated therein. In 1889 he was called to Baltimore where, as he lived in the Johns Hopkins Hospital, he was able to take an active part in all the work, both in the wards and out patient department. Soon after going there he wrote the first edition to his *Practice of Medicine*. In no accomplishment of his life did he take greater pride than in his clinic at the Johns Hopkins Hospital; the improved methods of medical teaching, the estab-

lishment of a great clinic and the training of teachers and investigators he regarded as his greatest achievement. He devoted eleven hours a week to teaching, his free mornings were spent in writing, and his consultations were in the afternoons. He also rarely missed doing some work in the evening.

On his summer vacations he usually spent part of the mornings at work. To his assistants he was the most considerate of chiefs, never hesitating to let them have responsibility, and he left much of the administrative work of the clinic in their hands. His writings and his addresses were the results of infinite care and revision; he used the experience of his life in discussing later day problems. His consciousness of a disinclination for matters of routine and administration was the cause for his declining the office of president of one great university and principal of another. He was not always the man of work and he was a wonderful companion on a holiday; he played golf and was particularly fond of swimming. He was a man of gentle humor and fond of a joke and always had an apt reply to a witticism. On the other hand, to few was it given to know the real depth of his feelings and his intense human sympathy. He loved children and his relations to his fellow man could be summed up by stating that no one ever heard him speak unkindly or unfairly of another; charity to all men was his daily text, illustrated always by example and seldom by precept. He was always ready to make excuses for someone else, and to meet the many demands made on his time and goodness of heart.

His achievements are known to all. The historical sense was strongly developed in him and he firmly believed that for the present and future, a firm grip on the past was necessary. He took an intense interest in Greek thought and philosophy and this existed all his life; at the last he was honored by being elected president of the British Classical Association, a remarkable achievement for a doctor of medicine who had not had a classical training. Throughout his life books were his avocation; the appreciation of his knowledge of and love for books was shown by his having been president of the Biographical Society for the last seven years of his life, a period more than twice as long as had been allowed to any of his predecessors. He was as much appreciated in Great Britain as in this country; his activities broadened in his English life after his call to Oxford; he took great interest in the University work as a member of the Hebdomadal Council, the Bodleian Library, for which he was able to secure many treasures, and the Oxford Press. To the medical faculty he proved a stimulating force which resulted in wonderful development in the scientific work of Oxford University. Over the fireplace in his library were three portraits, of Linacre, Harvey, and Sydenham; he combined the qualities of all three; the learning of the first, the enquiring spirit of the second, and the clinical acumen of the third. One might ask from what came the power to bind so many to him in love and friendship; it was not so much his greatness in his profession as the attributes of the man himself.

Dr. EDWARD C. STREETER, of Boston, spoke of Osler as the man of letters. Although it was quite true that Doctor Osler was not the originator of the historical method of teaching medicine in this country, for it had a certain vogue even in Jefferson's time, yet it must always seem that he had a more shining vision of its possibilities, and sought more intimately to concur in the work of restoration of this method than any other teacher. Oliver Wendell Holmes, had he been moved, might have accomplished what Osler did in this direction. Certainly John Shaw Billings was of too cool and impersonal a quality to effect such a revival. Nor could one think of any medical man on this continent who was quite as well fitted as Doctor Osler to inspire and quicken the historic sense in the rank and file of medicine.

From all records of his student days in Montreal it does not appear that Osler concerned himself overmuch with mere book knowledge. The moulding influences of Palmer Howard and the two *Wanderjahre* spent abroad brought new appetencies and a new outlook, but whether or not Osler before the year 1876 gave evidence of unusual interest in medical literature could not be determined. One would like to know how he came by his flair for the Fathers and Founders. One might venture to guess that there existed in Osler, even in his student days, a sealed and secret spring of delight in old books, a tincture of old letters, confined for a season but released later in those refreshing streams along which we have all wandered. In 1876, Osler, who was then twenty-seven, made his first descent upon the library centre in Boston. At that time the medical library of five thousand volumes occupied two ground floor rooms at 5 Hamilton Place; Holmes was president, Chadwick librarian. But Osler on coming to the library was immediately taken into camp by the clinicians and made the rounds of the hospitals for two or three succeeding weeks, with the result that he spent relatively little time among the books at Hamilton Place. At that he could not escape the toils of the alluring Chadwick, the raging specialist in books, who dogged his steps, expatiating upon the treasures of the Hunt collection, the hidden Alley and Treadwell libraries, Doctor Read's obstetrical lore, and the wonderful Tiedemann library on early anatomy, at that time in the hands of Dr. Morill Wyman in Cambridge. Four generations of Warrens, he was told, had brought together the entire output of the French School of Medicine of a hundred years ago—endless rows in gilt calf of Louis, Laënnec, Velpeau Dubois, Andral, Roux, Bichat, Broussais. Doctor Holmes, Osler's senior by just forty years, exercised his full charm upon the latter as often as they adjourned to the noble book room overlooking the Charles at 206 Beacon Street. Indeed the stranger's trial before adoption by Holmes consisted in his doing reverence to these books. Hence Osler, after saluting the medical classics, doubtless passed down the entire line and list to the Baskerville *Virgil*, the Elzevir *Tacitus* and Walton's *Polyglot Bible*. The description of the Master's library, as it appears in the *Poet at the Breakfast Table*, was fresh in the

minds of young students at this time. It had been printed in '72 and this was the year 1876. Osler revered Holmes. He later corresponded with him.

Through Holmes, Bigelow, Bowditch, Jackson, the Shattucks, the Warrens, still ran the full tradition of the Paris schools of medicine. There were scarcely any German plated medical men to be found at that time in the region about Massachusetts Bay. Ziemssen's *Practice*, it is true, was in course of publication in America and there was access to some translations of Billroth *Rindfleisch* and Niemeyer made in '69, '71 and '72. Hence it was partly on account of his German training that Osler interested Boston from the day of his arrival, and he felt a corresponding interest in Boston because of the French tradition lingering along the back waters of the Charles. One of the choicest studies in the history of American medicine is Osler's *Influence of Louis upon American Medicine*.

"Without history a man's soul is purblind, seeing only the things which almost touch his eyes," says the worthy Fuller in his *Holy and Profane State*. Osler was fond of Fuller. He believed with all his heart that a medical man without history was living in a profane state, unregenerate, lost in the welter of our ever increasing literature. "Faced with the bewildering variety of this literature," demanded Osler, "how is the hard pressed student to learn, first, the evolution of knowledge in any subject, and second, the life and work of men who made the original contributions?" As teacher the problem in a somewhat simpler statement assumed this form: "How to make incision in the memory of my boys so that the essential written record of great minds in all ages will never depart from them?" Everyone knew the technic of that operation, the ingrafting of the humanities by Osler's unfailing method, the patient, shrewd, profound pedagogical skill in procedure, genial, deft handed, delightful. Question any student who had been operated upon and he would confess that his crudities and windy humors had given way to lofty ideals and an instinctive spirit of kindness.

Books were his tools; as he said in his address on Books and Men, "Books are tools, doctors are craftsmen." "A physician who does not need a library sinks to the level of a cross counter prescriber." "To study the phenomena of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all." "By the historical method alone can many problems in medicine be approached profitably." "A library after all is a great catalyzer, accelerating the nutrition and rate of progress in a profession." When he said that he should like to see in each library a select company of immortals set apart for special adoration, you may read into this his cryptic purpose to supply those books which he regards as immortal, in so far as he could, to the libraries of which he was especially fond.

Voynich in London spent years trying to fill his order for a dozen copies of the *Fabrica* of Vesalius in the "edition princeps," and on top of that he wanted two or three perfect copies of the *Celsus* of 1478. Since the time of Sir Robert Cotton in Elizabeth's reign who in Cotton House, Westmin-

ster, where the House of Lords now stands, played the part of antiquary and bountiful booklover, no collector had shown a more liberal spirit than William Osler.

By 1900, however, his array of British clinicians and surgeons must have been fairly complete, with many side lines of great extent, including the Americans Beaumont, Bartlett, Bassett, Smith, Holmes, Jackson, Bigelow, whose response to the great call he loved to dwell on. His election lighted early on the founders of modern medicine—he began to covet a strict *Bibliotheca prima* not only in medicine but in science; as he expressed it, "The idea is to have in a comparatively small number of works the essential literature, grouped about the men of the first rank." In illustration of this idea Doctor Osler, last May at the meeting of the Classical Association at Oxford, showed the following books, arranged in chronological order, all in first editions save one, the Avicenna. First his prized copy of Plato, then Hippocrates, Aristotle, Theophrastus, Galen, Dioscorides, Celsus, Plotinus, Rhazes, Avicenna, Averrhoes, Copernicus, and many others.

The rate of growth of the library at Norham Gardens was greatly accelerated over that of West Franklin Street, with which he has made his students long since familiar. The most notable expansion was on the side of medical manuscripts and incunabula. His address as president of the Bibliographical Society just before the war was driven home by a most striking display of the earliest medical imprints, all dating before the year 1480. The gathering and collating of these items became more and more his hobby, his sole recreation. His love for the old medical humanists, Linacre, Caius Leonicensis, and Rabelais suffered no sea change in that island air. He still spoke of himself in his last address as "one whose best friends have been the old humanists, and whose breviary is Plutarch, or rather Plutarch gallicized by Montaigne." What little time was left to him during the war Doctor Osler spent in preparing a *Catalogue raisonne* of his library. His arrangement was in six main divisions; *Bibliotheca prima* and *secunda*, biographica, bibliographica, historica, and lastly manuscripts. This plan, commended by experts at the Bodleian and British Museum, was running as smoothly as the Works and Days of Hesiod, when came the great Interrupter of all plans. Only one portion of the catalogue—the section on the history of anesthesia—had gone from Osler's hands to the press. As to the printing of the complete catalogue, that is in the lap of the gods. It was devoutly to be hoped that this definitive and final great work be published if possible; for his warm heart, open mind and friendly hand would be discernible line upon line through all its stubborn matter.

In closing the speaker recalled what Colonel Garrison said about Doctor Osler's library: "His great collection of original texts and documents relating to discoveries and advances in the science and art of medicine was all but completed as to items, but the big human touch which would have made its catalogue one of the unique things in medical bibliography could only have been given by Osler himself."

Dr. WILLIAM H. WELCH, of Baltimore, spoke of Sir William Osler as the physician. He declared that undoubtedly the greatest figure in the medical world at the time of his death was Sir William Osler. This dominant position had been attributed to a number of his qualities or achievements. No one ever attempted even to present a sketch of Osler without dwelling on his personal qualities. It was a question whether or not, back of that, his professional, scientific achievements, putting consideration of his personal qualities aside, would ever have given him the place he held in the respect and admiration of the world. Perhaps no other physician has had a position comparable in the sunlight of the world to that of Osler. Then again he was a man of letters and it was quite right that this should have been treated as one of the important sides of Osler's work and character. No mortal man had occupied quite the same position toward and in literature as Osler, because his writings were not on general subjects.

His place in medicine was comparable to that of Huxley in science, unlike as the literary style of the two men was. Indeed, there could hardly be a greater contrast. Osler was the most striking example of the most elusive style. One would have to be well acquainted with the classics to grasp his writings. Osler's writings, in part at least, even his medical writings, were ranked as literature. Other authors have had a good style, but he added a peculiarly arresting quality to this so that men like Gilbert Murray ranked him as a man of letters, though unlike Holmes, he did not contribute to general literature. His newspaper reputation rested on that notorious episode in his last formal address at Johns Hopkins in 1905, and this was a matter of great distress to him. The daily press gave the impression that his fame rests upon one paragraph, almost an aside in the address. One or two matters in regard to this might be put straight at this time. That general line of thought was one of which Osler was very fond of developing. He told the speaker a few days before giving the address on the 22nd of February: "I have no original thought to present," whereupon Doctor Welch assured him that he had never been known to fail and suggested that he make use of this theme. The newspapers featured that the next day, and it was a reflection on the press that they should have taken a joking allusion to a novel of Trollope as a serious expression of Osler's belief. But if one bore in mind what he contended, that fruition in man in late life was the result of the seed implantation before forty years of age, one could agree with the statement.

There was no one particular accomplishment, or quality, or characteristic, which could account for the greatness of Osler. It was the unique combination of them all which accounted for it and which gave him that distinguished place in the respect and admiration of the world. Osler would have been the last to have put himself outside the medical profession; his creed was that he belonged to it. His life was that of a physician and that was the central feature in the whole composite picture of the man. There were two or three aspects of that side of Osler as the physician and clinical teacher which

might be dwelt upon to advantage. Doctor Shepherd had already indicated the character of his training for his profession and had spoken of his not engaging in practice until after several years following graduation. He had these early years, therefore, for the development of the foundation of his professional work. He was one of the physicians whose work and career were founded on the study of morbid anatomy. This type of physician was a characteristic one of the nineteenth century. He did not exist before, and it was not until then that Morgan stated that there was little appreciation of the service which morbid anatomy was capable of rendering physical medicine. Up to that time there was no appreciation of its relation to the better understanding of disease and to better clinical training.

In another connection, Doctor Welch spoke of Osler's mind as that of a naturalist. It was a very charming type of mind, one that appealed more broadly to human interest than the other type of scientific mind. By that the speaker meant that one was greatly interested in observing and studying the relations of the phenomena to each other; in accurate record, not in hypothesis. He was not unsympathetic with experimental studies, but his interest did not lie in that direction nor was his teaching in that direction. No one had attempted to form an estimate of Osler's contribution to medicine. In the multitude of biographical sketches one would find only general statements that his contributions were valuable. A study which would take considerable time with considerable knowledge of what had gone before, such a study would present Osler in an excellent position as a valuable contributor to medicine.

Doctor Welch then spoke of Sir William Osler's contribution to hospital organization and clinical teaching because he felt there was a little risk of what he had accomplished in this field being lost from sight. When Doctor Osler went to Johns Hopkins he had an exceptional opportunity. There were no traditions; the hospital, by an extraordinary provision in the will of the donor in 1867, was designated as a part of the school. Osler established a hospital organization which was very interesting. He created the so-called upper resident staff above what he called the interns, appointed as residents for an indefinite period, who lived in the hospital and worked there. When one recalled who these men were and what they had since accomplished, it became clear that there was something of value in the method. It furnished to the young physician, aspiring to higher work, the same kind of activity which an assistantship in a laboratory gave. Those men really left the hospital with established reputations and ready to fill desirable positions in the world. He also established for the first time in this country the posts of clinical clerk and surgical dresser. He brought into close association the out patient department with the wards of the hospital. He made great use of the out patient department in his teaching.

There was no one who had such a multitude of friends; no one whose death could be felt as such a personal loss as the death of Osler. There was

never a more delightful companion. He was mourned, but there was joy in the memory of such a life and such work as he accomplished. It was a life full of systematic work, and until that great blow, the loss of his son, full of happiness, success, peace, concord, and amity with all mankind. The life of Osler had left an indelible mark on his time and generation, and the influence of such a life and such work was enduring.

Letters to the Editors.

DUCTLESS GLANDS IN U. S. SOLDIERS DURING THE EUROPEAN WAR.

The Association of Military Surgeons, U. S. Army Medical Museum.

WASHINGTON, D. C., May 11, 1920.

To the Editor:

Being interested in material on diseases of the glands of internal secretion in U. S. soldiers in our Army camps and at the front during the European war, I should feel much indebted to any physician who has served as a medical officer in the Army during the war, who might be able to supply me with any information in regard to this matter, particularly statistical relations, semeiology, the incidence of these diseases in drafted men and in enlisted men who were subsequently on duty, and the measures taken in dealing with such cases. Any help I may receive in this matter will be highly appreciated and acknowledged.

JAMES ROBB CHURCH,
Colonel, Medical Corps, U. S. Army,
Secretary-Treasurer.

Births, Marriages, and Deaths.

Died.

BARNES.—In Martinsburg, W. Va., on Saturday, May 1st, Dr. William Allen Barnes, aged fifty-four years.

BEARD.—In Horseheads, N. Y., on Saturday, May 1st, Dr. George Miller Beard, aged eighty-one years.

BOSS.—In Beverly, Mass., on Tuesday, May 11th, Dr. J. William Boss, aged fifty-three years.

CADY.—In New York, N. Y., on Thursday, May 13th, Dr. Lyndon Bulkley Cady, aged thirty-one years.

CURTIS.—In New York, N. Y., on Friday, May 14th, Dr. H. Holbrook Curt's, aged sixty-four years.

HOLCOMB.—In Seattle, Wash., on Monday, May 3rd, Dr. Charles Milo Holcomb, aged sixty-one years.

MILLER.—In Philadelphia, Pa., on Tuesday, May 11th, Dr. Mary Miller, aged eighty-two years.

PORTEOUS.—In Yonkers, N. Y., on Thursday, May 13th, Dr. James Lindsay Porteous, aged seventy-eight years.

RICE.—In Excelsior Springs, Mo., on Tuesday, April 6th, Dr. James Tipton Rice, aged fifty-nine years.

SCHWAB.—In Brooklyn, N. Y., on Saturday, May 5th, Dr. Alvin Hugo Schwab, aged fifty-two years.

SEALY.—In Newark, N. J., on Tuesday, May 11th, Dr. Edward Sealy, aged seventy-one years.

SIMPSON.—In Martinsville, Ind., on Monday, May 3rd, Dr. Wade E. Simpson, aged forty-two years.

TODD.—In Seattle, Wash., on Friday, April 23rd, Dr. William R. Todd, aged ninety years.

WICHTERICH.—In Cape Girardeau, Mo., on Friday, April 2nd, Dr. Robert F. Wichterich, aged fifty-two years.

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Original Communications

SEX DISPROPORTION AND ITS CONSEQUENCES.*

By R. MURRAY LESLIE, M. D.
London.

In France it is considered a safe procedure when in doubt as to the explanation of any social matter to rely upon the famous maxim *cherchez la femme*, and this principle may be said to be generally applicable, whether the problem is a private quarrel, social unrest, or a national revolution. The principle I am now inculcating is that there can be no real social rest without feminine contentment—more particularly in England, where women form the bulk of the population. I do not propose to discuss the large problem of feminine content or discontent in all its various aspects, as this is quite beyond the scope of this lecture, which is solely concerned with the direct and indirect consequences of the numerical preponderance of women over men in the United Kingdom, and the suggested remedies for sex disproportion. As far as one can judge, the presence of female sex preponderance seems to be almost wholly injurious and to have few compensating advantages.

FACTS AND STATISTICS.

The following table indicates the female sex preponderance in Europe in 1911 (at the end of the last census):

	Numbers.	Females to 1,000 males.
England and Wales.....	1,179,000 (over 2,000,000 now)	1067.6
Scotland	143,000	1062.0
Italy	628,000	1036.0
Austria	506,000	1036.9
France	683,000	1035.4
Germany	845,000	1026.4
Hungary	106,000	1018.9
Belgium	62,000	1016.9
Ireland	6,000	1002.8

A glance at the table will show that the female excess is vastly greater in Great Britain than elsewhere. During the generation immediately preceding the war, the proportion of females had been steadily rising in England and steadily falling in Germany and Austria. Thus in England the excess of females had risen by twenty-three per cent.; whereas in Germany it had fallen by thirty-two per cent., and had these tendencies continued, without interruption by a war, the sexes in the Central

Empires would have become almost equal; while in England and Italy and other allied countries the superfluity of women would have become more pronounced than ever. Further, and this is the most disturbing factor, it is between the ages of twenty and sixty (i. e., the age group which comprises the most important economic and reproductive individuals of the country, and therefore by far the most important section of the population) that Great Britain is in a very much worse position than any other country. At this age period Great Britain had in 1917, 938,000 females excess, as contrasted with a much larger Germany, which had an excess of only 400,000, and France, which had an excess of seven thousand.

It is in just this age section that the war has produced the greatest disturbance in the sex balance, as the men who have fallen all come within these age limits, and therefore were all potential or actual husbands and fathers. It may be stated that the extent to which the late war has disturbed the sex balance in all the European belligerent countries has not yet been fully appreciated by the general community. There are now about a million excess females of reproductive age in these islands.

During the first four years of the war female excess among young and middle-aged adults (twenty to sixty) in Great Britain had increased from 1,093 to 1,000 males to 1,150 to 1,000 males, i. e., in the proportion of 150 to ninety-three, the only consolation being that the increase was still greater in the central Empires, where the figure was 1,200 to 1,000 males. Ireland is the great exception, as there the sexes are almost equal, and the proportion has remained practically unaffected by the war, for reasons upon which it is unnecessary to dwell.

Professor Lindsay, in September, 1918, stated that as the result of the war the disproportion between the sexes had been so accentuated that on a moderate calculation there will be three million more women than men in these islands in the not distant future. At the present moment the proportion is well over two million, but the larger figure quoted from Professor Lindsay may be well imagined when we consider that in this war the holocaust has been mainly among the young males and potential fathers—a fact which makes the great war far more calamitous than even the Black Death of the fourteenth century, which is believed to have carried off twenty-five million people in European countries.

*Lecture delivered at the London Institute of Hygiene on February 4, 1920.

CAUSES OF FEMALE SEX PREPONDERANCE IN GREAT
BRITAIN.

It is a recognized fact that in all countries more boy babies are born than girl babies, nature providing this excess in order to compensate for the greater mortality among male infants. During the past ten years the average proportion of male births to female births in England and Wales was 1,040 boys to 1000 girls. Now curiously enough this excess of boy babies is smaller in Great Britain (particularly in England and Wales) than in any other European country. Boy babies are much more delicate and difficult to rear and in this country there is a higher relative male mortality than in any other country; thus, in England and Wales the females catch up with the males at the age of fifteen and so far surpass them that at the age of forty the females show an excess of nearly 600,000. In Scotland it is rather better, as the females do not overtake the males till the age of twenty-one, and in Ireland not until the sixties, in Germany in the forties, and in Holland in the thirties. Had the relative number of deaths of males and females in Great Britain during the past thirty years been on the same level as in the Scandinavian countries, we should have saved half a million male lives. When in addition to all this, we remember the immense amount of male immigration that goes on annually from these islands, particularly from the more virile and vigorous age classes (between twenty and forty-four years of age when the sex proportion is 1,095 to 1,000 males), it will be readily understood why we have such a female sex preponderance in Great Britain.

It is a gratifying fact, however, that the same phenomenon which took place after the Napoleonic wars at the end of the last century has again occurred, and there has been a marked increase in the excess of male births among the war babies born in this country. During the forty years preceding the war, the ratio was 1,038 boy babies to 1,000 girl babies; whereas, during the ten quarters up to the end of 1917 the proportion rose to 1,045 war baby boys to 1,000 war baby girls. I am glad to say that this increase of male babies is continuing after the war at a still higher level, and during the first three quarters of the present year, 1919, the proportion of male births to female births has been respectively 1,059, 1,052 and 1,058; and if we could only save these boys during infancy and childhood, we should add many thousands of young men to the population, and correspondingly reduce the female preponderance. Why it is that during and after a war there should be a rise in the proportion of boy babies, is an interesting matter for speculation. Is it possible that the universal desire for male progeny exerts an influence, and is this influence exerted through the father or through the mother?

CONSEQUENCES OF FEMALE SEX PREPONDERANCE.

These consequences may be grouped under four headings:

1. Social consequences.
2. Economic consequences.
3. National consequences.
4. Diversity of type.

I. SOCIAL CONSEQUENCES.

The social effects of female sex preponderance are both complex and very far-reaching, and profoundly affect the whole social fabric—ethics, morals, religion, marriage and family life. The ethical standards which were largely man made are crumbling under our very eyes, and a complete revision is only a matter of time; new ethical codes on a much broader basis are being established.

The close relationship of sex preponderance to sex morality is obvious. The resulting social conditions, as Doctor Bond has recently pointed out, prevent the normal development of perfectly natural capacities and desires, owing to the absence of opportunity in marriage for their legitimate exercise; and this divorcement between desire and legitimate satisfaction is responsible for at least some of the increase in sexual immorality and the spread of prostitution. The social evil was never more in evidence than now, particularly in regard to the number of so-called amateur prostitutes, many of them recruited from the more irresponsible juvenile members of the surplus female population. Further, the freedom of the modern independent girl, earning her own living away from the supervision of her parents and relatives, is fraught with great danger. There is a tendency for the modern woman to rebel against all discipline and conventional trammels and a desire to proclaim the so-called liberty of the individual and to demand freedom to satisfy natural desires regardless of consequences. Pleasure for pleasure's sake is the cry of many, and all this tends to the encouragement of unchaste conduct and also to the spread of contagious disease, with which a lower standard of sexual morality must necessarily be associated. In this connection it is noteworthy that in Ireland the illegitimate birth rate is by far the lowest of any country in Europe. This fact is generally attributed to the influence of the Roman Catholic religion. If this is so, why should the effect not be similar in Spain, Austria, France, and other Roman Catholic countries. May not the explanation be partly due to the fact that the sexes are practically equal in Ireland, and that there is thus less occasion for unchastity? Be that as it may, there is no doubt that there is an increasing number of women who no longer believe in the conventional moral code which holds that all sexual relationships outside marriage are wicked and immoral. This is partly due to lack of religious and disciplinary education during the war. The moral evils would be much less if girls were taught the facts of life before being launched into the outside world.

As regards religion, it is alas true that to many women as well as to men the Ten Commandments are becoming out of date. Religion itself, the greatest social power in the world, is voted as old fashioned and often spoken of with more or less contempt as Early Victorian. Bertrand Russell in a recent article goes so far as to say that the influence of the Christian religion on daily life is decaying very rapidly, even among women who hitherto have been the main upholders of religious observances. He adds that not only has the proportion of nominal believers declined, but even among those who

do believe, the intensity and dogmatism of belief has enormously diminished.

It is, however, in regard to marriage and family life itself that female sex preponderance is playing such an important part. It is still true, as Bertrand Russell admits, that the law and public opinion as regards marriage are still largely dominated by the teaching of the churches; but within the marriage state itself there is profound discontent. There were there so many unhappy marriages and there is an ever increasing demand for the reform both of our marriage laws and of our divorce laws. The expense of children leads to continually greater limitation of families—more especially among the educated classes—which leads to an unsatisfactory birth rate, so that these and also the skilled artisan class are steadily dwindling; while the shiftless and drunken sections of the community are constantly increasing in numbers.

Owing to the excess of women, a large number must remain unmarried and others refuse to marry unless the State provides for the children. Many married women demand that the law should permit divorce by mutual consent. Owing to the increasing complexity of disposition that civilized life brings, it becomes more and more difficult for the modern man or woman to find the mate who will bring happiness. Under the present rigid law, it is contended that large numbers of men and women are condemned by marriage to the society of utterly uncongenial companions, and married men but too often seek happier relations elsewhere among the numerous unattached women who abound on every hand, and many of whom are only too eager to afford them the consolation they cannot find at home. It is rumored that Germany is encouraging such secondary relations, which is tantamount to a practical though clandestine polygamy, and it is feared that a similar state of matters exists to some extent in our own country. Speaking from my own medical experience, I have no hesitation in saying that much of the unhappiness existing in this country is directly traceable to clandestine friendships between young women and married men. Every young woman going out into the world should be told to beware of the married man who complains of his wife not understanding him.

Lastly, from the point of view of social unrest, the enormous amount of unhappiness and discontent arising directly from female sex preponderance, not only in our cities and towns but in every country village and hamlet, is difficult to overestimate. The boredom, the domestic friction, the dull resignation, the family misunderstandings—all serve to increase the national discontent; and all these factors are still further accentuated by the increased cost of living.

II. ECONOMIC CONSEQUENCES.

The old idea of a woman devoting herself exclusively to husband, home, and children, and of a young woman similarly preoccupied with her home, mother, and younger brothers and sisters (although it still lingers in the minds and hearts of countless men, probably the majority) is no

longer held by women themselves. Several factors have contributed to this result. On the one hand, the wider educational facilities have broadened women's minds and awakened countless social and intellectual interests outside the home which have rendered limitation to the domestic sphere dull and monotonous and devoid of prospect, while on the other hand, the increased cost of living has made it impossible for quite young men to marry, so that the marriage age is longer and longer postponed, and also makes it impossible for the average father to maintain his daughters in idleness. But probably the most important factor of all in bringing about this change is the much smaller proportion of men with a corresponding reduction of the opportunities for marriage. Accordingly, young women are faced with two alternatives, looking forward to a dull, monotonous, poverty stricken future, or going out into the world to earn their own living. The best women naturally choose the latter alternative, and so secure both interest and independence. They refuse to mate with inferior men.

No doubt a considerable amount of harm is being done by certain types of women engaging in work for which, both physically and mentally, they are totally unsuited. Women, however, are determined to find out for themselves by practical experience what they actually can do, regardless of the risks they may suffer in the meantime. The new type of woman is determined to be independent and to have a career of her own, quite apart from any domestic duties which may or may not fall to her lot. It is now universally recognized that work is a great safety valve and an outlet for various energies; and that the provision of such outlets by adding interest and zest to life strikes at the root of many of the evils from which idle women have so long suffered—not the least being that dull, dead monotony with no hope and no outlook for the future. Experience shows, also, that when due regard is paid to healthful conditions of work, and when real safeguards are established, women may more or less safely engage in most professions and industries, and there will still remain a sufficient surplus of reproductive energy for potential motherhood.

But not only is this the case in regard to the unmarried woman, but the ideal of an economically independent woman is held by many to apply equally to the wife and mother. Many believe that it is quite possible for a wife to earn an income alongside of her husband, so that she may contribute with him to the upkeep of a common home and the education of their children. Those who argue thus are likely to forget that the withdrawal of the mother during the day and every day from her young children deprives them of the strongest and best of all influences during the most impressionable time of their lives. Still, it is argued that the new ideal, though a difficult one, need not be impossible if the additional income earned by the wife is able to provide a trained nursery governess with expert knowledge in the rearing of children. Queen Victoria has been quoted as being an excellent ruler, and yet a devoted wife and mother of nine

children; and also Mrs. Booth, who although her husband's right hand in his outside philanthropic work, brought up a large family in the most exemplary manner.

Be that as it may, the fact remains that each recent successive census, while recording the increasing female sex preponderance, also records the steady numerical advance of women in industrial and professional occupations. In 1901 there were in England and Wales 6,300,000 female workers to 12,900,000 male workers. This proportion has been increasing steadily year by year. The war has given an immense impetus to women's employment—partly due to the still greater sex preponderance, as the result of the slaughter of our young men, and partly because women during the war have shown their capacity to do almost all kinds of work and to do them well, including the occupations hitherto confined to men. It may be taken for granted that women will continue to discharge their manifold activities partly because they like their work; still more because they like their pay; and most of all because the increased cost of living renders any and every addition to the household exchequer welcome.

III. NATIONAL CONSEQUENCES.

By far the most important national consequence of the female sex preponderance is its relation to the birth rate, both quantitative and qualitative. The actual lowering of the total birth rate is more the result of economic conditions; but the quality of the birth rate is closely related to sex preponderance. Owing to the excess of women, a large number, as has already been stated, must remain unmarried, and though not debarred by any legal penalties from having children, are actually debarred by the existing social and religious code. Now in this class of unmarried women are to be found a large and ever increasing number of the physically and intellectually fittest women in the country—women who can through their own ability earn their living in secretarial, professional and industrial life. On the other hand, the great majority of the less provident women belonging to the unskilled workers' class marry and have large families; while the professional classes even when they do marry, do not marry young and have only one or two children. In this way, the nation is deprived of the offspring of the best potential mothers and the decline in the birth rate becomes greatest in the best elements of the population.

There is a strong feeling among a considerable section of the higher grade women workers, and indeed to some extent among the excess female population generally, that even unmarried women who can afford to do so should have the right to bear children without any social stigma being attached to them. During the past few weeks this aspect of the question has come very much to the front in connection with the young millionaire's illegitimate son, whose mother, Miss Peggy Marsh, in a recent outspoken letter to one of the Sunday papers states frankly that "every woman has a right to motherhood and to the fulfilment of her life," irrespective of legal ties. Personally, I believe that such a demand, plausible though it may

seem on the surface, would in the end lead to chaos, unless the State stepped in and undertook the care of the children. To my mind, a far more urgent need is for the State to undertake the expense of education by making much larger tax abatements to married couples with children, so as to enable the latter to be educated properly and started in life. It is the economic burdens due to children that really prevent the highly educated woman of today from undertaking the responsibilities of marriage and motherhood.

One good result of the increased activity of modern women in professional and other employments is that it enables many women to come into close touch with social and political questions and to make their influence felt in promoting legislation to improve the conditions of life and work—more particularly in regard to woman's own industrial service to the nation.

As an offset to the reduction of the birth rate among the more educated classes of the community, the modern economic independence of women and the increasing friendship between the sexes resulting from women's independence, has undoubtedly increased the woman's power of sex selection, which may be of enormous value in future human development.

One of the most important national gains has been the increased interest in education and the numerous measures of reform which are now being introduced. Primary education is tending to fall more and more into the hands of women, as it has already done in America. Hitherto the pioneers of the women's movement have foolishly endeavored to consider education as if men and women were identical, and the attempt to force women into masculine molds is both mischievous and useless. Each sex brings to the world's work aptitudes which the other lacks, and it is owing to these differences that men and women have their wonderful charm for each other. Hitherto, the great desire seems to have been to prove woman's ability to do the same thing as man in exactly the same way, and accordingly to educate girls and boys practically the same. There is at last, thanks to some farseeing women, a deliberate endeavor to bring the education of girls into some relation with their own special nature. Rousseau long ago said "Educate women like men, and the more the resemblance, the less power they will have." At the same time, while women should be trained for home and motherhood, they must also be prepared and educated for some profession or occupation, as it is absurd to close one's eyes to the fact that owing to the female sex preponderance a multitude of Englishwomen must perforce remain single.

IV. DIVERSITY OF TYPES.

It may be considered presumptuous on the part of mere man to attempt a classification of women; but certainly there is no more striking fact than the extraordinary diversity of type that has emerged apparently as the direct outcome of sex preponderance. Women tend to run to extremes in their quest of interest and excitement. The following types seem to stand out prominently:

The domestic type.—The domestic type, fortunately for the nation, still forms the bulk of the women belonging to the industrial classes, but is getting more and more rare in the so-called middle and upper classes. Love of home interests appears to be getting less and less, and is being replaced by desire for outside excitement, e. g., cinemas, theatres, restaurants, and dances. Real love is the only power capable of keeping a girl in her home; the sense of duty seems powerless to do so. The absence of opportunities for love and marriage makes home dull and monotonous.

The social butterfly type.—This type has probably never been so numerous as at present, and is represented by the frivolous, scantily clad, jazzing flapper, irresponsible and undisciplined, and to whom a dance, a dress, a new hat, or a man with a motor car are of far more importance than the fate of nations. This frivolous type contains a large proportion of physically attractive specimens, with strong reproductive instincts, and who accordingly prove sexually attractive to the average young man of today, freed from the discipline of school and the army. Although these girls are quite unfitted by training or disposition to undertake the responsible duties of marriage and maternity, they are ever vying and competing with each other for the scarce and elusive male and in many cases they strive by means of dress or the lack of it to appeal to man's lower nature instead of exercising their power of elevating his ideals. Dignity and reserve are often conspicuous by their absence. Young men have dance invitations four and five deep. Never was the lure of sex so strong and rarely have the young people's ideals been so low. Our boys and young men are being spoiled before our eyes.

The intellectual type.—This type is represented by the professional workers—journalists, doctors, social workers, school teachers, college girls. A very small proportion of this class marries; but it is chiefly to them that we owe the driving force which has secured the amelioration of the conditions of employment of their sex, and also—most important of all—in safeguarding maternity and in promoting child welfare. The higher education of women seems to be an important factor in lessening the number of marriages and lowering the birth rate. The majority of girls enter college with ideals unfavorable to early marriage and large families. Dr. Mary Robert Smith, in America, contrasted the marriage and birth rates of college women and of their noncollege relatives and friends. Of the noncollege married women thirty per cent. married under twenty-three, as compared with 8.5 per cent. of college women; on the other hand, between twenty-three and thirty-two the respective percentages were 6.5 and 8.3. The number of living children of the college woman average 1.6 as compared with 1.8 of the noncollege woman. But it must be remembered that the college woman marries later.

The intelligent woman.—From the racial point of view, this is the most important type of all, and is the one that is best fitted to undertake under

present complex conditions the responsibilities of marriage. There is a vast difference between intellectuality and intelligence. Rightly or wrongly the purely intellectual woman is not sexually attractive, and therefore generally remains unmarried. But the intelligent woman is not only well read and in touch with all new movements, but equally appreciates the charms of dress, refinement, and other social amenities. She makes the ideal companion and hostess, and on account of her adaptability to varying conditions is really the woman who most counts today.

The pseudointellectual type.—This type is a peculiar product of the twentieth century, though she has no doubt existed in all ages. She is the woman of cults, missions in life, and other freakish tendencies. Such women abound in garden cities, Fabian societies, and certain types of women's clubs. They include in their number ardent spiritualists, Christian Scientists, crystal gazers, futurists, astrologists, morbid sexual neurotics, certain vegetarians, and professed man haters. Some of them are short-haired folks corresponding to long-haired men. Their ranks are largely recruited from unmarried women, in the middle meridian of life. Not a few of them in happier circumstances and with an approximate equality of sexes would have been happy wives and mothers, but lacking domestic interests, find their present circumstances so monotonous that they are glad to seize on anything which may yield even a transitory interest. Many of them lavish their affection upon toy dogs or other pets, owing to the fact that other more healthy outlets have been denied. It is undoubtedly true that large numbers of women do not desire to have children at all; while a still larger number of intelligent, activeminded women resent the slavery involved in having children; they are ambitious for a career of their own. Similarly there is a growing number of less estimable women who, while loving pleasure, gaiety and the admiration of men, want to postpone marriage and child-bearing till youth is past.

There are many other types, such as the athletic girl, often a breezy, charming personality; though even she is likely to push her hobby to extremes, but she is vastly to be preferred to the bridge-playing type who spends her afternoons and evenings at her favorite dissipation, with no time or leisure for the multitudes of needs and interests which surround her on every hand. We have still present among us the disappointed old maid or witherhood type, as it has been called, which constitutes a large proportion of the inmates of boarding establishments. This diversity of type is undoubtedly the result in great measure of the sex preponderance of females, necessitating a corresponding multiplicity of interests outside the old beaten domestic track. If change be the essence of progress there is certainly no evidence of stagnation among the women of England. In view of all this diversity it is no wonder that the bewildered male finds it difficult to select his mate from this feast of types. There are women to minister to all his varying moods at all ages, and hence he is no hurry to settle down, but postpones marriage later and later

with each decade. It may be that the balance will be redressed by women taking matters into their own hands; and it is possible that in racial questions women will yet become the dominant sex. With a greater sense of personality, she is probably far better fitted to be a mate selector than the more abstruse and less observant male. In any case they have an opportunity in the present year of our Lord, 1920, although there is some justification for the observation of the young lady who recently remarked that "in view of the great scarcity of bachelors this season, and their low percentage of eligibility, this year's leap year privilege is not worth having."

A much more hopeful method of equalizing the sex proportion in England is to be found in the removal of those influences which tend to produce the high mortality among male infants. It has already been mentioned that had the relative proportion of deaths of males to females in England and Wales during the past generation been on the same level as in some other European countries, we should have saved no less than half a million male lives. The general establishment of maternity homes, the improvement of the qualifications of midwives, and the extension of the system of infant welfare centres, and, perhaps most of all, the return to the habit of breast feeding, which used to be almost universal in England and has now fallen into disuse, will all help in the saving of the more delicate male infants.

It would be an excellent thing, too, if well-to-do single women and childless wives adopted boy babies. The desire for children is likely to develop in middle life, when the adventurous age is past and when the prospect of a lonely old age begins to terrify, and the feeling of having no share in the future becomes oppressive. It is then that the highly intellectual woman of independent status begins to envy her former girl companions whom she used to think ordinary and humdrum, but who are now happily surrounded by their sons and daughters. By adopting boy babies she not only increases her own happiness, but performs a great national service.

FEMALE EMIGRATION.

The most immediately practical method of reducing the female preponderance is the encouragement of female emigration. We seem only now to have awakened to the fact that while the female sex is in the majority of over two million in England, there is a surfeit of males in some of our colonies, and we are only beginning to realize the immense evil of the illconsidered migrations from this country in the past. For a century young men have been pouring out of this country and settling as bachelors in our overseas dominions and elsewhere, leaving their sisters at home. The appalling number of half castes in America, Canada, India and South Africa bear witness to the insensate folly of sending lonely young men away from the home country. It is a melancholy fact, as Doctor Snow recently pointed out at the Royal Statistical Society, that a large proportion of Canadians, Australians and New Zealanders—many of them as fit men as could be found anywhere—remain single chiefly be-

cause of the scarcity of women in the dominions. Doctor Carver, of Harvard, has shown that migrations are always away from a great disadvantage toward a greater advantage, the pressure being that of want, danger, monotony, oppression and uncertainty toward wealth, safety, variety, and comfort.

It is proposed now to remedy this state of matters, and it is suggested that a systematic scheme for colonization should be worked out, whereby young women should be sent out in sufficient numbers to keep the sexes equal. There is at present a government scheme to give free passages to all ex-service women who have worked with the Waacs, Wrens, the Wrafs, the Women's Legions, and numerous other women's corps, who ought to be just the type of women to make good as wives and helpmates in the dominions. Our splendid land girls—fine healthy specimens of womanhood with experience of farm work—should be most valuable in Canada and elsewhere. It is stated that 300 applications a day are pouring into the offices of the Overseas Settlement Department.

There are, however, numerous difficulties, and experience has shown that, owing to the severe conditions of a settler's life, a sufficient number of married women must be reinforced by a corresponding amount of domestic help. Accordingly emigration societies are specially helping women who are willing to engage in domestic service, and statistics have shown that most of these women have married in four or five years. It is an interesting fact that while there seems to be a deep rooted objection among war service women to undertake domestic service at home, even though they have done similar work in the army without a word of complaint, they are apparently quite willing to act as domestic helpers, or to assist on farms in our overseas dominions. One great barrier to female emigration is the universal distaste of young women for monotony and discomfort, and it is undoubtedly a tremendous sacrifice to give up home, friends, shops, cinemas, dances, theatres and other similar attractions for a lonely life many miles away from towns and villages. There is also the fact that young, energetic women, just the types that would make our best colonists, can easily earn a satisfactory livelihood in this country; though, as Doctor Snow has pointed out, it would be far better from an imperialist viewpoint that these young women should be wives and mothers in the sparsely populated countries of Canada and Australia, rather than be wage earners in the textile and civil industries of Great Britain.

Another important fact must be remembered, and that is, that in certain colonies the sexes have from various causes recently approximated to an equality. Thus, in New Zealand, by the end of the war the small excess of males had been wiped out. In Australia, too, where in 1914 there was only an excess of 64,000 males between twenty-one and forty-five, this excess has been enormously reduced—partly by the numbers killed in the war and partly by the thousands of bachelors who have married while in this country. There remains, therefore, only Canada, and it is computed that this dominion, where in 1911 there was an excess of

about 400,000 males, can now only absorb about one half of the additional excess actually caused by the war, leaving five sixths of the total excess untouched. It will thus be seen that emigration will only solve a small part of the problem of sex disproportion.

I would suggest that one of the most useful forms of migration would be that of little girls from British orphanages, who could be equally well reared in our dominions, and who, during childhood and adolescence, would gradually become acclimated to the conditions in which their lives would be passed.

SECONDARY NEPHRECTOMY.*

By ARTHUR L. CHUTE, M. D.,
Boston.

By secondary nephrectomy I mean a nephrectomy that follows, usually after a moderate interval, some previous operation on a kidney that has not completely relieved the patient of his trouble. It is a sort of supplementary nephrectomy that is necessary to restore the patient to health. In many of these cases the previous operation that has failed to give complete relief has been a nephrostomy, though exceptionally it has been some other sort of kidney operation.

As the number of operative kidney cases increases, and especially as our attempts to do conservative kidney surgery become more common, we shall in all probability be confronted with a greater number of cases in which we shall be forced to do a secondary nephrectomy, at least until such time as we have formulated definite rules as to what kidneys we may hope to save by conservative operations and what ones we may not save. While secondary nephrectomy does not bring into play much, if anything, in the way of new principles, there are certain procedures commonly employed in this operation that are only exceptionally employed in primary nephrectomy. Also, there are certain conditions to be met and certain accidents which are unfortunately not very rare in secondary nephrectomy that are met relatively seldom in primary nephrectomy. In secondary nephrectomy one commonly meets difficulties and dangers that are only exceptionally encountered in primary nephrectomy.

Secondary nephrectomy can never have a standard, classical technic, for the reason that the conditions it must meet vary too much to admit of this.

This paper is based on a study of twenty cases of secondary nephrectomy that I have found in my records. A review of these records would indicate that cases of secondary nephrectomy fall naturally into two great classes. The first class is made up of those cases in which one may say that the operation was intentional, cases in which one elected to do a secondary nephrectomy rather than a primary nephrectomy, for the reason that one believed he would in this way diminish the risk to his patient's life. The second class is made up of cases in which it was not the operator's intention to

do a secondary nephrectomy but in which this course was forced upon him; this may have come about from some almost fortuitous circumstance, but more often it has been the result of an error of some sort either in diagnosis or in judgment.

In my experience a large proportion of the cases of secondary nephrectomy is the result of an attempt on the part of the surgeon to diminish the danger to life that he feels a primary nephrectomy would inflict on a patient. The greater number of these patients have a suppurating kidney and are so toxic as to raise a doubt as to whether they would withstand the shock of a primary nephrectomy. In cases of this sort preliminary drainage allows the patient to rid himself of his sepsis before he is called upon to withstand the shock of nephrectomy. Nephrostomy in these cases may be compared to preliminary cystostomy in prostatics with overdistended bladders. The primary nephrostomy may, in certain cases, even be carried out under local anesthesia, in which respect it further resembles the primary cystostomy of prostatics. Operation as carried out in these cases might be aptly termed two stage nephrectomy. Of the twenty cases in which I did a secondary nephrectomy nine came under this first class; cases in which a primary nephrostomy had been done to lessen the danger to life of a subsequent nephrectomy. Seven of these nine patients presented a pyonephrosis; in three of these the pyonephrosis was due to renal stone; in the other four, the pyonephrosis was in two instances of tuberculous origin and was accompanied by a perirenal abscess, while in the other two cases the pyonephrosis was nontuberculous; one of these patients also had a perinephritic abscess. Beside these suppurating cases there were two large, acute hydronephroses, both in children. One was the result of trauma and was mildly infected, while the other was apparently of congenital origin. I did not see either of these hydronephrosis cases at the time of the primary operation, but it was considered that the patients were too ill to permit a primary nephrectomy.

Of these nine patients who were subjected to a secondary nephrectomy only one died. This patient was one of the tuberculous cases with a perirenal collection of pus, and as his death did not take place until about six weeks after the secondary nephrectomy, it probably cannot be charged directly against the operation; there was no autopsy but death was supposed to have been due to a more or less generalized tuberculosis. I feel sure that had a primary nephrectomy been carried out on these nine patients the mortality would have been much greater than it was; that the operation of secondary nephrectomy, in spite of its increased technical difficulties, was really a conservative procedure for these patients.

The second group of cases for the most part represents our errors, which vary from slight errors of judgment to pretty marked blunders. These are the cases in which we did not plan to do secondary nephrectomy but were forced to do it. They are very interesting and instructive but are cases in which, in theory at least, we should have been able either to have avoided a nephrectomy or if this

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was inevitable, we should have recognized that fact and carried it out before any preliminary operation was done. Four of the patients in this group had had stones removed from their kidneys. In one patient stones had recurred on several occasions and had been removed by dilating a sinus under ether and fishing them out. Each had a urinary sinus in his loin that had existed for periods that varied from seven months to twenty years. The man whose sinus had existed twenty years was more reconciled to the urinary leakage and smell than the others. Of course, as time goes on and the kidney becomes more and more atrophic, the amount of discharge from the sinus diminishes and so requires fewer dressings. This man submitted to secondary nephrectomy, not because of the offensiveness of his discharging sinus but because of colicky, intestinal pain that was apparently the result of adhesions between the mass of perirenal fibrous tissue and his descending colon.

In one patient from whom I removed the primary stone and later a second stone that had reformed in his kidney, I was unwise enough to do a pyelolithotomy on both occasions. Secondary nephrectomy became necessary in this patient because the second operation was followed by a persistent loin fistula. I am not perfectly sure just what operation was done in the other stone cases, but from what I could learn there seemed to be a reasonable probability that pyelolithotomy was the operation carried out for some of them as well. While pyelolithotomy is in a great many instances a satisfactory operation, there is a certain proportion of cases in which it is followed by a reformation of stone, a persistent loin fistula, or a progressive destruction of the kidney. In many instances one may remove a large and even branched calculus from a kidney pelvis and the incision will close readily—in the next instance a small calculus removed in the same way may be followed by a persistent fistula; as now used the operation is an uncertain one. Until we have had an opportunity to formulate definite rules as to which calculi may be safely removed by means of an incision into the pelvis of the kidney, I often wonder if we should not get better results if we removed all renal calculi by means of an incision carried down through the cortex. When a kidney containing a stone is already infected or when there is any appreciable danger of infection of such a kidney, I am convinced that nephrolithotomy, the incision through the cortex, gives better drainage and offers greater opportunity for the kidney to free itself of its infection than does an incision with drainage through the pelvis. The drainage if continued through the pelvis long enough to allow the kidney to rid itself of infection is very likely to be followed by a fistula. I believe that adhesions of the kidney pelvis to the surrounding structures, following the scar of pyelolithotomy, tend to produce faulty pelvic drainage, and the consequent reformation of stone, or to obstruction to the outflow of urine and a persistent fistula. The inadequate drainage that a fistula through the kidney pelvis offers with its intermittent opening and closing seems to furnish just the conditions that favor the destruction of kidney tissue. In the case to which

I referred as having removed a stone by pyelolithotomy and then a recurrent stone by the same route, I was surprised to see at the time of the nephrectomy how extensive the destruction of kidney tissue had been, though the kidney was a good one at the time of the original operation. On the other hand I have been surprised in calculus and other renal cases to see what wonderful recuperative power the kidney shows following adequate drainage. Not only do I believe that drainage that is carried out by an incision through the convex surface of the kidney into the pelvis is better able to conserve the functional capacity of the kidney than drainage that is brought about by incising the kidney pelvis, but I also believe that it is much less likely to be followed by a secondary stone or a permanent fistula. This I think is to be accounted for by the more adequate drainage that an incision through the cortex furnishes the infected tissue of the secreting part of the kidney and the better opportunity such an incision affords dilated kidney calyces to contract, as well as the better chance that is given an infected kidney pelvis to rid itself of infection and round cell infiltration, and to regain its normal elasticity and ability to function. On the other hand, as the wall of the kidney pelvis is relatively thin it is easily distorted and its ability to empty itself is easily interfered with by post-operative adhesions; this interference with adequate drainage favors the progression of the renal infection as well as the reformation of stone and the persistence of the fistula.

This, I realize, is more or less of a digression but it is, in a way, germane to my subject, in that it has a most important bearing on how to avoid secondary nephrectomy.

Three additional cases in this group illustrate errors in diagnosis in connection with renal stones that led finally to secondary nephrectomies.

CASE I.—A man thirty-seven years of age had pain referred to his right loin. This pain was at times very acute. The urine showed only a few leucocytes and blood cells. The patient had no frequency or pain on urination, and no tubercle bacilli could be demonstrated. After a long period of observation a shadow about as large as a small pea was found in the region of the right kidney. It was proved to my satisfaction to be connected with the kidney and seemed to offer a satisfactory explanation for the attacks of acute pain. This kidney was cut down upon and a calcified area in the cortex just under the capsule was found. I felt that it would be well to remove this and so scraped it out. A small wick was carried down to the spot from which the calcified material had been removed and the loin incision was closed about it. Within a few days a urinary fistula developed which persisted until I removed the tuberculous kidney seven months later. This is one of the few cases in which the x ray, or rather our interpretation of its significance, did harm. This man had a subcapsular tuberculous lesion of the kidney which was getting well and would probably have continued to do so had I not, wholly misunderstanding the significance of the shadow, interfered with it. In another case that I saw in consultation some time later, the re-

removal of a similar calcified cortical area was followed by a fatal milary tuberculosis.

CASE II.—In another case, a man of forty presented himself with brisk bleeding from the right ureter. Radiography showed a branched calculus in the right kidney that was removed through a cortical incision. The incision closed and the man made a prompt recovery. Some months later the loin sinus opened and remained open. There was obstruction to the passage of a catheter up the right ureter and a vague shadow was to be seen just beyond the point where the catheter met the obstruction. I supposed a bit of stone had been overlooked and had gone down into the ureter. Exploration showed a practically obliterated, tuberculous ureter with enough thickening to cast a shadow. The kidney was removed at a somewhat later date.

CASE III.—A woman of thirty-eight complained of pain in the right loin. She was found to have a slight hydronephrosis with a kidney that was abnormally movable. This was fixed in her loin. As the pain persisted she had one or more pelvic operations without relief. A large stone was found in the ureter, low down, and removed. It reformed but as by that time the right kidney was simply a pyonephrotic sac, it was removed and the stone in the disused ureter allowed to remain. She was wholly relieved of the pain though the stone in the ureter remained. I believe it must be exceptional to have a stone in the lower end of a disused ureter give trouble. I can call to mind three cases where there is a quiescent stone in the lower end of such a ureter. In each of these cases the kidney, which was destroyed as a result of the unrecognized ureteral stone, had been removed, but the stone itself remained and seemed to cause no symptoms.

On another patient in this group I made an attempt some years ago to do a plastic operation on a moderate sized hydronephrosis—her kidney held seventy-five c.c. of residual urine. The cause of this hydronephrosis was apparently a definite bandlike narrowing of the ureter just below its junction with the kidney pelvis. There was a mild infection in this patient's kidney pelvis, but as it seemed very mild, a plastic operation was carried out at the site of the ureteral narrowing. The kidney was not drained. This procedure was apparently successful, and the patient did very well for the following two weeks.

She then began to have a high temperature with turbid urine and pain in her loin. A secondary nephrectomy was done about a month after her primary operation. The principle of adequate drainage through a cortical incision, that was discussed when considering the question of pyelolithotomy, was neglected in this case, and I believe that it was the neglect of this precaution that made it necessary to carry out secondary nephrectomy. Another patient in this group was operated upon only a month or so ago; the patient, a young man, had had his left kidney cut down upon two and one half years before, but apparently no procedure on the kidney itself was carried out. He had temporary relief only, followed by a recurrence of the pain, frequency, and turbid urine. The excised kidney showed a moderate grade of pyelonephritis

with kidney cortex considerably atrophied. The breaking up of the adhesions or whatever operation had been carried out had not offered the kidney sufficient help to permit it to overcome its infection; another instance in which adequate drainage was neglected.

In another of these cases a man in his forties had first shown painless hematuria a month before an exploration of the bleeding kidney was carried out. An incision was made from the cortex to the pelvis without recognizing any evident pathological process, a tube was carried down to the pelvis, and the kidney sewed up about this tube. Thirty-six hours after operation this man began to bleed so sharply that secondary nephrectomy was done. The removed kidney showed a large infarct which was believed to be the primary process, though not recognized at the time of operation. The patient made a good recovery.

The last case in this group was that of a man with large but movable hypernephroma, on whom an attempt had been made to remove this growth through a loin incision, but because of hemorrhage this had to be given up and the wound packed. Some four months later when the patient learned that his kidney had not been removed he was very insistent that an attempt be made to do it. The kidney was exposed by an anterior incision and after considerable trouble was freed, all but at one point, just above the hilum. A clamp was put on here, the adhesions cut, and the kidney removed. In tying off it was found that this clamp was upon the vena cava. Several attempts at tying and sewing were unsuccessful. The clamp was then adjusted so as to control the bleeding with as little obstruction as possible to the lumen of the vein and was left. There was some oozing following the operation; he became worse and died some five hours later.

As I have previously mentioned, there is no standardized technic for secondary nephrectomy. Some modifications, however, of the technic of primary nephrectomy are required to adapt it to this purpose; these are made necessary because of the anatomical changes brought about by long standing suppuration. We find a discharging sinus in the loin in a very large proportion of the cases in which we are called upon to do a secondary nephrectomy. The presence of this sinus makes it rather easier to do our various function tests, whether they are color tests, induced polyuria, or simply the collection of the kidney output under normal circumstances. From a surgical point of view, however, the disadvantages of a discharging sinus far outweigh its advantages.

As a general rule, a secondary nephrectomy is harder to do the longer the time that elapses between the primary operation and the secondary one, since the longer the time the denser the inflammatory adhesions become and the greater the distortion due to their contraction. It is this distortion and the loss of the usual anatomical relations that add so much to the difficulty and dangers of the operation.

The most generally useful incision to employ in secondary nephrectomy, especially in a case in which there is a sinus, and three fourths of the

cases have these, is an elliptical one that surrounds the old scar. There are several ways of treating the sinus itself, the object of which is to prevent or minimize the contamination of the operative field by urine or pus. A cuff of tissues may be dissected up immediately surrounding the sinus and clamped or tied as one would fold over or tie a bag; this is rather the most satisfactory plan when it is possible; it prevents effectually any spilling of pus and urine over the operative field while handling the kidney. Another simple way is to plug the sinus with a bit of gauze; in a few cases where there is very little discharge one need do nothing more than swab out the sinus with a little iodine. In a considerable number of cases, especially long standing ones, the kidney will be found right under the scar of the previous operation and very closely adherent to it, so much so that one recognizes no line of cleavage between the two. An unguarded incision may open into the kidney tissue and start a sharp oozing which obscures the field, if nothing worse. For this reason it is well to make one's elliptical incision rather wide of the edges of the scar and to carry this down cautiously that one may avoid injury to the kidney substance should it be just under the scar. It is one's wish to open the perirenal fat layer to the outside of the kidney. When the incision has been carried through to the perirenal tissue at one point it is easy to extend it all the way around the scar and sinus, though toward the inside one must be on the lookout for the peritoneum. We then have the scar and sinus separated from the abdominal wall on all sides but attached to the kidney or to the mass of fibrous tissue which has the remains of the kidney in its depths.

In a few instances where the kidney mass is large, it may be of advantage to add to this incision a second incision that is parallel with the edge of the ribs: an incision of this sort gives a wider field but is rarely necessary in the same way that a resection of the twelfth rib is seldom necessary. Unless there is a very short costoiliac space the use of a proper table and the proper arrangement of the patient will allow one to carry out most secondary nephrectomies through the usual oblique incision. When secondary nephrectomy is carried out for a tumor of the kidney or for any nonsuppurative condition for that matter, an incision through the rectus muscle and then through the peritoneum to the outside of the colon gives an excellent approach.

The kidney or the mass of inflammatory tissue in which the kidney is hidden may be intimately adherent to the lumbar muscles, the peritoneum, the diaphragm, the colon, or to the great vessels, to any or to almost all of these structures. The separation of these adhesions constitutes the chief difficulty and danger of secondary nephrectomy. The safest place to begin the separation of adhesions that bind the kidney mass to the surrounding tissues is below and posteriorly. The important structures—the vessels, the peritoneum, the pleura, the colon, are met internally, anteriorly, and above. As a rule any adhesions that can be separated by lateral pressure between the thumb and forefinger

need not be considered. This applies to the adhesions about the kidney. There are at times rather dense adhesions binding the kidney mass to the erector spinæ group of muscles. These may be so dense as to require the cutting away of bits of muscle with the scissors more or less blindly. On the other hand all adhesions anteriorly, above and to the inside, that cannot be separated by lateral pressure between the thumb and forefinger should be carefully separated and cut between clamps under the eye; the separation of such adhesions by great force is risky and to be avoided.

In the most difficult cases it may be impossible to recognize the exact location of the kidney in the great inflammatory mass that surrounds it and fills the loin until one has located the ureter at a point below and followed it up into the mass.

The peritoneum may be so intimately adherent to the anterior internal surface of the mass that it is impossible to separate it. Under these circumstances it will of necessity be more or less widely opened in separating the kidney mass. This opening should be walled off temporarily and later closed wholly or in part, depending much on the position or extent of the rent. If the rent is wide, I believe it is rarely wise to close it without a small rubber drain; when it cannot be closed completely by suture it may be packed off with gauze. I have never seen a general peritonitis develop following a nephrectomy in which the peritoneum was opened. Even when there was some infection it has led to a very localized process giving rise to local spasm and to a moderate degree of distention; however, I believe, when the peritoneum has been opened, care should be taken to provide adequate drainage.

When the mass is adherent to the posterior surface of the colon great care should be exercised in separating the adhesions. It will usually be wiser to cut away and leave a bit of the inflammatory mass adhering to the colon rather than to separate two intimate adhesions. This presupposes that one recognizes just how near he is to the colon, but this does not always happen by any means. In one of the patients of the series the colon was opened at the time of operation: it was closed at once, no fistula developed. In another patient a fecal fistula appeared some four or five days after operation, raising the question whether this was the result of a direct injury to the bowel or due perhaps to some interference with its blood supply and the giving away of a necrotic area. This fistula closed in a few weeks' time. These bowel fistulas that occur with secondary nephrectomy will, I think, almost always close themselves. They are usually connected with the large bowel, and while they may take some time to close they seldom require anything more than conservative treatment.

The adhesions about the superior pole of the kidney may bind it to the diaphragm so intimately that in separating them, especially by cutting, an opening is made in the pleura. If this is large, it makes itself known by a sucking sound, that is more or less like the sound one often gets due to aspiration of the thorax, when simply the peritoneum has been opened in the region under the ribs. I believe a

small wound in the pleura often goes unrecognized. When recognized, a rent in the pleura should be sewed up tight, unless there is a good deal of contamination of the field, in which case a wick should be introduced. When these wounds in the diaphragm are closed as was a considerable one in one of the patients in this series, there is a little pain in the thorax and shortness of breath for a few days but this soon passes away and leaves no evidence of lasting trouble in the chest.

The one case I have had that went on to an infection of the pleura and to an empyema with resection of the chest wall, was in a patient in whom I was not aware that I had wounded the pleura. It is possible, of course, that the infection may have been lymphatic but in this patient I am inclined to the belief that it was more likely direct infection through an unrecognized wound.

We may find supernumerary vessels of moderate size imbedded in the adhesions near both the upper and lower poles of the kidney and these may give slight bleeding but our greatest concern and danger will be when in the separation of the kidney mass we approach the region of the pedicle—this is normally to the inner side of the kidney but with the distortion, due to dragging the kidney or to rotating it, that we may meet in cases requiring secondary nephrectomy, it may be above and to the inside or it may appear almost directly behind.

The renal vessels may usually be located by feeling their pulsation and if time is taken and care is exercised they may be secured, except in the most unusual cases, before they are injured. If I can do so, I get a mass ligature about the pedicle and tie it before I clamp and cut the vessels. I think this is a safeguard, if one can do it. The pedicle should then be clamped and the kidney cut away; one should then attempt to pass a ligature on a needle through the pedicle and securely ligate it. If one succeeds in this, the pedicle may be considered properly secured. If it cannot be done, one may either tie the vessels separately or put on another ligature around the whole pedicle. Exceptionally it will be necessary to leave a clamp on the pedicle; this I do if I question the security with which I have tied the vessels. I leave this clamp in place from seven to ten days, and while it hampers the amount that the patient can move about in bed, I have never known it to do any serious harm.

On the right side the vessels give more concern than on the left; because of the location of the vena cava on that side. The vena is thin walled—does not pulsate, and may be so intimately adherent to the kidney mass as to be overlooked. In one case, already referred to, where the vena was adherent to a hypernephroma, I caught it longitudinally in a clamp and cut it thinking it was an inflammatory adhesion. In this instance I was neither able to tie it nor to sew it, so I was forced to leave a clamp on it. I have always felt that this played a part in the fatal outcome in this case. Occasionally the adhesions that surround the kidney are so dense and thick that it is practically impossible to separate it from the surrounding tissues sufficiently to get at its pedicle. In such cases it may be of the greatest advantage to carry out a

socalled subcapsular nephrectomy. In this procedure after incising the capsule one separates the kidney from its thickened capsule and makes the pedicle at the point where the vessels enter the kidney tissue. One can often make a relatively small pedicle which can be readily held with a clamp while the kidney tissue is cut away. It is then often possible to pass a needle armed with a ligature through the improvised pedicle and tie it securely, or one may be able to get a mass ligature about this pedicle which will hold it well. At other times it may be possible to tie the vessels of the pedicle separately. Failing in these measures it will be necessary to leave a clamp on the pedicle. In the subcapsular nephrectomy suppuration following operation will usually go on for some considerable time because of the amount of infected capsular tissue that has to come away.

In secondary nephrectomy we have practically the same choice as to treatment of the ureter that we have in primary nephrectomy. In the subcapsular variety the ureter is as a rule left in its entirety, though it is possible to remove it if one so desires. Adequate drainage should be provided in cases of secondary nephrectomy as the cavity from which the kidney mass is removed is irregular in contour and lined with badly nourished, fatty tissues. In a great many of the cases there will be some contamination of this cavity during the operation.

In the postoperative treatment of these cases one employs the usual measures that come into play in the treatment of major surgical cases in general. As a class these patients suffer a good deal from postoperative intestinal distention; this is supposedly the result of nature's attempt to keep the colon quiet since it has been greatly irritated by the extreme disturbance of the tissues immediately behind it. Enemas several times a day do more to relieve this condition than anything else I know. These patients, especially if they have much nausea, are made much more comfortable by large infusions of salt solution (750 c.c. three times a day). I have on one occasion had a patient transfused who had lost a good deal of blood during a secondary nephrectomy—he made a good convalescence. The aftercare of these patients does not differ materially from that of primary nephrectomy.

In these twenty cases of secondary nephrectomy, two patients died; a man with a tuberculous pyonephrosis and perinephritic collection of pus, and a man with hypernephroma, on whom an unsuccessful attempt at removal had been made some months before, a mortality of ten per cent., which I think is about what one must expect in this condition.

352 MARLBOROUGH STREET.

The Sterilization of Lipovaccines.—Paul A. Lewis and Francis W. Dodge (*Journal of Experimental Medicine*, February, 1920) attempted to sterilize lipovaccines by the application of dry heat without destroying their antigenic properties. In the case of pneumococcus vaccine it was possible to do this, but the antigenic properties of typhoid lipovaccine were destroyed by heating for three hours at 130°.

THE DEAF CHILD IN ITS RELATION TO THE PARENTS, THE TEACHER, AND THE PHYSICIAN.*

BY EMIL AMBERG, M. D., F. A. C. S.,
Detroit, Mich.

The soul stirring events of the last few years have made some people think a little more than they did before. The searchlight of public opinion has illuminated a few known facts and has generalized them to a certain extent. Unless the impetus which has been acquired is made use of, and unless our energy, efforts, and perseverance are directed into proper channels, we will again gradually settle into a state of apathy. This impetus will be lost, and as before, only a few will be called upon by their conscience to bring forward and advocate new measures. Their efforts will be understood and appreciated by few, followed by even fewer, and ignored by the great multitude. This is human nature. The average human being is concerned only about things affecting him directly at a given moment. He is too superficial and thoughtless to consider that conditions which affect others, at a given moment, but which at that moment have no bearing on him or his family, may suddenly and unexpectedly become very personal to him. If he had thought that we are our brother's keeper; if he had contributed his share to the sustenance of the good of all; if he had been guided by his ecumenic conscience, he would not need to raise the cry of despair when disaster overcomes him, and torture his conscience about things which he should have done and things which he should not have done.

The foregoing is true in any of our relations to the great majority. It is especially true in our attitude toward our health. It is obvious that considerations of our own health and of the health of our families include considerations of the health of others, because others can transmit diseases to us or disturb our health. In this city today there are between two and three hundred cases of scarlet fever. You know how dangerous scarlet fever is. You know the danger of measles, diphtheria, tuberculosis, typhoid fever, and other diseases. You know how much typhoid fever occurs in some summer resorts. Do you aid in disseminating knowledge concerning these and other equally dangerous diseases? Your loved ones may be spared; your little sons and daughters may not succumb, or be left more or less disabled for life, and you may remain free from mental tortures through the rest of your lives. Indeed you should be your brother's keeper for your own sake. I have chosen these striking examples in order to remind you of the continued gravity of the situation in which we all live. There are, however, many other conditions which should engage your attention, among them deafness in some of its relation to the parents, the teachers and the physicians.

Among the causes of deafness we may first mention heredity. Professor Fay (1) divides 5,000 marriages in which 8,000 deaf persons were concerned, into two groups; those concerning people

known to have deaf relatives, and those not known to have had such. Deaf persons who have deaf relatives will have nearly forty per cent. of deaf children, while deaf persons without deaf relatives, will have only one and two tenths per cent. of deaf children. Brooks comes to the conclusion that, "The intermarriage of people with deaf relatives is almost sure to result in deaf children, more than half the children being deaf, whether the marriage is between deaf or hearing people." Mygind (2) mentions that various diseases of the middle ear and of the labyrinth, also that mental diseases, epilepsy, idiotism, stammering, and other nervous diseases are conspicuously frequent among relatives of deaf mutes. Alexander Graham Bell says:

1. A deaf person not born deaf, who has no deaf relatives, will probably not increase his liability to have deaf offspring by marrying a blood relative.

2. A deaf person born deaf, who has no deaf relatives, will probably increase his liability to have deaf offspring by marrying a blood relative, especially if that relative should happen to be on the deaf side of the family. For example: If his father has deaf relatives and his mother has none, he will be more likely to have a deaf offspring if he marries a relative of his father than if he marries a relative of his mother.

Speaking in general, Bell says, "As there are few families entirely free from constitutional defects of some kind, a prudent person would do well to avoid a consanguineous marriage in any case, not necessarily on account of deafness but on account of the danger of weakening the constitution of the offspring." Congenital and acquired syphilis are causes of deafness. Mygind mentions that acquired deafness occurs most frequently in the second year of life, then follow the third, the first, the fourth, fifth, etc. Mygind gives among other causes diseases of the brain. In Ireland in 1881 eleven and nine tenths per cent. of deafmutism was caused by diseases of the brain; in Pomerania in 1874-75, fifty-four and five tenths per cent.; in Pomerania-Erfurt in 1874-75 cerebrospinal meningitis was the cause of twenty-four and nine tenths per cent. of deafmutism. Among other acute infectious diseases Mygind mentions that in Italy in 1887 fifteen per cent. of deafmutism was caused by scarlet fever, whereas in Saxony in 1880 forty-two and six tenths per cent. was caused by this disease. The highest proportion caused by measles was eight and three tenths per cent. in 1885 in Mecklenburg-Schwerin. In our city school for the deaf the principal, Miss G. Van Adestine, reports that seventy-four per cent. of the cases of deafness were caused by preventable diseases, according to an investigation made three years ago. Once in a while deafness leading to deafmutism may be caused by typhoid fever, diphtheria, smallpox, influenza, whooping cough, mumps, pneumonia, articular rheumatism, and other diseases. I mention these causes of deafness in order to show that we must try to prevent deafness caused by these factors by fighting the causes. This imposes upon us the duty of preventing the spread of infectious diseases as much as it is in our power. This is mainly the duty of the physician and of the health authorities. They should be well aware of their tremendous responsibility. On the other hand, you must assist them as much as you can. Many infectious diseases

*Read before the parents and the Section for Education of the Deaf of the Michigan State Teachers' Association, October 31, 1919.

are spread through the respiratory organs, i. e., by coughing and sneezing. It is criminal for anybody to cough and sneeze if he does not protect his cough or sneeze. Scarlet fever, influenza, pneumonia, and other serious diseases are spread in this way. You would no doubt resent it if anybody in a street car would deliberately slap you in the face, and yet that is a very innocent offence compared with the damage which he may cause you by coughing or sneezing in your face. This is no exaggeration, but a generally and widely accepted view among the medical profession. Everybody should be requested to call this to the attention of the person who offends in such a manner. Street car conductors and others should be instructed to watch for offenders. We know that one sick person can infect many others, so that it is absolutely necessary that such a simple precaution should be observed rigidly by everybody.

Only recently Dr. William J. Mayo said: "The people should be made to understand that the State is culpable if its citizens are allowed to become ill through manifest neglect. It is probable that such an understanding by the people would result in greater good through new legislation than all the work and all the sacrifices of the medical profession who have secured the present laws." I am compelled to state that viewed from a medical viewpoint we live in a state of precivilization.

Concerning the pathological changes in the temporal bone in deafmutism, Mygind mentions malformations in the shape of the temporal bone, sclerosis of the bony tissue and narrowing of the internal ear canal. It is the result, he says, of an inner ear trouble developed before or after birth which causes a partial or total destruction of the contents of the osseous labyrinth. It leaves behind it the consequences of an inflammation which most frequently are of an osseous nature and which occupy the normal cavities partially or completely. Mygind also reports that inflammations which develop after birth are more serious than those which develop before birth. This explains why in the latter cases rests of hearing are more frequently found than in the former.

Bezold found some hearing for words or voice in twenty and three tenths per cent. of those born deaf, but only in fifteen and two tenths per cent. of those who had acquired deafness. It is known to you that children who are deaf before they are seven years old become, as a rule, deafmutes.

When does a child begin to hear? Falta (4) says that we are not yet sure about the time when a child begins to hear. He quotes Sachs, who states that an infant does not hear during the first ten days of its life, and Preyer, who is of the opinion that a child is under suspicion to become a deaf-mute if it does not react, in its fourth week, to a strong sound behind its back. Falta, however, saw a child five months old which did not react, but it began to hear in the second half of the ninth month. Falta states that it is important to ascertain whether deafmutes of the ages of three or four years still possess rests of hearing. Politzer (text-book) recommends a careful examination of deafmutes in order to establish whether there exists

total deafness for all kinds of sounds or whether noises or sounds are heard. These rests of hearing must be utilized to the utmost. Especially in these instances it is the duty of the parents to talk to the children in order to preserve the possibilities left to them. Untiring and continued efforts on the part of the parents are of the utmost importance. As Falta remarks, the relatives of deaf-mute children must be told that they must be full of kindness and love for them and that they must not let them feel that they are annoyed on account of their condition, furthermore that they should not discriminate against them in their education compared with other children. They need all that the normal child requires and special attention in addition. The parents should see to it that the children are given an opportunity for their special training. It is absolutely necessary that ample provision is made by the city for adequate school buildings. Miss Van Adestine holds the opinion that the deaf child must be educated by daily contact with normal children in order to maintain a normal outlook after leaving school. A deaf boy volunteered the following remark: "How can the deaf boy learn the ways of the hearing if he does not learn them at school?"

John Dutton Wright (5) states: "In order that a child with impaired hearing may eventually attain the highest possible efficiency, his training must differ somewhat from that of the child with normal hearing, and this modification of training should begin with the onset of deafness. The preliminary special training of a deaf child should begin in his home before he reaches the age of admission to the special school. If he has passed the age of three, and is under twelve, it will either cause entire loss of speech and language or so retard and limit his progress that he becomes a costly charge upon the State. As the degree of deafness is greater, the results are increasingly calamitous.

Experience has shown that the disastrous nature of these consequences of early deafness can be greatly reduced by correct modification of the treatment of the child in the home before school age is reached, and by such treatment the child can be prepared to benefit to a greater degree from the educational training provided by the state in the special school for the deaf. Not one father or mother in ten thousand knows how to meet the situation as it should be met, unless some special guidance is provided for them."

The physical examination of children is very important. For instance: Adenoids should be removed in children who have rests of hearing. This should also be done for other important reasons, which hold good for deafness without rests of hearing. Adenoids frequently interfere with nasal breathing and thus cause trouble. Falta remarks that tuberculosis frequently occurs in deafmutes, because they are more careless than others and breathe more dusty air. Inasmuch as the deafmutes do not talk, the lungs are not exercised sufficiently. This fact, Falta remarks, imposes the duty on us to resort to gymnastics, which further the strengthening and development of the lungs. Falta recommends toys which call for exercise of the lungs

of these children by blowing. Running ears should be attended to. A discharging ear diminishes the chances for saving and utilizing rests of hearing and, furthermore, often constitutes a danger to life. The ears of all deaf children should be examined periodically; even such a hindrance as cerumen (wax) has frequently been found.

During the last year nurses of the board of health have found in the schools of Detroit approximately four hundred children suffering from ear troubles. There are undoubtedly many among them who may become hard of hearing if their ears are not taken care of. Some of these may eventually become pupils in the school for the deaf.

The eyes of children who learn lipreading should be carefully watched, and errors of refraction corrected, if necessary. This is emphasized by Falta. This is especially true when the child suffers from headaches or inflamed eyes.

The lighting arrangements in schools for the deaf must receive careful attention from the school authorities.

It is not necessary to repeat the advantages of lipreading and dwell upon the circumstances which guide us in the single instance to recommend lipreading.

When shall the child learn lipreading? I can only answer, he should begin as soon as possible. When is the child so deaf that it should attend the school for the deaf? The Detroit Otolaryngological Society appointed a committee consisting of Dr. Lee E. Grant, Dr. Harold Wilson, and myself, to formulate answers upon questions propounded to members of the medical profession in Detroit by the secretary of the section for the education of the deaf of the Michigan State Teachers' Association. We answered as follows:

1. Scientifically: a, Hardness of hearing is partial loss of hearing. b, Total deafness is total loss of hearing. Economically: Hardness of hearing means the condition when ordinary conversation voice is heard only in a distance of six to eight feet.

2. Total deafness means inability to hear the loudest spoken voice.

3. Deafness in general is divided into total and partial deafness. Partial deafness is divided into slight, severe, and almost total deafness. Slight deafness means the ability to hear ordinary conversation voice at a distance of five feet. Severe deafness means the inability to hear loud conversation voice at three feet.

4. Lipreading: Only chronic cases should be considered where the normal methods of education are likely to fail or be deficient, and where there is an inability to hear whispered voice at a distance of six feet. (Wright's six foot rule.)

5. Lipreading is at present the most practical method to overcome this handicap. This six foot rule refers to at least one ear. Wright (6) states that an adult cannot well conduct the business of life unless he hears with at least one ear whispered voice at a distance of six feet.

At present there are in Detroit 127 deaf children in the public schools under instruction. The law of Michigan makes instruction compulsory between the

ages of seven and eighteen years. Voluntary attendance is offered to the deaf between three and twenty-one years of age, since it is important that the child receive training before it is seven years old in order to develop the organs of speech.

The teachers in the Detroit school for the deaf, as you know, work for the children with great enthusiasm, with untiring effort, and with an almost superhuman patience. The children, however, look also to their parents. They have the right to do so.

In conclusion, let me repeat, and emphasize a few points.

1. It is necessary that the general health of deaf-mutes be closely watched.

2. Special attention must be given to the eyes, to the throat, to the ears, and to the lungs.

3. Each parent must be a teacher for the deaf child as soon as it is noticed that the child is deaf.

4. The parents must continuously be considerate and kind to the deaf child. They must especially cultivate the speech of the child who is only hard of hearing, and cooperate in every way with the teacher in the education of the same.

5. The parents of deaf children should be especially interested in procuring the proper facilities for the teaching of their children.

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A YEAR'S OBSERVATION IN ORTHOPEDIC SURGERY.*

At the U. S. Army Base Hospital, Ft. Riley, Kansas.

By EDWARD ADAMS, M. D.,

New York,

Major M. O. R. C., U. S. Army.

I shall discuss in a brief way the treatment of osteomyelitis and the indications for debridement. At the beginning of the war, orthopedic surgery was confined mostly to the treatment of deformities, injuries and diseases of the spine, and it was necessary to train men not only in the treatment of fractures, but also in a very definite way as to the character of the recruits that were to be accepted for military service in the Army. Some of the best orthopedic surgeons volunteered their services and were sent abroad to the clinic of Sir Robert Jones (who is no doubt the greatest orthopedic surgeon in the world today). These men afterwards taught the American orthopedic surgeons the lessons that the English had gained from the war, not only in the method of transport of fractured cases, but also in the treatment of wounds, osteomyelitis and other similar conditions.

*Read before the Clinical Society of the Lenox Hill Hospital on November 14, 1919. (With lantern slide demonstration.)

When I first arrived at Fort Riley the work of the orthopedic department consisted chiefly in the examination of recruits, which was done at Camp Funston. This was one of the largest cantonments in the country, for at this time there were nearly 80,000 men in the camp training for overseas duty. At the base hospital only patients who required hospital care were seen, and patients for whom consultation was asked. At this time a very definite method of examination was resorted to, and the rules and regulations were laid down in *Manual No. 4* relating to military orthopedic surgery as prepared by the orthopedic council of the Surgeon General's office.

After the armistice and on November 20, 1918, we received our first overseas cases and from that time until September 1, 1919, when we reverted to a camp hospital, almost 4,000 bone and joint cases were treated at the base hospital.

We had to deal with various conditions, such as gunshot wounds and fractures, foreign bodies, pieces of shrapnel and bullets, loose bone fragments, osteomyelitis, sacroiliac conditions, arthritis of different types, such as toxic arthritis, those especially due to focal infection, as diseased tonsils, infected teeth, gonorrhea and other infections. Most of the cases come under the following headings: 1, Fractures of various types; 2, repair of fractures by the use of bone graft, and 3, osteomyelitis of a chronic nature with sinuses.

Every possible type of fracture of the extremities was encountered as the result of gunshot wounds, trauma or injury of some kind. Simple, compound, and comminuted fractures of both lower and upper extremities; fractures of the femur with marked overriding, angulation, and shortening were also seen. Most of the fractures, however, were not of recent origin, for most of the injuries were received in battle, and were put up in a Thomas splint and transported to this country for final treatment. Gunshot wounds of the joints were also seen, as this type of injury represented about four per cent. of the total number of wounds met with in the present war. A number of general factors governing treatment had to be considered as follows: 1, The patient; 2, nature of the wound; 3, time elapsed after being wounded; 4, nature of the infecting organism, and 5, radiography. The considerations in regard to the patient were: a, The younger the patient the more readily he was able to withstand conservative measures. It is well when resorting to conservative measures in cases involving the larger joints, especially the knee and hip, to keep a close observation of the patient. b, General condition: The local condition of the wound may appear to be making satisfactory progress, yet the patient is steadily losing ground. The evidence of this is in the character of the pulse. c, The more wounds a patient has, the less effort should be made in the line of conservatism, if for example a man is injured in such a way that both upper and lower extremities are in jeopardy unless there is reasonable certainty of saving both; it is better to save the upper extremity at the expense of the lower one. d, It is well to ascertain the man's occupation at the outset. First, because in

certain types of work a rigidly stiff limb is of less service to some patients than an artificial limb; and secondly, it gives one a guide as to the best possible position in which ankylosis should be secured. The positions of election for ankylosis following gunshot, injuries or infections of joints can be summarized as follows:

Shoulder joint.—In treating injuries of this joint the arm should be abducted to about fifty degrees. The elbow should be placed slightly in front of a coronal plane of the body, so that when it is at right angles and the forearm supinated the palm of the hand is toward the face. The arm is placed in this position while the scapula retains its normal position of rest. If the arm is correctly placed, the hand can easily be brought to the mouth by bending the elbow. Furthermore, the humerus being fixed to the scapula at the angle indicated, the arm can be lifted to a considerable height of scapular action; moreover, pockets can be reached, the hair brushed and the patient can pick up a plate or cup without spilling the contents. The arm should never be

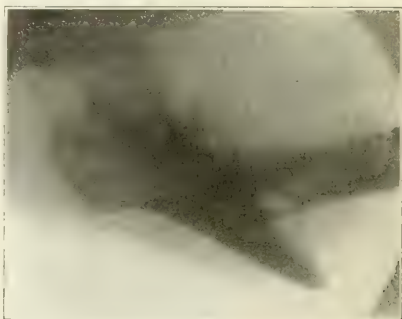


FIG. 1.—Fracture of the femur.

kept at the patient's side if ankylosis is feared, for in these cases the functional result is most unsatisfactory and it will be very difficult for one to reach across a table to perform many simple movements which constantly recur in everyday life. Flail shoulder joints should also be ankylosed in the position described, and joints which have been allowed to ankylose in an abducted position may require osteotomy of the humerus high up to correct this faulty position. The shoulder joint should never be allowed to become fixed at right angles to the side in adults, as in that case the patient will be unable to bring his arm down to his side. It is to be clearly understood that I am dealing with injuries to soldiers and sailors, and not with children in whom other means can be adopted owing to anatomical considerations.

Elbow joint.—The proper course to adopt will depend upon the patient and his calling, but by far the greater number of men would prefer the fixation to be just below a right angle—that is, about seventy degrees. The ankylosis commonly met with at an angle of 130 degrees is not useful. It is important to bear in mind that in cases in which both elbows will become ankylosed it is necessary to fix the

one at an angle of 110 degrees, and the other at an angle of seventy degrees as recommended for one sided trouble. This position enables the patient to move his hand to his mouth, button his clothes, brush his hair and reach over a table. At an angle less than a right angle it is certainly more easy to get the hand to the mouth and to various parts of the head, but limitations in other directions more than counterbalance these advantages.

Forearm.—If the movements of pronation and supination are lost, the radius should be fixed midway between pronation and supination. The hand is more useful for dressing and eating and for manual labor when it is fixed in this position. A minor advantage is that of appearance.

Wrist joint.—All injuries of the wrist joint should be placed in the dorsiflexed position. This is an urgent necessity where ankylosis is expected or where even limitation of movement is likely to occur. The common deformity of palmar flexion occurs when no splint is applied, or from the use of a straight splint; in all cases in which the arm and fingers are kept on such a splint, palmar flexion of the wrist occurs, and this condition is a life long handicap to the usefulness of the hand. The grip of the fingers is diminished if the wrist is held in the palmar flexed position. The strong flexors overpower the extensors of the fingers and in consequence proper coordination of the finger movements is impaired. The grasp of the hand is strongest when the wrist is in the dorsiflexed position, the balance between the flexors and extensors is preserved and the coordinated movement of the fingers is secured. The splints required are simple in construction. In proof of the importance I attach to the dorsiflexed ankylosed wrist, I may state that I always restore hyperextension of the ankylosed joint from the position of flexion by manipulation or incision. This invariably improves the grip of the fingers. Apart from the impairment of function, a flexed wrist is unsightly.

Hip joint.—Ankylosis should be encouraged in a position of slight abduction, with the thigh extended and very slight outward rotation. The common deformity in ankylosis of the hip is flexion, abduction, and internal rotation, which is found in an untreated or imperfectly treated tuberculous hip joint; it leads to lumbar lordosis and an ugly limp. Abduction brings the limb too near the middle line,

walking if the thigh is slightly abducted. The limb should be slightly rotated outward to avoid the unsightly lift of the pelvis as the patient rises on his toes when walking. This is due to the immobile condition of the hip joint. This position makes it easier to walk than if the toes are pointed straight

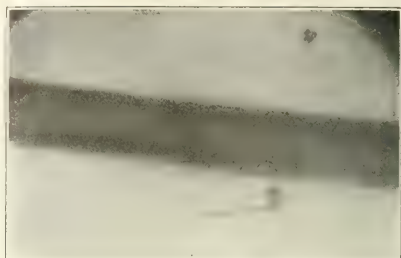


FIG. 3 Foreign body lying adjacent to probe.

forward. Most of the American orthopedic surgeons prefer to place the limb in a position of from ten to fifteen degrees flexion at the hip.

Knee.—This joint should be fixed in an extended position. Very good reasons may be given in favor of slight flexion from the point of view of elegance in repose and that of ease in mounting stairs. Due weight should be given to these arguments, but in the case of war injuries the straight position obviates many risks. Ankylosis, as we know, is not necessarily bony; when it is fibrous the tendency is for the flexion angle to increase by exercise. The incidence of the body weight on a slightly bent knee, unless the ankylosis is sound and bony, will increase the flexion. The position, therefore, is mechanically a weak one for carrying body weight. Even when new bone is forming, its complete consolidation is sometimes a slow process, and if the surgeon places such a knee in a slightly flexed position the degree of ultimate flexion is often much greater than he would wish. The advantage of increased strength and stability ensured by an extended joint will generally outweigh all other considerations. Most American orthopedic surgeons prefer from twenty to twenty-five degrees flexion at the knee.

Ankle.—The foot should be kept at a right angle with the leg, so that the sole impinges on the ground in a slightly varus rather than a valgus position. If the reader will recall the ankylosed ankles he has seen, he will remember that most of them were in a valgoid position. A varoid position conduces to a strong type of foot; a valgoid (flat foot) to a weak foot, and all the disabilities associated with erroneous deflexion of body weight.

Joint of the tarsus and metatarsus.—In gunshot wounds and other injuries of the tarsus and metatarsus, the deformities to be feared correspond to the common static deformity of flat or pronated foot, that is to say, to pronation at the midtarsal joint, flattening of the longitudinal arch and sometimes flattening of the transverse arch associated with pain in the metatarsophalangeal joint. Callus exudation added to plantar malposition results in a very crippled foot. In all gunshot injuries of the

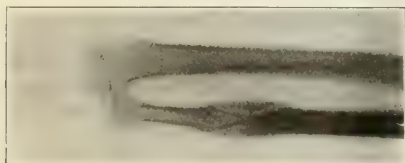


FIG. 2 Callous formation in fracture repair.

interferes with the normal position of the sound limb in walking, and by involving abduction of the sound limb interferes also with a free gait. If the hip joint is ankylosed in the fully extended position, lordosis and the consequent trouble from backache are avoided, and there is freer pelvic movement in

tarsus and metatarsus the surgeon should take care during the latter stages of healing not to bandage the sole rigidly against a flat footpiece, for if that is done every irregularity of bone will conduce to callosity when walking is resumed. It is necessary, therefore, at this stage to adjust a splint having an inside arch padded to conform to the natural shape of the foot. Eversions of the foot should be guarded against, and the hollow of the arch should, when possible, be emphasized. Later, the heel of the boot should be raised on the inner side to obviate eversion, and, if the metatarsals are involved in order to allow of early walking a bar should be placed across the sole of the boot behind the tread. Light work can then be undertaken at a much earlier date.

Flail joints.—In answer to the question, what should be done with flail joints? I would say, secure the joint by operation and ankylosis in the most useful position. The only exception is in case of the hip joint, where by means of a simple mechanism, a useful limb may be obtained in spite of the joint being flail.

NATURE OF THE WOUND.

The nature of the wound is a matter of great importance and involves consideration of the size of aperture of entry or exit or both. Large external wounds that communicate freely with the synovial cavity and thereby allow for the free exit of fluid, are appreciably less dangerous than similar wounds with small openings which do not allow for this escape. The nature of the missile largely determines the urgency of the case. Shell wounds are much more dangerous than those caused by undistorted rifle or machine gun bullets. The size of the missile has an important bearing on the likelihood of sepsis and the urgency or otherwise of the necessity for invention.

A good rule to remember for practical purposes is that missiles up to the size of a small pea usually give but little trouble, therefore such wounds that cannot be operated on within forty-eight to sixty hours are best left alone until all danger of lighting up sepsis by operation has passed, and usually six months' time is sufficient to allow to elapse before all danger has passed. The extent of bone injury is a most important factor in the treatment, and as-

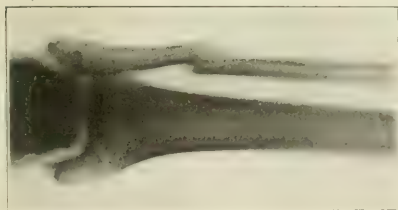


FIG. 4.—Fracture of the humerus.

sumes a rôle of increasing prominence the greater the time that has elapsed between the injury and the operation. If the injury is due to a rifle or machine gun bullet with a small portal of entrance and exit, without extensive bone comminution, there is little doubt that the wound is best left alone.

Excision of wounds in the skin only is called for. Whatever the missile, if the patient is seen early (within the first twelve hours) and has ragged entry and exit wounds and more especially if the missile is retained, primary suture, after efficient excision of the wounds and removal of all loose bone, is the

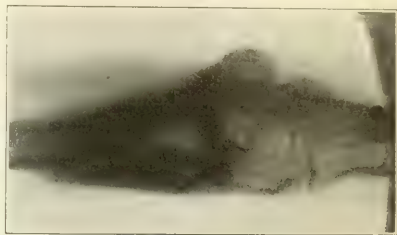


FIG. 5.—Extensive callous formation.

best treatment to adopt when feasible. If the condition has become septic before the operation has been resorted to, more radical means must be used, varying according to the joint involved. The Willets method of treating septic knee joints, although it first appeared to be very radical, is no doubt the best technic to be used in the treatment of this condition.

Different organisms and different strains of the same organism produce widely different effects and in each case the treatment depends upon the recognition. Those most frequently encountered and clinically the most important are: The bacillus of gas gangrene, staphylococcus, and streptococcus. Of these the most dangerous to life and limb is the streptococcus, but even here the strain is largely the governing factor. A highly hemolytic type infecting the knee joint gives rise to a fulminating septicemia, fatal within a few hours. On the other hand a number of infections with other strains are readily controlled.

It has been the experience of most observers that six months should elapse after the wound has healed before any secondary operation should be performed. Most of the patients, where fragments of bone was shot away, requiring a bone graft, were not operated on until the six months' intervening period had elapsed. The early cases that were operated upon became infected and we soon learned that most of the cases upon bacteriological culture proved to be of the *Streptococcus hemolyticus* type. As regards infection with the staphylococcus those patients get well if carefully immobilized, the source of infection removed if possible, and cross infection from without prevented. The *Bacillus perfringens* when invading a cavity (a joint, for instance) has a strong tendency to disappear, but it is unfortunately almost invariably accompanied by either one of the organisms mentioned above.

RADIOGRAPHY.

The value of efficient radiographic examinations in bone and joint cases cannot be overestimated. To be adequate they entail: a, localization of any foreign body present by marks on both surfaces of the limb in two planes at right angles to one an-

other, and, b, good radiographic plates taken by preference in two planes as before. In each case the most suitable planes for use are the anatomical anteroposterior and lateral ones. In addition to this it has been my experience to have stereoscopic plates made especially when the joint is involved.

In dealing with joint cases absolute rest and fixation are the essential principles underlying the successful treatment of all wounds in the early stages and their value cannot be overestimated. The best method for securing fixation, whether for transport or treatment is by fixed axial extension of the limb in one of the various Thomas or Jones splints. Plaster of paris is sometimes used instead of splints to secure fixation, and in the later stages of convalescence it is useful to allow the patient to get about, but in early cases of sepsis its use is attended with many disadvantages. The chief of these is the impossibility of preventing the plaster from becoming soiled with a septic discharge from the wound. This forms a centre from which the wound is constantly reinfected. Another important disadvantage is that it does not allow of access to the adjacent parts of the limb, thereby preventing all possibility of massage and obscuring any changes in the neighborhood of the part. Dressings should be changed as infrequently as possible for two reasons, 1, the risk of movement, and 2, the risk of fresh infection from without. The latter is a consideration of prime importance where it has been impossible to sew up the wound. In the infected cases the Carrell-Dakin method of treatment is indicated.

OSTEOMYELITIS.

Those chronic cases which we saw were mostly all infected and some pyogenic microorganism was the direct etiological factor. The treatment was as follows: Preliminary to operation 500 units of antitetanic serum were given (after the method advocated by the Surgeon General's office); the operative field was sterilized, and excellent results were obtained with five per cent. dichloramine. The sinus

removal of all the dead bone. Arrest of all hemorrhage was a very important factor and the wound was left wide open after being thoroughly packed with sterile gauze saturated with Dakin's solution. A splint was applied according to the part operated on. The first dressing was changed in twenty-four

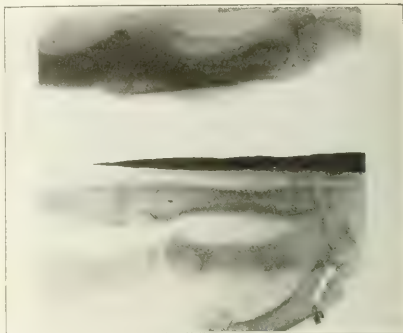


FIG. 5.—Fracture repair in carpal bone.

hours, and the Dakinized gauze reapplied. The skin was protected with either a paraffin gauze, or strips saturated with ten per cent. boric acid vaseline. This was done in order to prevent any irritation of the skin. In large infected wounds at the end of the third day the Carrel tubes were inserted, and the wound kept wet every two hours with the installation of Dakin's solution.

Usually beginning at the end of a week, bacteriological counts were made in order to determine progress and when the count reached one microbe to a field or less and remained this way for three successive days, the wounds were ready for a secondary suture. In most of these cases we got primary union, but we found after some experience that if any secondary operations were attempted before six months after the original injury had elapsed nearly all of these cases became secondarily infected with the *Streptococcus hemolyticus*.

A method which I used in treating these bone cavities and believe is original with me (as I have not seen it described before) was after the third day in a chronic osteomyelitis case to use an electric hair dryer (hot air) on these wounds in order to obtain thorough dryness of the part. This was denoted by a fine glazed surface to the granulations, and I found in a series of nearly 500 cases not only a marked shortening in the period of convalescence, but also a marked stimulation in the healing and sterilization of the wound. Unless the wound was thoroughly dried by this method the results were not satisfactory. A series of cases treated by this method was compared to those treated without and the former showed the great advantage in the use of this hot air dryer. After the wounds healed massage and passive motion was resorted to. Primary debridement was indicated only in those cases having a wound that was seen within the first six to twelve hours.

Delayed primary debridement was indicated in

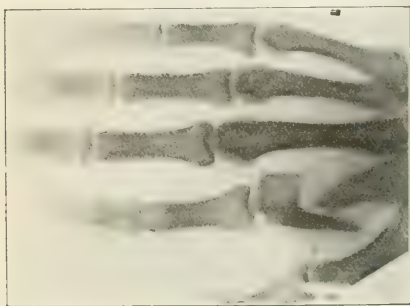


FIG. 6.—Fracture of carpal bone.

tract was next injected with a one half per cent. solution of permanganate of potash, and the scar and all devitalized tissues including bone were thoroughly removed. No overhanging edges of the bone cavity were allowed to remain, and the success of the operation depended upon the complete and thorough

those cases seen within the twelfth to the twenty-fourth hour, and sometimes primary union was obtained. In another article I shall describe in detail the treatment of fractures of the extremities, with the indications and technic for the use of bone grafts.

180 WEST FIFTY-NINTH STREET.

THE FROST-LANG OPERATION.*

By HOWARD F. HANSELL, M. D.,
Philadelphia.

In 1886 Adam Frost (1) suggested dropping a ball into the cavity previously occupied by the globe, after which a strong silk suture should unite the superior and inferior recti muscles, the same stitch including the overlying conjunctiva. Lang (2) proposed practically an identical procedure a short time later, differing only, according to Allport (3) in including the capsule of Tenon in the sutures. Morton (4) has described a similar operation, in which he laid particular stress on his method of suturing the muscles. Each of the four recti muscles is treated thus, taking the internal rectus as an example. The internal rectus is dissected free from surrounding tissues up to its attachment to the globe and held by a pair of advancement forceps, after which it is cut close to the sclera. A double needle catgut suture is passed from within outward enclosing the central bundle of the tendon and tied to its external surface. The ends of the suture which are cut to a generous length are now laid to the nasal side of the field of operation. After enucleation and implantation of the ball the sutures holding the externus and the internus are taken by the operator, the assistant at the same time taking the sutures retaining the superior and inferior recti. Before the second turn is made in the sutures held by the operator the assistant ties his sutures together, and these are enclosed in the final turn of the knot holding the external and internal recti.

Dr. William M. Sweet (5) has described the operation as it has been done at the Jefferson Hospital for many years. He reports the result of forty-eight cases, two balls only having been extruded some weeks following the implantation. Since 1910 many more patients have been operated on with uniformly good results. The balls have, with the exception of one or two, been retained and the movement and appearance of the stump most gratifying. The operation as performed by the eye surgeons of the Jefferson Hospital is as follows:

The conjunctiva is divided at the corneal limbus around its circumference, undermined and pushed back a few millimetres with the scissors. A strabismus hook is inserted under each rectus muscle in turn and the muscle loosened from its fibrous attachment to the sclera. The edge of the cut conjunctiva is drawn over the tendon and sutured to the muscle at or immediately posterior to the insertion. The tendinous attachment is cut close to

the sclera. The internal rectus is the last to be divided. A small stump of tendon is allowed to remain in order that it may be grasped and the ball firmly held as the ball is rotated outward and the optic nerve severed. The ball is now withdrawn from its socket, and all tissues adhering to it are severed.

Bleeding, never serious, is checked by pressure. In those cases in which the optic nerve has been cut several millimetres back of the sclera a small mass of orbital fat will be driven forward into the cavity of the capsule. This may be left to become absorbed, but it is our custom to excise it. The success of the operation, i. e., the retention of the gold ball, is largely dependent upon the proper carrying out of the next step, namely, the separation of the anterior edges of the capsule from the conjunctiva and fibrous connective tissues lying in contact with it. Inclusion of the conjunctiva in the sutures which are meant to close only the anterior border of the capsule leads to tension, opening of the capsule, or thinning and loss of power of resistance and possibly expulsion of the ball. Having isolated the capsule edges with the forceps without tearing or bruising, a silk suture brings together the edges of the middle of the wound—the ball held in a piece of sterile gauze is dropped or gently forced into the capsule. A second suture is inserted into the outer or inner angle of the opening, bringing this part of the two surfaces in apposition. One end of the suture is cut off, the other retained as a handle in order to avoid the use of forceps. The intermediate capsular edges are united by one or two sutures.

The other half of the opening is similarly treated; all the sutures are vertical, and it makes no difference whether they are introduced from below or from above. By elevating the lines of sutures by means of the uncut end one may readily determine whether or not the wound is entirely closed. If it is not the gold ball will be seen. The cut edges of the conjunctiva are now brought together by three vertically placed silk sutures, and the operation is concluded.

The recovery after operation is prompt and not attended with greater reaction than that following simple enucleation. Silk sutures are more satisfactory than catgut; those in the conjunctiva may be removed in three days; the deeper ones as they appear. The artificial eye may be worn in from three to four weeks. This procedure differs from that practised by the originators of the operation; first, in the use of silk instead of catgut sutures; second, in fastening the recti muscles to the conjunctiva before enucleating the ball; third, in the manner of closing the opening in which the gold ball has been placed.

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*Read before the Section in Ophthalmology, College of Physicians, Philadelphia, April 19, 1920.

THE RELATION OF NEUROLOGY TO THE PRACTICE OF GENERAL MEDICINE.

By J. W. McCONNELL, M. D.,
Philadelphia,

Neurologist to the Philadelphia General Hospital; Associate in Neurology, Medical School, University of Pennsylvania; Chief of Neurology, Medical School, University of Pennsylvania.

In considering the subject of neurology in relation to the practice of general medicine, one should recognize that the term is used to include not only diseases of the nervous system, that is, the motor, sensory, and allied systems of the brain, the spinal cord, and the peripheral nerves, but also that mysterious realm of mental disorders which is regarded as past understanding by many, and to which is given the name psychiatry. Harking back to the time when some of you as medical students were acquainted with me in ward class days, you may recall that neurology was regarded by all third and fourth year men as a *terra incognita*, despite the fact that all had passed examinations in the anatomy and physiology of the nervous system. How frequently I have heard the undergraduate say, "I do not know anything about nervous diseases, and I cannot see why anyone should be interested in them." It then falls to the lot of the ward class instructors to endeavor to establish in the minds of the students some real interest in the subject of nervous diseases. How successful these teachers are it is impossible for me to say, but those of us who are sufficiently interested in neurology to pursue our study of it are often amazed at the immense amount of neurological material to be found in the practice of general medicine, and we wonder why it is not put on as a major branch in the medical schools.

As a general practitioner I have seen many patients suffering from all the diseases of the nervous system, from apoplexy to writer's cramp. In not a few instances other general practitioners had treated them and rheumatism was a common diagnosis for tabes and for the early stage of paralysis agitans, for metatarsalgia, for neuritis of individual nerves. The peculiar neurological features of hyperthyroidism and hypothyroidism, of the early stage of acromegalia, of dyspituitarism, have been accorded the lack of attention befitting the unknown, and neurasthenia as a blanket diagnosis for early tuberculosis, chronic appendicitis, or the querulous depressed stage of general paresis has not been at all uncommon. But because one cannot pursue laboratory and research work in neurology one should not pass over the clinical diagnostic side, which is of equal or even greater importance than the pathological investigation. I must beg your indulgence for the relation of personal experiences necessary to prove this assertion. Many years have elapsed since I essayed the practice of medicine. My hospital residence included medical and surgical work among the insane, and thus an interest in psychiatry was created. Later, among other things, I became attached to a neurological clinic in a general hospital, which in turn stimulated the growth of a leaning toward diseases of the nervous system and of the mind. Early in my residential work I

became impressed with the utter ignorance of the general medical man in the matter of things psychiatric, and frequently found that in his mind was the lay idea of insanity, namely, wild ravings, dangerous behavior, and most likely hopelessness as to future normality.

One Sunday noon a poorly nourished, undersized man of twenty-four years was brought to the hospital in the care of two burly policemen and the family physician. He had been manacled by the officers and further rendered helpless by the doctor, who had administered morphine hypodermically to the point of narcosis. He was carried to a room, unshackled, and put to bed. Later with the staff psychiatrist I saw him when he had recovered from his drugging, a youth of undeveloped mind, hysterically upset by a love affair, but now, in the care of those who understood his mental state, quite tractable and capable of handling himself with normal reasoning. Two days later, his emotions entirely under control, he was working in the garden, from which place he had to be called for an interview with the astonished family doctor. Why had the general practitioner not recognized this man's mental state and saved the patient and his family the discomfort and expense of the hospital trip? His own reason was, "I do not know anything about these mental diseases." But he should have known; he should at least have had a smattering of knowledge of psychiatry, from post student reading, if not from experience. With similar and more elaborate instances I have come in contact during my general practice days and always with the same observations and wonderings.

Very many of my case cards show the lack on my own part of careful study of symptoms, or the absence of proper deduction from those that were obtained. Occasionally continued study helped to rectify the earlier shortcomings, but not always was the ending of my connection with the patient a happy one. A very impressive object lesson was the case of an apparently healthy railroad freight conductor who, returning home from a hard day's work, partook heartily of a dinner of pork and sauerkraut. Three hours later I was summoned to see this man who was suffering intensely from pain in the head, was vomiting quantities of material, and altogether was an excellent picture of what I supposed was acute gastric indigestion. But the vomiting and headache did not disappear after four or five days' "general practice" treatment. He became a perpetrator of facetious remarks, despite the fact of his intense illness, but was otherwise practically without suggestive features. He was removed to the hospital where an examination of his eyegrounds showed papilledema in both eyes, greater on the right side. Three days later he died very suddenly and unexpectedly, and the autopsy revealed an enormous tumor of the right frontal lobe of the brain, with recent hemorrhages. The specimen is at present in the laboratory of neurology of the University of Pennsylvania.

A man presented himself at my office one evening complaining of pain over a portion of his chest and down the arm. Examination disclosed a well defined zoster eruption for which I prescribed. Later,

the skin lesion having disappeared, he returned because of a sharp shooting pain in the region formerly the location of the herpes zoster. Further study of the man resulted in a diagnosis of tabes dorsalis, for which I have treated him for at least fifteen years, with fair success as to his relative good health.

And so I could continue to relate concrete examples of the nervous material that comes to the general practitioner. I once made a survey of all my cases, and was astonished to find that over forty per cent. were recognized as having supreme neurological or psychiatric interest. Add to this the cases not of necessity distinctly nervous or mental, that occur in every branch of medical and surgical practice, and the percentage is much greater.

Textbooks on general medicine, whether in the form of a single volume or of a series of several volumes, invariably contain sections on nervous disorders but not always on mental diseases. These volumes or sections, so far as I can see from recent examination, are invariably incomplete in that oftentimes diseases which are definitely related to the nervous system are catalogued throughout the book as pertaining to other systems than the one of which we are speaking. True, exception might be taken to the fact that many of these diseases are of endocrine pathology, as for instance acromegaly, cretinism, exophthalmic goitre, and adiposis dolosa, yet in the last analysis of all of them there is so much more that pertains to the nervous system than to anything else, it seems that they should be included under the general head of diseases of the nervous system.

A recent work on medical diagnosis, containing 1,040 pages, devotes over two hundred of these pages to the study of diseases that are generally known as nervous diseases. I say generally known for the reason that many of these diseases would, in the natural course, be studied almost solely by the specialist in nervous diseases as pertaining to his province; yet this is a work on general medicine, not a specialty. A reviewed individual volume of a recent *System of Medicine* is entirely devoted to diseases of the nervous system, and does not include psychiatry. Scattered throughout the other books of the system are such subjects as chronic lead, arsenic, and alcohol intoxication, with pages devoted to the effects of these drugs upon the nervous system, while coffee and tea have portions of chapters devoted to their baneful influence upon nerves and mind.

There are many reasons why the practitioner of general medicine avoids the study of nervous disease and is much inclined to shift it to those who regard themselves as especially interested in it. One reason for this is that neurology is regarded as an unknown land, the exploration of which should only be attempted by high brow individuals who wear heavy spectacles, have stooped shoulders, and who consider the greatest pleasure in life to be the changing of fluids on the specimens in their laboratories. The time required for the solution of neurological problems is a serious reason. The man whose life is absorbed in the petty details of measles, typhoid, fever, obstetrics, or acute conjunctivitis

does not have very much time left to follow through serial sections the degeneration of the pyramidal tracts in lateral sclerosis. Further, the antecedent history in nervous diseases counts for very much, and they have not the time nor the inclination to delve into the so-called minor details, which may mean very much. Another probable reason is the result of student days—the impression made by the teaching of nervous diseases in many of the medical schools. Many physicians seem to think that the making of a neurological diagnosis is quite the next thing to the signing of a death certificate, because they see no advantage to be derived from therapeutic measures other than iodine and arsenic, or perhaps they feel that symptomatic treatment is the only possible thing.

What remedy have I to offer for an improvement in the handling of neurological cases by the general practitioner? My first suggestion would take us back to student days. Criticism can well be made of the teaching of neurology and psychiatry in the medical schools. It is not at all unusual for men to come to the third year classes in neuropathology and state that they have absolutely no knowledge of the symptomatology of nervous diseases, or if they have knowledge of symptoms they do not know how to measure up the underlying pathology in relation to them. Just why so much time is spent upon the teaching of physical diagnosis in relation to the heart and lungs, to the blood states, and to the condition of the kidney, in the early months of medical student life, while the important features of neurological symptomatology are almost completely ignored, I am unable to say. Certain it is that the student would be better prepared for the more practical work of the third and fourth years in nervous diseases if the second year study of physical signs would include gaits, reflexes, types of paralysis, disturbances of sensation, of coordination, and of motor balance. Demonstrations of psychopathic symptomatology could also be made, to the vast improvement in the later mental appreciation of these things by the undergraduate.

Subsequent to graduation from a medical school and during residence in a hospital is the formative stage of the general practitioner's career, and my next suggestion would relate to that time. The work in the special wards is essential to the development of knowledge of these more specifically designated diseases, yet a perfunctory interest is the usual attention given by most interns to neurology and psychiatry. History taking is laborious, examinations are tiresome, yet careful work in these details is of greatest value in elaborating the powers of observation and in giving to the mind the wide angle lens essential to diagnostic perception. The establishment of a close relationship between the various specialties and so-called internal medicine would result in more practical knowledge to the intern who is soon to launch out into the practice of general medicine.

Once in general practice a man should endeavor to continue his study or reading along broader lines and develop an interest in those subjects which are to him distinctly uninteresting. He is to be a **general practitioner**, a man who is consulted by the

many that they may be saved the activities of the specialist, and when the patient presents himself with headache as a prominent feature he is not to pass over to him a few tablets of acetanilid, but rather "look him all over," take time, and by studying systematically determine the relation existing between the pain in the head and the condition of other organs of the body, not forgetting the nervous system. Cerebral neoplasm, cerebral lues in any of its forms, has to commence some time, and not infrequently headache is one of the earliest features. Furthermore, as a general practitioner he should forget the impressions of student life and replace them with the practical handling of observation and experience. Many cases of nerves show on complete analysis a sexual basis—repression, dissatisfaction, overindulgence. If the family doctor cannot recognize this on being consulted and if he fails to endeavor to correct it he has not measured up to the Hippocratic ideals.

"Reading maketh the full man." It is equally true of the general practitioner and specialist, and the acquisition of a wide acquaintance with neurological information will serve to help the general practitioner in solving many of the problems of gastric upsets, cardiac discomforts, bladder uncertainties, gynecological uproars, and obstetrical camouflages.

1909 CHESTNUT STREET.

CONTRIBUTIONS TO ROENTGEN RAY DIAGNOSIS.*

By JOHN W. SHUMAN, M. D.,
Sioux City, Ia.

In the following I will report briefly a few cases in which the röntgen ray was the greatest adjunct in making a correct diagnosis.

Mastoid.—Beginning with the head, Fig. 1, Case I, Record No. 1673, examined April 10, 1919, is a sample of what can be seen of the normal and pathologically changed mastoid cells. This was a case in which the patient complained of chronic headache and a chronic discharge from the right ear. Mastoidectomy was performed and the symptoms disappeared.

Antrums.—Fig. 2, Water's position, Case II, Record No. 1908, examined November 22, 1919, shows the right antrum markedly clouded, left antrum clear. Patient suffering from influenza. An outlet was secured for the pus and the patient thereby relieved. Inflammatory changes in frontal, ethmoidal and sphenoidal sinuses are as easily demonstrated.

Peridental Abscess.—Fig. 3, Case III, Record No. 1905, shows an abscess situated about the roots of a dead and imperfectly filled tooth. Patient complained of having a bad taste in the mouth and had tachycardia (120). The tooth was extracted and the patient examined four days later. The pulse rate was then 80, the bad taste in the mouth had disappeared and the patient was feeling much better.

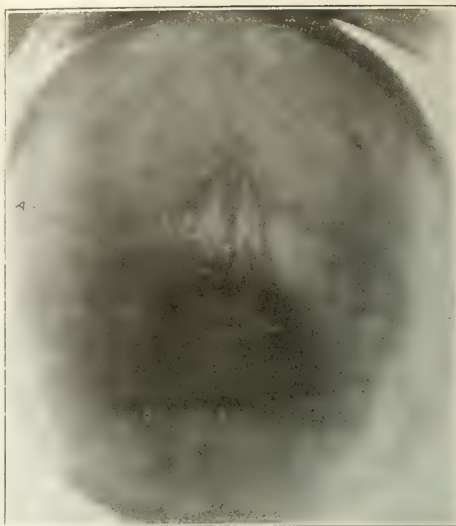


Fig. 1.—Waters position, A, pathological antrums. This position is recommended on account of the demonstration of frontals, ethmoids, and antrums at the one exposure.

Pulmonary Tuberculosis.—Fig. 4, Case IV, Record No. 1818, examined August 7, 1919, shows extensive infiltration in right apex. Patient stated she had a pain in right chest, cough, expectoration, loss of weight, a subnormal temperature in the morning and rise of temperature in the afternoon. Physical signs of consolidation in the right upper chest were present.

Empyema.—Fig. 5, Case V, Record No. 1839, examined August 20, 1919, shows marked shadowing in the midleft chest. Pus was aspirated. The patient was operated upon two days later and the following data was furnished by the surgeon. "Two inches of the seventh and eighth ribs laterally and posteriorly removed and about a half pint of thick pus liberated."

In the last two cases, as is the custom with all chest cases, fluoroscopy was done as it is considered more helpful from a diagnostic viewpoint. The plates were made for study, but more especially for record.

Esophageal Stricture.—Fig. 6, Case VI, Record No. 1166, examined April 5, 1917; patient complained of "inability to swallow"; demonstrates a stricture at the cardiac end of the stomach, well below the diaphragm.

The age of the patient (sixty-two years), the course of the disease (gradually getting worse the last six months) and the cachectic appearance, spoke for the diagnosis of carcinoma as

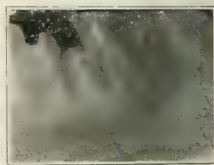


Fig. 3.—Arrow points to area of lessened density interpreted as an abscess.

*Clinical demonstration before the Iowa Clinical Medical Society, held at St. Vincent Hospital, Sioux City, Ia., October 25, 1919.

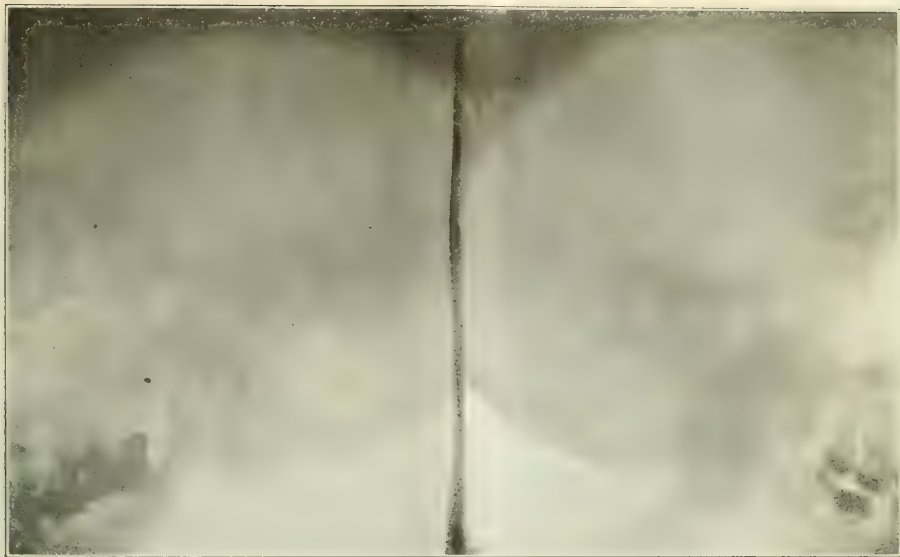


FIG. 1.—Involved mastoid cells as demonstrated by their cloudiness as compared with those on the other side.

being the cause of this stricture. Further data was not available; however, I had the good experience to make the same diagnosis three years ago in a similar case and predicted death in six to twelve months if a stoma was not made. That patient is alive and well; another doctor made the correct diagnosis of cardiospasm and the patient was treated

accordingly. From now on I am having the esophagoscopist assist in the differential diagnosis in this class of cases.

Ulcer.—Fig. 7, Case VII, Record No. 1882, examined September 27, 1919, shows a deformity of the lesser curvature, which was read as a penetrating ulcer. The patient complained of a raw

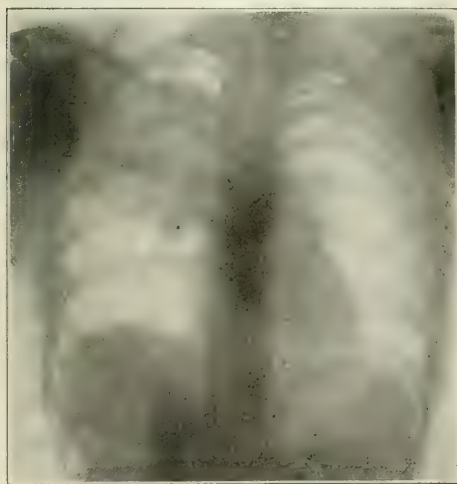


FIG. 4.—Marked shadowing of right upper. This infiltration interpreted as tuberculous.



FIG. 5.—Note marked shadowing in left middle chest. Heart not greatly displaced to right. Interpreted as fluid.



FIG. 6.—Prone position; time one hour. A, canalization; X, esophageal tumor; S, stomach. Interpreted as cancer of cardiac end of esophagus and stomach.

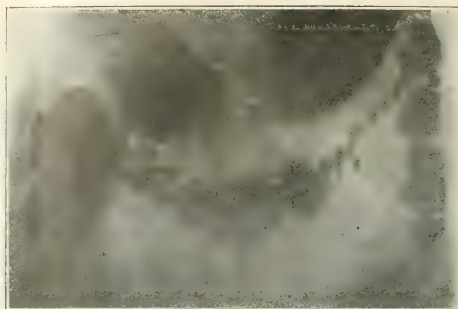


FIG. 8.—Prone position, twenty-four hour and immediate opaque meal. A, appendix partially filled and kinked; X, duodenal cap not showing.

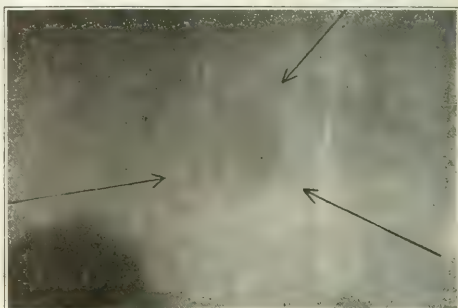


FIG. 9.—Arrow points to hyperdense area, interpreted as gallstones.



FIG. 7.—Prone position, one hour after ingestion of bismuth. A, the deformity which was persistent throughout the series read as a penetrating gastric ulcer.



FIG. 10.—A, shadow in right renal region interpreted as urinary calculus.

feeling in his stomach. He was operated upon two weeks later, with the following comment, "a perforating ulcer was found on the lesser curvature, half the distance between the cardiac and pyloric ends of stomach, the size of a ten cent piece. The ulcer was excised and a posterior gastroenterostomy performed. The patient is convalescing nicely."

Appendix.—Fig. 8, Case VIII, Record No. 1906, examined October 17, 1919, shows a tortuous and improperly filled appendix which was interpreted as being the most likely reflex cause of gastric disturbance (patient to be operated upon). In 1917 I published a brief article on the röntgen ray investigation of the appendix in which it was concluded that the röntgen ray was of great service in diagnosing chronic appendicitis. Army service somewhat curtailed my studies in this line, but am taking them up again and hope in the future to have something more definite result.

I will not burden you further with illustrations

years, he was thirty-six years old. His condition had been diagnosed and treated as neurasthenia on a number of occasions. His recovery, following the removal of the stone, was speedy and complete.

Gallstones.—Fig. 11, Case XII, Record No. 702, examined March 1, 1916, showed opacities in the gallbladder region, which were interpreted as gallstones. The patient was operated upon March 11, 1916, and the surgeon reported as follows, "Gallbladder normal in size, a few light adhesions, contained number of small stones (thirteen removed)." Patient made an uneventful recovery.

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FRANCES BUILDING.

SPINAL SUBCUTANEOUS INJECTIONS*

BY SIEGFRIED BLOCK, A. M., M. D.,
Brooklyn, N. Y.

Neurologist, Long Island College, Greenpoint, Holy Family, Bkay Cholim, and Samaritan Hospitals.

To suggest empiricism in medicine without proper laboratory tests seems almost retrograde in the light of most of the modern medical discoveries. However, among the foremost exceptions to this rule have been quinine in the treatment of malaria, the newer arsenic preparations in syphilis, and salicylate of sodium in rheumatism. Thus we must concede that some of the most wonderful advances in therapeutics have had only empiricism added to experience as their foundation for conservative employment.

Several observers, a short time ago, advised blood serum intraspinally for the treatment of chorea. The object of this short communication is to suggest the subcutaneous use of the spinal fluid of patients. In several cases the results have been almost miraculous, especially in some of the violent choreas.

There has never been a cure in any one case, but the results have been of such great value that the method is worth a trial. The treatment has acted much like the salvarsans. The immediate effects of salvarsan seem a marked improvement of the lesion, but the old fashioned mixed treatment must be continued to effect a cure. The same is true in these cases. In cases of chorea which are so violent that the patients jump high out of the bed, twitch almost to distraction and cannot eat nor talk, in twenty-four to seventy-two hours they have quieted down and nothing is left but a little mild choreic manifestation, which should be treated in the good old fashioned way.

The method consists of withdrawing spinal fluid, about twenty or thirty c.c., or if there is much pressure more may be withdrawn. This fluid is permitted to flow into a sterile test tube with a sterile cotton stopper and placed on ice. In severe cases twice daily an ordinary two c.c. hypodermic syringe of this fluid is injected subcutaneously. The original test tube of spinal fluid may be kept on ice and used as required. The results have been the same

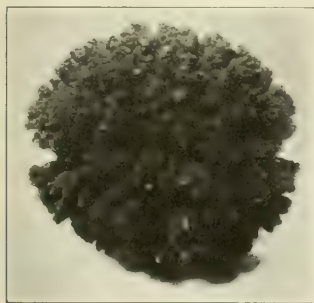


FIG. 10. Urinary calculus removed from bladder in Case XI. Actual size; weight 180 gm. (calcium oxalate stone).

of pathological conditions of the soft parts, suffice it to say, cardiac changes in size, shape and location of the heart, aneurysms, and other abnormalities are easily visualized and can be fairly correctly interpreted if taken with careful history and physical findings.

FOREIGN BODIES.

Renal calculus.—Fig. 9, Case IX, Record No. 1144, examined March 27, 1917, showed a renal opacity, diagnosed as a stone in the right kidney. Patient gave a history of a number of attacks of renal colic. He was operated upon two days later and the stone removed.

Ureteral calculi.—Fig. 10, Case X, Record No. 1575, examined February 21, 1919, shows two opacities in left ureteral region. There was a history of a number of attacks of renal colic and hematuria. Probable diagnosis rested between ureteral calculi and phleboliths. The patient was not operated upon.

Urinary cystic calculi.—Case XI, Record No. 115, showed the exact size and appearance of a calculus removed from the urinary bladder March 15, 1914. The x ray plate in this case was broken. This man had suffered from painful urination for

*Read before the Brooklyn Neurological Society, March 1, 1920.

in the hands of half a dozen different observers, in six different hospitals, and at homes in private practice. About sixty cases are definitely recorded in these hospitals and it was noted that when the spinal fluid was withdrawn and not injected subcutaneously, there was no improvement. Neither length of time nor severity of chorea altered the statistics, which are one hundred per cent. for improvement. A few of the physicians who became interested have tried this treatment for encephalitis, and in one case at least, there was definite improvement, directly attributable to this form of treatment.

I am prepared to give any further information on this subject, as it has been tried in my services.

Four of the best cases are cited in detail, to give an idea of what might be expected with this treatment in the hands of any good, careful practitioner. No specialist is required to carry on the work. It works alike for all members of the profession, under all conditions, in proper cases.

CASE I.—Agnes K., twelve years old, referred by Doctor Kirk, had suffered from a typical Sydenham's chorea since one month old. During the past week she had become much worse—marked myocarditis—all of the valves of the heart affected; marked athetoid movements, no convulsions. Patient had lost control of bladder and rectum; could not talk at all; rolled around in bed, and cried continually. Fingers and hands were cyanosed. Patient had to be restrained to keep her quiet. Ordinary narcotics had little or no effect on her condition. This patient was getting Fowler's solution, bromides and the syrup of the iodide of iron quite steadily, but she was gradually getting worse.

A spinal puncture was done on July 1st, at 2 p. m., twenty-five c.c. being withdrawn, an ordinary hypodermic syringe of this fluid was injected subcutaneously into the arm. That night another two c.c. was injected into the other arm. The next morning there was a substantial decrease in the restlessness of the patient, and there was less crying; again two c.c. was injected—this time into the left buttock. At night the dose was repeated into the right buttock. From the next morning onward, the whole condition seemed to change for the better by leaps and bounds. In one week there was left only a slight twitching of the shoulders, arm, and hand, together with some excessive blinking. The Fowler's solution was kept up until the patient was discharged as cured. At the time this procedure was started, the child looked almost as if she was in *extremis*.

CASE II.—A girl of fifteen years, treated at the Greenpoint Hospital, had marked choreic movements. She gave a history of never stopping her eccentric motions for eight or ten years. After three days, her parents thought she was well enough to go home, although the twitching had not entirely ceased. This case was carefully examined by various members of the staff before the diagnosis was made. Hysteria was quite definitely excluded in this girl. She cried a good deal, was mentally and physically normal, but her upper extremities and head seemed to move about in most grotesque ways.

About forty c.c. of spinal fluid was withdrawn, which came out under considerable pressure. She

had four subcutaneous injections altogether, and left the hospital greatly improved. The case is mentioned on account of the long duration of the illness and the fact that the patient had received much treatment, without value, before this method was tried.

CASE III.—Willie K., aged nine years, was treated at the Vanderbilt Clinic, Neurological Institute, Bellevue Hospital, and in a number of other outdoor clinics. He was in the hospital for two days following withdrawal of the spinal fluid; he then daily applied at the clinic for subcutaneous injections. He had six in all, and his twitching resolved itself into slight finger and left shoulder motions. He gave a history of rheumatism and the salicylates were given. The boy was discharged as cured in one month after his first visit to our clinic.

CASE IV.—This was a girl, aged seven, at the Greenpoint Hospital. She was being treated in the children's ward in the usual way without improvement. The intern, Doctor Harrison, suggested that the spinal subcutaneous method be tried, and the results were beyond expectation. In four days the child was able to stand up out of bed. This was wonderful, considering the previous marked state of chorea. In this case, before treatment, the patient could hardly hold up her head.

The fact must again be emphasized that no cure was obtained by this form of medication. There was marvelous improvement. Other older methods of treatment should follow, and similar improvement can reasonably be expected in future cases where this treatment is applied.

Several other nervous conditions have been treated by this method and there is reason to believe that some cases of epidemic encephalitis were helped, but in these cases decision is reserved at present.

502 WASHINGTON AVENUE.

LONDON LETTER.

(From our own correspondent.)

Discussion on the Accessory Food Factors in Infant Feeding in London.

LONDON, May 8, 1920.

An extremely interesting discussion on the influence of vitamins in infant feeding took place at a meeting of the Section of Diseases of Children, in the house of the Royal Society of Medicine in London, on February 27, 1920. Mr. J. P. Lockhart Mummery was in the chair.

The discussion was opened by Dr. J. Mellanby, who has done a good deal of investigation as to the vitamins. Doctor Mellanby on this occasion confined himself to the question of fat soluble A. According to his view its distribution in food stuffs rendered it the most important factor from the viewpoint of child nutrition. While it had not been decided definitely that fat soluble A and the antirachitic factor were the same, in his opinion such was the case. The results of his experiments on dogs did not coincide exactly with those of other workers who had experimented on various animals, notably on rats. The factor did not appear to be necessary to growth and he had found a distinct amount of the antirachitic factor present in some

but not all vegetable fats. A feature of the experiments was that the relation of the antirachitic factor to the age of the animal was clearly brought out. It was found to be practically impossible to produce rickets in dogs more than four or five months old by the method he had adopted. With increasing age, the animal became less dependent upon an antirachitic factor, and any rickets which had previously developed tended to cure itself.

Another feature sharply defined was the relation of the antirachitic factor to the energy producing power of the diet. In animals which were fed on a deficiency diet under precisely the same conditions, the only variable element in the diet being bread, it was found that the animals which ate most bread acquired the most pronounced rickets. The carbohydrates appeared to accentuate the rachitic tendency, while protein diminished it. Exercise had the same effect as protein; it increased the energy output, while carbohydrates increased the laying on of tissue.

Doctor Mellanby drew attention to certain statistics with reference to the relative frequency of rickets among Jewish and Gentile children, a smaller percentage by far of Jewish children showing symptoms of rickets and bad teeth. Evidence pointed strongly to the fact that diet was the deciding factor in the case. In Jewish households large quantities of oil were used in cooking; potatoes were boiled in milk or fried in fat, never boiled in water, and the ordinary beverage was cocoa made with milk. The speaker held that diet was the most important element in child nutrition in the first year of life, and that the antirachitic factor was an important part of this diet. It was assisted in its action by anything which increased the energy output of the child, such as increased protein or exercise, and was prevented by increased carbohydrate or anything which tended to make the child put on flesh.

Professor Noel Paton, of Glasgow, was the next to join in the discussion. Professor Paton, together with Doctor Findlay and Doctor Watson, is chiefly responsible for the theory that rickets is more largely due to unhealthy home conditions, bad ventilation, and lack of fresh air and exercise, than to an ill balanced diet. Paton insisted that evidence was still lacking for the theory that rickets was due to dietary deficiency alone. He was of the opinion that no farreaching conclusions could be drawn from such evidence as was at present available. He considered that to compare animals of different litters and to group puppies of different ages was unjustifiable. What was wanted was more experimental evidence, the value of which could be definitely estimated. Further work on the connection between fats and energy must be undertaken. Paton also recorded the opinion that the evidence was far from being complete that milk contained an accessory factor protective against the development of rickets. A series of inquiries which he had addressed to the masters of foxhounds in the country, the returns covering six hundred puppies, failed to support the idea that deficiency of fat soluble substance was a causal factor. He recapitulated the observations which with those of Findlay and Watson had been

published in the *British Medical Journal*, December 7, 1918, and said that to his mind more and better coordinated investigation was necessary before the etiology of rickets could be adequately discussed. The possibility that it might be primarily an infective disease, due to a nonspecific organism, must be borne in mind. Certainly in experiments on puppies the more scrupulously clean the kennels were kept the less frequently did rickets develop.

Dr. Robert Hutchison, the well known authority on diet, thought that most clinicians would agree that the dietetic factor was essential in rickets, but he was not convinced that the fat soluble accessory factor was alone concerned. What produced rickets was an ill balanced diet, in which there was a relative excess of carbohydrates. By cutting down the carbohydrates, even though the rest of the diet was left much as it was before, the clinical cure of the condition could be effected. It seemed unnecessary, therefore, to evoke an explanation some elusive thing named a vitamin. The vitamin theory must not be overdone. He did not dispute that there were such things as vitamins, but to make farreaching applications of the theory was not yet justifiable.

Dr. C. I. Martin of the Lister Institute pointed out with regard to the work done on the antiscorbutic vitamin, how widely the results varied with different animals. If the work was done on rats, the conclusion might be that there was no such thing as an antiscorbutic vitamin; if on guineapigs that it was the most essential thing in the diet. The quantitative line of investigation had made it possible to estimate the value of certain food stuffs. For example, if the value of lemon juice from the point of view of the antiscorbutic factor were taken as 100, that of equal weights of cabbage juice would be the same, that of carrot juice 7.5, a lightly cooked potato and beef juice 7.5, and that of fresh milk 1.0 or 1.5.

Dr. Eric Pritchard exhibited a form of artificial cream made with oils containing a rich supply of fat soluble A factor and of chemical composition closely analogous to butter fat. He objected to the term antirachitic applied to any particular vitamin. The particular symptoms of malnutrition which followed from deprivation of this accessory factor ought to be ascertained. He was strongly of the opinion that the majority of cases of malnutrition in infants were due not to deficiencies but to excesses. To label any one accessory factor the antirachitic factor was a retrograde step, because it induced people to think that rickets was a perfectly simple disease, and capable of being cured by a teaspoonful of codliver oil. Dr. Lawson Dick drew attention to the geographical distribution of rickets. The area from 40 degrees N. to 58 degrees N. across Europe and America, included the whole of the ricket zone. This was the temperate zone, the zone of deciduous trees, the wheat growing zone, but, above all, it was the great industrial zone of the world. Four hundred millions of Asiatics lived on rice, under ideal conditions for diseases due to want of vitamins, but rickets did not develop.

(To be concluded).

Editorial Notes and Comments

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NEW YORK, SATURDAY, MAY 29, 1920.

MORALITY AND RESPONSIBILITY.

The question of the fatherless baby has grown so large as to be considered a problem of the State. Our attitude has changed. The girl is no longer fallen, but an unmarried mother; the baby is no more a child of sin, an illegitimate, a love child, but a ward of the court; and the problem will doubtless find speedy solution, since it is, in the end, a financial one, both here and in England. In England, the new Bastardy Bill for 1920 is based on the idea that the sooner the question of the child's paternity can be raised, the better in the interest of truth and justice.

It is in the interest of the State that an illegitimate child should grow up to be a healthy citizen, and not a constant charge on State or philanthropic funds. The mother should not be allowed to deteriorate physically and morally under a heavy responsibility. The bill is not intended to shift this responsibility in any way, but to equalize it by making the father share it. If the act should pass, a justice of the peace or a borough official may institute proceedings against the putative father at the request of the mother or on his own initiative. When the paternity is admitted, legal forms must be filed and sealed regarding maintenance; where denied, the father shall be summoned as a neglecter.

The next clause is the rock round which angry argument is swirling and dashing. It says: Where the paternity cannot be proved or an order enforced against the putative father or mother, the maintenance and education of the child until he is

sixteen shall be provided for by Parliament and the child termed a ward of court, the mother contributing according to her means.

A tremendous outlay will be necessary, as the putative father is hard to find, especially when the mother is too amorous, too frightened, or really unable to trace him. Naturally, during and since the war, distance and death and bigamy have accentuated difficulties, though there were thousands during the war who, strong in morality, protested that the woman and baby ought not to get any army pay at all because of illegitimacy—a putative father dead for his country did not count.

A member of the parliamentary commission stated that in ninety-nine per cent. of the cases no father could be traced, one reason for this being that it is not the supposedly wild young man who tempts and deserts, but the middle aged, with sufficient worldly wisdom to evade consequences. Deliberate bigamy is another aspect of the question. In some thirty thousand marriages in England during the war contracted by Australian, American, New Zealand and Canadian soldiers, many thousands were bigamous. The husband is now dead or gone; the wife and child remain.

The bill has the support of all labor members of the house and the doctors, while the N. C. U. M. C. is doing valiant work to provide homes and hostels for the nursing mothers, where they are trained to be selfsupporting, and where after weaning the child, never separated from its mother, is properly cared for while the latter goes out to work. Curiously, the opposition is led by the Church. Meanwhile philosophers, philanthropists, politicians, doctors, papists, protestants, and magistrates are theorizing, discussing, wrangling and legislating ineffectually round the cradle of that simple little child of shame.

THE TENTH REVISION OF THE PHARMACOPŒIA.

The *Pharmacopœia* of the United States differs from that of any other country, for it is not a product of the Government nor is it issued under Government control, but is made by a voluntary organization composed of representatives of incorporated colleges and associations in medicine and pharmacy. It is much to the credit of the physicians and pharmacists of the United States that this voluntary organization has been able to produce a work of this magnitude. The Tenth Decennial Convention for the Revision of the *Pharmacopœia*, which was held in Washington during the week of

May 11th, outlined the general plans for the eleventh edition of the *Pharmacopæia*, and selected a committee of fifty men to whom the preparation and the revision will be entrusted.

Representatives from nearly every state in the union were present at the convention. The general principles laid down were in harmony with those which have prevailed in the past, with the exception that hitherto the committee of revision has been definitely instructed not to recognize proprietary preparations. The only limitation placed upon the choice of the committee in the instructions as adopted by this convention was that no substance or preparation should be recognized which was of secret composition. With this proviso the committee is at liberty to recognize any proprietary preparation which they may deem worthy. In a general way the object of the *Pharmacopæia*, as set forth in these general principles, is the establishment of standards of strength and purity for the drugs and preparations which have the widest use in medicine. The committee was instructed to proceed along the same lines which have marked its deliberations in the past, instructions which, in view of the successful issuance of the revision during the past, are wise and well chosen.

The members elected on the committee of revision included seventeen physicians and thirty-three pharmacists, representing about the same proportion as the delegates at the convention. The new chairman of the committee of revision, Professor E. Fullerton Cook, of Philadelphia, was for some twenty years the personal assistant of Joseph P. Remington, who was chairman of the committee of revision, and has during that time been in intimate touch with all of the revision work; in fact, he has had personal charge of the details of the work of revision. Moreover, Professor Cook is a competent pharmacist of high scientific attainments, a man of sound judgment, and there was no dispute as to his selection. Dr. Reid Hunt, who was chosen president of the convention to succeed Dr. H. W. Wiley, is one of the foremost pharmacologists in the United States, and has the complete confidence of the leaders, both in medicine and in pharmacy.

The convention was characterized by harmony of action and was devoid of factional fights. Its deliberations occupied less than three days, and the program arranged by the committee in charge of the work for the past ten years was carried out without material alterations.

The board of trustees, which has charge of the publication of the work and of the financial affairs of the convention, was wisely instructed to prepare and publish a Spanish edition. The statistics presented show that the first Spanish edition was

issued without loss, in fact, with a small profit, and the convention looks upon the publication of this Spanish translation as a duty which it owes to the Spanish speaking countries included in the possessions of the United States and also to the Spanish American Republics, several of which have adopted the *United States Pharmacopæia* as their standard. It is to be hoped that the Spanish translation of the tenth revision will be issued somewhat more promptly than the previous ones have been.

THE EARLY DIAGNOSIS OF COXALGIA IN CHILDREN.

All the current textbooks describe a so-called onset phase in coxalgia, but for the experienced clinician there exists long before this phase a period during which pathological manifestations are already present, which can be revealed by closely questioning the patient. The first index which, it would seem, should draw attention is the very slightest defect in walking, and if the child is observed, for instance, as he enters the physician's office, the most significant symptoms may be noted. Questions will reveal the fact that the child has dragged his leg and complains of feeling tired when he returns home from school. If the child is made to walk before the examiner, after being completely undressed, over a sufficient extent of space so that the rhythm of his gait shall have been thoroughly grasped by the physician, he will at once recognize the rhythm well known to horse dealers, but which is frequently imperceptible at the onset of coxalgia. Usually the limping caused by other congenital or acquired lesions of the lower limb is readily recognized. Still there are children whose awkward step may cause one to hesitate.

The child should be examined on a table lying down, and he is asked to indicate with the finger the area of pain. This he usually does correctly, so that many other affections of the lower limb can be eliminated from the diagnosis. It should be recalled that when pain is complained of in the knee, the gonalgia is often the first sign of coxalgia. Even in children who do not limp, the examination should be directed to the differential lesions of coxalgia, and in proceeding the presence or absence of muscular atrophy should be noted by comparing the thighs and by seizing the quadriceps on each side with the hand.

Examination of the hip is more delicate. At the onset of coxalgia the outline of the thigh is still normal, and there is nothing to be found in Scarpa's triangle. However, some subjects may present subacute or cold adenitis following a wound on the limb or simply fatigue, which is painful on pressure,

while the adenitis of coxalgia is painless. Search for pain provoked by digital pressure directly over the joint surfaces is of the highest import. The healthy limb is first examined and an attempt made to reach the head of the femur or even the cotyloid brim. If pain exists at this point only on the suspected limb, it is an almost certain sign of coxalgia. The posterior articular area should next be examined, and after this percussion along the axis of the extended limb should be resorted to, which occasionally gives rise to coxal pain.

A study of provoked movements is important. At the onset of coxalgia defensive contraction does not exist. It is, in the first place, only a contraction of the antagonist muscles. In making the examination by the method of Lannelongue the child is extended on a table, the hand is applied flat on the anterior region of the thigh, and each limb in turn is made to rotate; the spring imparted to the affected limb ceases quicker and is less in extent than on the healthy side. Contraction during flexion of the thigh on the pelvis is next looked for. If there is muscular defense, the hand grasping the iliac region will feel the pelvis slide backward, while the thigh appears to continue its movement. Should this test remain negative, the examiner may, while the thigh is in semiflexion on the pelvis, exercise rotation of the knee, when occasionally some difficulty in these movements will be detected on the diseased side.

Muscular contraction during flexion and abduction is unquestionably one of the best elements of the early diagnosis of coxalgia. This consists of bending the knees, at the same time keeping the legs parallel to each other, and then gently and symmetrically spread them apart as far as possible. If contracture appears, the healthy side will be seen to lower toward the table. The pelvis must be held very evenly and the test be repeated several times, if necessary. It should be remembered that there are affections which may present symptoms of coxalgia, such as sacrocoxalgia, coxa vara, and numerous inflammatory processes. Their diagnosis is not difficult to make. Radiography is the last resort in diagnosis and should be done, although in the very early stages of coxalgia the data obtained are rather vague.

All of these methods of investigation having been carried out, three hypotheses offer themselves, namely, 1, the process is another affection than coxalgia; 2, there is a symptomatic ensemble which makes it morally certain that the case is coxalgia, and in these circumstances a vigorous treatment must be begun at once, and 3, there is simply probability or even doubt, in which case the child should

be put in bed for a fortnight, and again examined after the lapse of this time. If the process is not coxalgia, there will be considerable chance that the rest in bed will have improved or even caused the symptoms to disappear; while if it is the onset of coxalgia, the condition will not be influenced by the test rest.

PERIDUODENITIS.

Periduodenitis is an affection anatomically characterized by a deformed duodenum surrounded and fixed by peritoneal adhesions which twist or bend it. Clinically, digestive disturbances result from a chronic duodenal stasis. Its pathology and etiology are rather obscure, but in the latter a morbid state of the mucosa may be mentioned, characterized by a change in its secretory activity arising from general septic states, infections from septic food-stuffs and defective feeding during the recent war—particularly evident in prisoners returned from Germany—irregular meals and chronic appendicitis. But of all the cases, Jean considers panoptosis as the principal one and above all gastrocolic ptosis. The bends in the duodenum in ptosis are more marked where traction is strongest. The bends remain movable and reducible for some time but thickenings and bands of adhesions finally develop at their site so that permanent bends are formed. Symptomatically there are pain, digestive disturbance and changes in general health. The pain generally assumes a burning character, sometimes shooting to the gallbladder or ileocecal region, but the pain never has the constrictive character at the base of the thorax that is met with in pyloric ulcer. The sensation of painful hunger is wanting and the pain is not allayed by bismuth. Vomiting is uncommon, while hematemesis and melena never occur. Constipation is the rule.

Objective examination gives the most data. By palpation muscular rigidity at the upper portion of the right rectus muscle is found. Palpation of the duodenum is difficult. If the gastric and duodenal contents of these patients are examined, it will be found that they all have a mild degree of hyperchlorhydria with a small amount of free acid, but especially an apparent acidity, as is the case with ulcers. But the best and most reliable data are obtained by radioscopic examination. After a bismuth meal it will be found that a minute portion of the repast will have passed into the duodenum, after which no more passes until the appearance of contractions of the pyloric antrum. The passage of bismuth in the jejunum lasts but a few seconds with a very short stop at the duodeno-jejunal angle. Complete repletion of the duodenum or the immediate and rapid passage of the gastric

contents into the duodenum should be regarded as abnormal.

In periduodenitis the pylorus is displaced slightly to the right; it is in a state of ptosis and reaches the right side of the third lumbar vertebra. The bulb follows the pylorus in this displacement and the first portion of the duodenum assumes an abnormal aspect by forming an angle at the junction of the first and second portions. The deformity of the second, third and fourth portions is manifest on account of the stasis they determine. From all this it is evident that the diagnosis of periduodenitis is not easy in many cases. One must know which is the diseased organ and then differentiate between periduodenitis and ulcer. If hematemesis occurs the classic symptoms of duodenal ulcer should be looked for and in this way a correct diagnosis can be arrived at.

The medical treatment of periduodenitis consists of milk diet at the time of the painful paroxysms and wearing an abdominal belt for the control of the ptosis. But usually the patient is anemic from the diet which, by increasing constipation, causes a recrudescence of the painful phenomena, so that surgical interference for the purpose of freeing the duodenum, combined with gastroenterostomy, is indicated.

MEDICAL PLACE NAMES.

A survey of the place names in the United States indicates that as a people the Americans have been faithful in the perpetuation of the names applied by the Indians to various geographical entities; that pioneers and early settlers have been remembered in the nomenclature of cities, towns and villages, and that the physical peculiarities of the various locations have been preserved for posterity. There is, however, a marked dearth of names having as their origin the appellations of physicians and scientists who, by their labors, have contributed enormously to the welfare of future generations.

The French, however, with a happy faculty for holding in memory those men who have contributed to the welfare of the community and the human race, have a system of naming places, and streets in particular, after beloved scientists and artists. Thus one sees frequently signs something like the following:

Rue du _____,
Physiologiste,
1620-1690.

This is an example which we would do well to follow, and the medical historical societies of this country could perform no greater service than by initiating and continuing a propaganda for the naming of streets, places, and public buildings after medical pioneers and scientists who have given the labor of their lives for the welfare of humanity. It is true that Chicago has a Nicholas Senn School, and Washington a Walter Reed Hospital. Doubtless many other cities have adopted place names to com-

memorate physicians and surgeons, but are these so marked as to make them a perpetual memory to great and good men? If the sign for Rush Street in Chicago had beneath it the words Physician, Patriot—how much more it would mean. How appropriate it would be to have an Osler Boulevard in Baltimore, or a Holmes Avenue in Cincinnati, each with a qualifying word or two which should give some hint of the service which these men had rendered to mankind. Philadelphia might well have a Rodman Street; Washington, a LaGarde Terrace, or a Sternberg Avenue; St. Louis, a Wyman Lane—in fact, there is no nook or corner in this broad country of ours which could not and should not label permanently some of its geographical features after its medical and surgical heroes.

Obituary.

JOSEPH FRAENKEL, M. D.,
of New York.

Dr. Joseph Fraenkel died in New York on Saturday, April 24th, at the age of fifty-three. He was born in Russia, emigrating to Austria at an early age, and was graduated from the University of Vienna at the age of twenty-four with the degree of Doctor of Medicine. He became an intern in the *Allegemeine Krankenhaus*, in Vienna, where he had the opportunity of working with men like Neusser, Bamberger, Bilroth, and others. American opportunities were an incentive to his inquiring spirit and at the age of twenty-six he came to New York, bringing with him immeasurable spiritual wealth and total material poverty. He shortly obtained the position of intern in the Montefiore Home and at once showed his capability. He was a man of startling personality. The principal thing he left was a group of followers to carry on the work from his stimulus; unfortunately he left little written material to describe his work. He was averse to publicity even as far as the findings of his keen observation were concerned, and for that reason the extent of his work cannot be measured. Toward the end he became dogmatic and frequently made *a priori* statements which might have been true but which unfortunately could not be checked up.

News Items.

Personal.—Dr. Edmund C. Boddy, of Rochester, Minn., has been appointed temporary sanitary supervisor in the New York State Department of Health.

Cocaine Smuggler Caught.—Sixty-five pounds of contraband cocaine, valued at \$200,000, were seized on board the steamer *Presidente Wilson* by revenue agents. The ship was docked in New York.

Indiana Medical Meeting.—The annual session of the Indiana State Medical Association will be held September 22nd to 24th at South Bend, under the presidency of Dr. Charles H. McCully, of Logansport.

Chiropractic Bill Vetoed.—Governor Smith has vetoed the Ames bill for the regulation of the practice of chiropractic, which was passed recently by the New York State Legislature.

Alimentary Hygiene Society.—The *Société scientifique d'hygiène alimentaire* at its recent convention elected as president M. Eugène Roux, director of the sanitary and scientific service of the ministry of agriculture.

Tuberculosis in Italy.—Professor Maragliano, of the University of Genoa, in a pamphlet on tuberculosis in Italy, states that there was no increase in tuberculosis in the country due to war conditions, and that Italy compares favorably with other countries regarding this disease.

Award for Prenatal Injury.—A legal precedent was established in New York State when the Supreme Court decided on May 22nd that a child may maintain an action for damages for injuries suffered before birth. Seven days before the child was born its mother, Mrs. Joseph Drobner, fell into an open coal chute, and at birth the baby showed serious injuries which it is alleged will be permanent.

Swedish Red Cross Active.—The Swedish Red Cross has asked its government for a subsidy of a million crowns so that it can take a more active part in the fight against misery and the dangerous epidemics which are prevalent especially in Eastern Europe. In the meantime, it has placed at the disposal of the Central Committee its available funds of 100,000 crowns so that immediate action can be taken in the most afflicted regions.

New Building for Broad Street Hospital.—The Broad Street Hospital, New York City, will soon begin the construction of a six story addition for use as a nurses' home and private pavilion, to cost \$215,000. Alterations on the present structure will provide a new clinic and dispensary, x ray and electrotherapeutic departments, and pathological and bacteriological laboratories. These units, which will cost \$172,000, are to be opened in June and will provide at least thirty more beds for the hospital.

Medical Men Honored.—The following officers of the Medical Corps, U. S. Army, have been mentioned by the King of England in appreciation of their distinguished service in the field: Colonel Christopher C. Collins; Colonel George W. Crile, of Cleveland; Colonel Harvey Cushing, of Boston; Colonel Mathew A. Delaney; Colonel Robert U. Patterson; Colonel Harry L. Gilchrist; Colonel James D. Fife; Colonel Richard H. Harte, of Philadelphia, and Lieutenant Colonel Lucius L. Hopwood; also Miss Julia Stimson, superintendent of nurses, U. S. Army.

Armenian Doctors in the War.—Figures published by the Association of Armenian Physicians give the following losses during the war: Armenian physicians massacred and killed, sixty-seven; dead of exanthematous typhus, fifty-two; Armenian pharmacists massacred and killed, fifty-four; dead of typhus or other diseases, nineteen; Armenian dentists massacred and killed, ten; dead of typhus or other diseases, four; Armenian medical students massacred, killed, or dead of disease, fifteen. A large number of Greek medical men also suffered from the barbarity of the Turks.

Fellowship Offered by Child Health Organization.—A thousand dollar fellowship, one year at Teachers' College, Columbia University, for the study of modern health education in the elementary schools will be awarded by the Child Health Organization of America, 156 Fifth Avenue, New York, for the best graded plan and outline for interesting children in the establishment of health habits.

Housing Project.—Announcement has been made by the Cooperative Housing Committee of New York that a committee is at work on a cooperative housing project modeled on the Garden City plan of London. The committee, which is composed of representatives of civic, cooperative, industrial, labor and other organizations, is planning the construction of cooperative apartments and single dwelling houses, apartment hotels, roof gardens and playgrounds, as well as cooperative stores and supply bureaus.

X Raying Old Masters.—A press dispatch from London states that the examination of old masters is the latest use to which the x ray has been put. A demonstrator at the Royal Institution, showing a picture of the Madonna, in which the Madonna appeared to be looking at something non-existent on the canvas, proved by a radiographic examination that the missing something was a child, which a former owner had evidently disapproved of and had painted out. In another picture a woman in an attitude of prayer was discovered to have been painted over what was in the original the figure of a monk.

South Carolina Medical Meeting.—The South Carolina State Medical Association held its seventy-second annual meeting in Greenville, April 20th and 21st. The following officers were elected: President, Dr. W. P. Timmerman, of Batesburg, vice presidents, Dr. Miles J. Walker, of York; Dr. William A. Boyd, of Columbia, and Dr. William W. Fennell, of Rock Hills; secretary-treasurer, Dr. E. A. Hines, of Seneca; counselors, Dr. A. E. Baker, of Charleston; Dr. Samuel E. Harmon, of Columbia; Dr. Thomas L. W. Bailey, of Clinton; Dr. Leland O. Mauldin, of Greenville; Dr. T. N. Duten, of York; Dr. Charles R. May, of Bennettsville, Dr. Harry L. Shaw, of Sumter, and Dr. Leighton A. Hartsog, of Olar.

Campaign Against Child Labor.—A campaign to abolish child labor not merely by prohibiting employment but by providing suitable education is being carried on or has been completed by twenty states in cooperation with the Children's Bureau of the U. S. Department of Labor. New York is not among the twenty states. The campaign is to be followed in the fall by a back to school drive to round up the children who fail to report at the opening of school, since the influence of vacation work in leading to permanent withdrawal from school has been strikingly shown. Rural child labor, which involves three fourths of all the child workers of the country, is particularly hard to reach. It is subject to no legal regulation except through school attendance laws, and these are, as a rule, inadequate and poorly enforced. In three of the states the percentage of illiterates over ten years of age represents more than one fifth of the total population.

Medical Men Going to China.—Three Johns Hopkins medical men will leave Baltimore this summer to accept positions at the Peking Union Medical College, Peking, China. They are: Dr. Ralph G. Mills, professor of pathology; Dr. Adrian S. Taylor, head of the department of surgery, and Dr. Charles W. Young, associate in medicine. Five Johns Hopkins men are already at the Peking college. They are: Dr. Henry S. Houghton, Prof. Edmund V. Gowdry, Dr. J. Preston Maxwell, Dr. Bernard E. Reed and Dr. Andrew H. Woods.

Ancient Surgical Instruments Given Museum.—A set of ancient Greco-Roman medical and surgical instruments found two years ago near Kolophon, in Asia Minor, has been presented to the Archaeological Museum of Johns Hopkins University by William H. Buckler. The instruments, thirty-six in number, are all of bronze, with one exception. They were probably the property of some Roman physician living in Asia Minor in the first or second century A. D., and the fact that they were all found in one place is doubtless explained, in the opinion of archaeologists, by the ancient custom of burying a person's worldly possessions with him. The set includes surgical knives and elevators, forceps, tenacula, a unique drill bow for use in injuries of the skull, scoops, probes and a cautery.

Johns Hopkins Finances.—The final distribution of the De Lamar bequest to the Johns Hopkins University will bring the total up to about \$4,000,000, according to a statement attributed to the president, Dr. Frank Goodnow. The university has already received \$1,500,000 of the bequest, which has been concentrated principally in the medical school, where several departments have been broadened and strengthened and salaries raised. One of the injunctions of the will was that the recipients of the fund publish health data in popular form, and Johns Hopkins has arranged for the publication of a public health journal. This detail is under the direction of Dr. W. H. Howell, general director of the School of Hygiene and Public Health, and it is probable that the first issue of the journal will appear next January. The De Lamar fund is to be divided equally among Hopkins, Columbia, and Harvard Universities.

Thermometers Tested by Health Department.—To determine the reliability of clinical thermometers in use and on sale in the city, the New York City Health Department tested 150 thermometers obtained from doctors and nurses. Of these eighty-four, or fifty-four per cent., were found defective and seventy-two, or forty-six, acceptable. As the owners of the thermometers could not spare them long, repeated readings could not be had, and it is probable that some of the thermometers passed on would prove defective if subjected to all the tests necessary to determine a good thermometer. With this information in mind, an appropriate amendment to the Sanitary Code and regulations to govern the sale of clinical thermometers in this city are under consideration by the Board of Health. A conference was recently called of clinical thermometer manufacturers, and the manufacturers agreed to abide by certain modifications of the regulations imposed by the Health Department.

Educational Work for Tuberculous ex-Soldiers.—Several of the army hospitals which have been turned over to the Public Health Service are being made over into sanatoria for tuberculous ex-soldiers. Occupation therapy, embracing mental work and manual handicraft for curative and diversional purposes, has been instituted in these places as an exclusive activity of the Public Health Service which will lead to vocational training under the Federal Board for Vocational Education, when the physical and mental condition of the patient will permit of such training. At the present time an educational director and teachers have been stationed at the following points: Greenville, S. C.; Rutland, Mass.; El Paso, Tex.; Sanatorium, N. C.; Perryville, Md.; Saranac Lake, N. Y.; New Haven, Conn.; Alexandria, La.

League of Red Cross Societies.—The meeting of the first General Council of the League of Red Cross Societies, held March 2nd to 8th, in Geneva, was attended by delegates from twenty-seven of the thirty Red Cross Societies comprising the league. After the opening session the council broke up into two parts—the section of organization and the medical section—each of which met twice daily. The medical section discussed the reports submitted by the various branches of the medical department and the projects brought forward by members of the general council. The subjects included child welfare, tuberculosis, communicable diseases, nursing, medical information, sanitation, vital statistics, social hygiene, malaria, and public health laboratories. Preparations are being made for continuous communication on medical subjects with the Red Cross Societies, in three different ways: First, by means of a technical medical journal in which will appear scientific articles on subjects in which the league is interested; second, the *Bulletin* of the league will issue articles on medical or welfare subjects suited to popular reading; third, special articles will be distributed on subjects whose importance or urgency calls for immediate publication as separate pamphlets. With regard to relief measures in Eastern Europe, the operations in Czecho-Slovakia are said to be of the nature of general relief, and present no serious administrative difficulties. In Poland, however, relief work is seriously hampered by the lack of food, fuel, clothing, and transport, and the provision of these on an adequate scale is beyond the resources of voluntary societies. Further government assistance is necessary if extension of the typhus epidemic is to be averted. The medical director in his report sketched the organization of a medical department at headquarters, split up into a number of divisions under the coordinating control of Doctor Strong. The establishment of a hygienic laboratory and museum has been deferred until its aims, function, and equipment have been formulated. The International Medical Advisory Board has been limited to fifteen members, not more than three of whom shall represent any one country. This board will meet in Geneva once a year, and at other times of emergency on the call of the director general or the board of governors. The first meeting will probably be held early in June.

Book Reviews

THE TEMPORAL BONE.

Essays on the Surgery of the Temporal Bone.—By SIR CHARLES A. BALLANCE, K. C. M. G., C. B., M. V. O., M. S., F. R. C. S., Consulting Surgeon to the British Army during the Great War and Chief Surgeon to the Metropolitan Police. With the assistance of CHARLES DAVID GREEN, M. D., F. R. C. S. Illustrated. In two volumes. London: Macmillan and Company, 1919. Pp. 612.

In a modest preface this pioneer of temporal bone surgery tells how the branch of aural surgery has grown. During the past twenty-five years it has extended from a modest beginning until today it is ranked as one of the most important in the sphere of general surgery. He likens it to ophthalmological or gynecological surgery and decries the fact that these branches of surgery have received more attention. The obvious reason for this has been that minor defects are more readily noticed and complained of in these areas. In truth in America the area of the mastoid has received considerable attention and the general surgeon is usually well versed in the technic of this important operation. For this reason the splendid work of Ballance will be well received in this country. The charts which he has assembled, including a great many of his own, are extremely helpful. His chapters on the technic of the mastoid operation are admirably presented.

It is not alone the aural and the general surgeon who will be interested, for there are many points in differential diagnosis that require the study of neurologists, orthodontists and other specialists in closely adjoining fields.

The experiments on labyrinthian disorders are of great value in the study of aviation and with the growth of aviation a great deal more work along similar lines may be expected in the future. The parts dealing with the operative treatment of facial palsy are of great interest. Material has been culled from many sources for this section of the book. The publishers are to be complimented on the excellent workmanship they have displayed in the publication of these two volumes.

PROTOZOA LIVING IN MAN.

The Ameba Living in Man. By CLIFFORD DOBELL, M. A., F. R. S. Illustrated. New York: William Wood & Co., 1919. Pp. i-155.

The monograph written by Dobell will prove of interest not only to the medical man but to the protozoologist as well. In the past the study of the protozoa was restricted to the zoologists, and for that reason their studies did not have a definite medical aim. They studied indiscriminately the organisms found in fish, frogs, birds, and mud banks. Many of their findings were of great value to medicine. It is therefore a matter of great satisfaction to find a carefully compiled monograph devoted to the protozoa found in man. The monograph is concise, in fact a great deal more could have been said on the subject. Monographs have been written on any one of the types described which filled more space than this entire book, but were these lengthy minute descriptions necessary, especially from the viewpoint of a medical man?

In the tropics the basis for the study of tropical

diseases is the ameba. A work of this kind should find favor among students of tropical medicine. Painstaking care is required for the study of these minute organisms. How encouraging it would be if this same degree of patience and work were expended in other branches of medicine. On reflection it will be found that every branch of medical and surgical science owes much to the work that has been done on the ameba. A better knowledge of these protozoa would be beneficial to all medical men.

A splendid bibliography is appended which should prove extremely useful to the student of protozoology.

PHYSICAL DIAGNOSIS.

Principles and Practice of Physical Diagnosis. By JOHN C. DACOSTA, JR., M. D., Member of the American Therapeutic Society, etc. Fourth Edition, Thoroughly Revised. Philadelphia: W. B. Saunders Company, 1919. Pp. iii-602.

DaCosta's textbook on *Physical Diagnosis* has been found of great assistance to the medical student. New aids in physical diagnosis have been included in this new edition. Many refinements have been devised, some of which do not serve to supplant the older methods of inspection, percussion and auscultation. These essential methods are described as well as some of the more elemental x ray diagnostic methods. It would seem that more attention could be given to this valuable laboratory branch of physical diagnosis, for frequently a diagnosis can not be made accurately without resorting to the x ray, the physical signs being masked to such a degree as to make it impossible to detect them in any other way.

HISTOLOGY.

A Textbook of Histology. By HARVEY ERNEST JORDAN, A. M., Ph. D., Professor of Histology and Embryology, University of Virginia. Illustrated. New York: D. Appleton & Co., 1920. Pp. i-857.

The general tone of the book is somewhat dogmatic, and the question arises whether this is a desirable quality in the teaching of a science which is developed so little comparatively. The decision is yet to be made whether the student of medicine should be told that certain things exist in a certain way. We know that many things are far from settled. The point is, shall the student be given a specific working basis on which to build, or shall he be told that the thing is not yet settled? If we are too certain in our assumptions and something is found wrong, then the whole edifice totters; whereas, if the various aspects of a situation are given in the first place, an adjustment can be made with greater ease and less damage. There are arguments on both sides, however. On the whole, this textbook of Jordan's can be considered only a textbook. He has balanced the various departments nicely, and from a study of the book the student will get a fairly good working basis for his histology. In the second edition many of the illustrations and some of the text matter which were used in Ferguson's textbook have been omitted. The gen-

eral appearance of the book has been changed for the better. We do not wish to criticize the presentation of the material, but rather to raise the point whether a more flexible presentation could not be affected.

THE NERVOUS CHILD.

The Problem of the Nervous Child. By ELIDA EVANS. Introduction by C. G. JUNG, M. D., LL.D. New York: Dodd, Mead and Company, 1920. Pp. i-299.

The long felt want of a book to present scientifically the problems of child life in the light of the new possibilities opened by psychoanalysis has been met in this book with a comprehensiveness and directness never attained before. The title might seem on first thought to limit the book to only special phases in the life of a few children. Such a narrow distinction can hardly exist in the minds of physicians, teachers, or parents who have felt the stimulating and illuminating effect of the psychoanalytical progress of the last quarter of a century. At any rate a complete and receptive perusal of this book will dispel any such old fashioned and narrow concept either of children or of children's nervous problems.

The writer is able to speak from a long and fruitful experience with children of distinctly nervous types and forms of psychoneurotic ailment, as well as with older sufferers, from such troubles started in childhood. Therefore the book is primarily a treatise upon this phase of medical work. The question of the neuroses, however, whether in children or in adults, is recognized more and more fully as a matter of child development and mental disease of any grade finds its roots in childhood. Such a study is, therefore, rightly a full discussion also of child tendencies, the recognition and understanding of these in their relation to environmental influences, and with a clear view of the parent's and teacher's responsibility in regard to them. The explanation gives a fruitful basis not only for preventive prophylaxis, a negative advantage, but for a thorough development of the child toward the use of his energy force, libido, in enlarging his constructive powers. So the force that has too long built up complicated neurotic natures and been wasted into destructive channels becomes a source of health to the child and an asset of power through his relations to the community.

Definite medical situations are presented and the pathological situation is defined and outlined, as is also the manner of approach to it through medical psychology. The latter is attested by the author's experience, which she has given freely in extracts from case histories. She discusses the meaning of the pathological manifestations, the mechanisms by which these have grown up in the child's life, the method of discovering them through psychoanalysis, largely by means of the dream, and the bringing about of the readjustment in the child's or adult's life. In so doing she has given much information in regard to psychic content and psychic mechanism which makes the book a welcome addition to the literature which has arisen around the new psychology and its relation to health. This is moreover presented in such exceedingly vivid and readable form, without sacrificing accuracy and definiteness and with

due regard to clear classification and arrangement, that it is a book to invite and hold the attention for careful reading and then to be kept conveniently near for frequent reference. Its form and style will commend it particularly to general reading and to the study of parents and educators, but it should certainly receive the consideration of every physician. The book will remind him that his youthful patients or the children of his older patients present problems of the greatest import in the present and future welfare of the family and the wider community.

The writer warns her readers that the matter will be presented without a complete bringing forward of the steps of experience by which her conclusions have been reached. The book may strike the inexperienced reader as too dogmatic and too rapid in its statement to be at all times convincing. There are portions which deserve a more detailed interpretation but the whole tenor of the book is too clear, its presentation of mechanisms too complete, not to carry the conviction of a true insight and an actual successful experience in dealing with child problems. One might ask perhaps for even more explicit detail in regard to the individual problems with which the child mind is troubled, which analysis invariably reveals, but perhaps this would add too cumbersome detail and carry the reader too bewilderingly into the immeasurable territory of phantasy with which analysis has to do.

NATURAL HISTORY OF THE CHILD.

The Natural History of the Child. A Book for All Sorts and Conditions of Men, Women and Children. By DR. COURTENAY DUNN. New York: John Lane Company, 1920. Pp. viii-316.

Once a little lad, whose childhood had not been happy, was taken through the British Museum. He was not enthusiastic over its treasures until he came on the toys of boys and girls who had played with them in the centuries B. C. There were stables and animals, dolls and balls, and—but these were not toys—a school writing tablet with a half finished sum and a case with straps to carry lunch and other school things. Also we saw the mummy of a girl. The little boy was delighted. Here, then, was a place where toys were appreciated, where girls, even as mummies, were thought worthy of being shown as interesting. He said excitedly, "Oh, how beautiful to die, and be in a museum." He meant a place where people would be interested in you; where playthings were given their due value.

Not far from the museum was a building with foot long letters on it, letters which, if explained to a savage brought to Christian England, would have caused some perplexity: "Society For the Prevention of Cruelty to Children."

B. C., toy giving; A. D., still cruelty, plus gifts. It is a most amazing thing that thousands of years have not taught parents how to bring up children, and Dr. Courtenay Dunn shows how tender youngsters have been the victims of prenatal carelessness, superstition, cruelty done in ignorance or wantonness, brutal teachers, unlearned doctors, the shadows lightening a little when some lover of children strove for wiser laws or left provision for his own love of them to blossom. The long, long procession of meekhearted, mis-

managed children comes onward through the centuries, and the author has taken infinite trouble in getting authentic notes as to the babyhood, language, school days, play, religion, naughtiness and troubles of boys and girls of long ago and today. His explanations are necessarily as brief as those given to one who stands by his side watching the procession, but the references are indoors, and he invites questioning. His book is full of charming anecdotes and traditions, and gives the meaning of old customs and phrases so all child lovers will enjoy it.

But, in spite of all that is now being done by wiser parents, teachers, doctors, psychologists, authors, the words on the building near the British Museum stand out accusingly, showing that much remains to be done. The long procession halts on its way before them and wistfully questions their need. "He must be a good man," said Edwin Arnold, "who can stand the searching gaze of a little child," and many, recalling mismanagement and ignorance, will sympathize with the young father who telephoned: "Please hurry, Doctor. My wife has that book, *What to Do Till the Doctor Comes*, and she's doing it."

PSYCHOLOGICAL ROMANCE.

Linda Condon. By JOSEPH HERGESHEIMER. New York: Alfred A. Knopf, 1919. Pp. ix-304.

The Happy End. By JOSEPH HERGESHEIMER. New York: Alfred A. Knopf, 1919. Pp. xi-315.

Joseph Hergesheimer is somewhat of an anomaly in American letters. A romanticist in a day of psychoanalytical and sociological fiction, he writes boldly of Platonic love and renunciation and deathless fidelity and all the other things that today no one thinks of except in their relations to neuroses. Yet Mr. Hergesheimer is not merely romantic, and he handles his subjects with full knowledge of their psychological implications. *Linda Condon* is, to put it brusquely, the story of a sublimation, and several of the tales in *The Happy End* show an exquisite understanding of character. And there is perhaps no other American who achieves the same perfection of style and workmanship.

In *Linda Condon* the underlying motives are worked out with great delicacy. Linda is the daughter of a pleasure loving and none too cautious widow, and her life is spent amid the florid upholstery of hotels. The remoteness which was her father's characteristic is intensified by her reaction to distasteful surroundings and by her mother's cynicism on the subjects of love and marriage. It is only when a dying man talks to her about Plato and the worship of beauty that she receives a glimpse of something beyond the flesh. So she grows into girlhood, "remote and perfect and faintly wistful," and she meets Dodge Pleydon, the sculptor, for whom she feels a hitherto unknown attraction. But Pleydon does not understand the impalpability of her emotion; his is an impressive masculine personality, and in trying to sweep her off her feet he bruises the filaments of the dream that has remained with her ever since it was called into being by the unknown young man. In despair over the hurt she marries a fragile scholar who at least

has never offended her, and bears him children, but always "with her invariable sense of separation, the feeling that, bound on a journey with a hidden destination, she was only temporarily in a place of little importance." Pleydon, however, has become the victim of that most effective artistic stimulus, a hopeless passion, and he is led to stop frittering and become a great sculptor. He touches only the fringes of Linda's existence, he sees her at intervals of years, but his idea is so potent that it does not matter whether she is there or not. Linda finds this out one day when, middle aged and disillusioned, she leaves her husband without a word and goes to Pleydon, only to find that he does not need her physical presence.

This is all true to romance, but it is even truer to Freud. Equally true is the depiction of the unconscious injury to her early, idealistic love which prevents Linda from ever being able to lose herself emotionally. The one exception is her brief mood of anger when a mob tears down Pleyton's great statue, the statue which above all others had been the vehicle for his expression. Mr. Hergesheimer might be accused of sentimentality in his selection of the theme of Platonic love, but not in his handling of it. In this instance romantic love is artistically productive, yet what Pleydon worships is not a human being but an abstraction entirely of his own building, and Linda's life is very empty.

The Happy End contains seven of Mr. Hergesheimer's short stories. In them more than in *Linda Condon* he indulges his sensitiveness to form and color, to the decorative aspects of life, the result being sometimes more like a fresco than a drama. Several of the stories, however, are skillful and sympathetic studies: *Lonely Valleys* details the rebellion of a mountain girl against the isolation of her existence, and the rebellion of her daughter after her; *The Egyptian Chariot* portrays with startling effectiveness the religious mania of an ex-criminal. Mr. Hergesheimer is at his best in dealing with the rarer and more fragile emotions; when it comes to the stark facts of life he slips into romanticism. Some of his characters lack the third dimension. Yet frescoes have their place. One does not always want to read Dostoyevsky, and in its illumination of intangible moods and in its rare beauty of movement, Mr. Hergesheimer's work has much to offer the reader.

GALSWORTHY.

Tattered Malion. By JOHN GALSWORTHY. New York: Charles Scribner's Sons, 1920. Pp. i-305.

These stories are all well told. Some are overshadowed by sentiment—overemphasized. In others with superb finish the author vies with De Maupassant. He frequently shows how the grip of emotion carries people away, taking them out of the world of reality into the heavens and hells of ecstasy. When these strange feelings are at work the cloak of selfpreservation, sex and even the ego are flung aside and denuded humans stand and take punishment. In his gripping tale *Defeat* he tells of a lonely soul, a shady woman, a German in London in war time, seeking a bit of companionship. She lays bare her soul before a chance ac-

quaintance, a wounded English soldier. She tells of her suffering and her pity for others. She tells him in self defense that she is wholly selfish. She explains her pity for her people and the prisoners and of the others who suffer during the war on the basis of self pity. Those who suffer, she tells him, are like herself, she pities herself and she insists that she has insight into what she is doing.

In *Flotsam and Jetsam* we again find a shrewd analysis of strange people, in their home land yet never quite at home or at their ease, never understood and yet allowances made for their eccentricities.

In the *Grey Angel* we have an Englishwoman finding her home in France—living and dying there—more at home than she had ever been in her native land. A good bit of writing and more sympathetic and human than some of his earlier writings.

While many of his other stories do not give the satisfaction of being well rounded or complete they all have points of rare beauty and show skillful handling.

FROM THE WELSH.

My Neighbors. Stories of the Welsh People. By CARADOC EVANS. New York: Harcourt, Brace & Howe, 1920. Pp. iii-244.

Not nice things does the author say of the Welsh. Hard to believe are his tales and not always understood. Frank they are and at times humorous. The more repressed would say that many of the tales could well have remained untold; others again would say that they should be told better. He leads us on and on, and while we experience unpleasant journeyings we are ever expectant that something more worth while will appear. It all seems like an unresolved, complicated Wagnerian passage, striving in a strained endeavor to tell a tremendous story, and we go on ever seeking the binding phrases until we come unsatisfied to the end. Friends have been made. Others are fearful of speaking their minds; fearful that they have missed the tale he attempted to tell; fearful of admitting that they do not understand; fearful of being unpopular. These tales are not so messy as some of the earlier ones but the more squamish will yet squirm. Perhaps there is more in them than we can see.

New Publications Received

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Hills of Han. By SAMUEL MERWIN. Illustrated. Indianapolis: The Bobbs-Merrill Company. Pp. i-365.

The Worldlings. By LEONARD MERRICK. With an Introduction by NEIL MUNRO. New York: E. P. Dutton & Company, 1919. Pp. v-334.

Woman Triumphant. By V. B. IBANEZ. Translated from the Spanish by HAYWARD KENISTON. With a special introductory note by the Author. New York: E. P. Dutton & Company, 1920. Pp. v-322.

The Hysteria of Lady Macbeth. By ISADOR H. CORIAT. Author of *Abnormal Psychology*. New York: Moffat, Yard & Company, 1912.

The Superstition of Divorce. By G. K. CHESTERTON. Author of *Heretics, Orthodoxy*, etc. New York: John Lane Company, 1920. Pp. xi-150.

Proceedings of the National Academy of Sciences of the United States of America. Easton, Pa.: National Academy of Sciences, 1920. Pp. ciii-158.

A Philosophy of Play. By LUTHER HALSEY GULICK, M.D. With a foreword by JOSEPH LEE. Illustrated. New York: Association Press, 1920. Pp. v-291.

The Purple Land. By W. H. HUDSON. Author of *Green Mansions*, etc. With an introductory note by THEODORE ROOSEVELT. New York: E. P. Dutton & Company, 1916. Pp. v-355.

La Question sexuelle. Par AUGUSTE FOREL. Ancien professeur de psychiatrie à l'Université de Zurich Yverne (Suisse). Quatrième édition revue et corrigée. Illustré. Paris: Masson et Cie., 1919. Pp. iii-620.

The Substance of a Dream. Translated from the Original Manuscript by F. W. BAIN, Author of *A Digit of the Moon, The Ashes of a God*, etc. Illustrated. New York: G. P. Putnam's Sons, 1920. Pp. iii-216.

Précis de technique opératoire. Chirurgie de l'appareil urinaire et de l'appareil génital de l'homme. Par PIERRE DUVAL. Cinquième édition avec 234 figures dans le texte. Paris: Masson et Cie., 1920. Pp. vi-227.

Visions and Beliefs in the West of Ireland. Collected and Arranged by LADY GREGORY. With Two Essays and Notes by W. B. YEATS. First and Second Series. Illustrated. New York: G. P. Putnam's Sons, 1920. Pp. i-632.

La réaction de Bordet-Wassermann pour le séro-diagnostic de la syphilis. A. D. RONCHÈSE, docteur en pharmacie, licencié es-Sciences, ancien interne lauréat des Hôpitaux de Paris. Préface par M. de Professeur FERNAND WIDAL. Paris: Masson et Cie., 1919. Pp. vi-211.

Practical Dietetics. With reference to Diet in Health and Disease. By ALIDA FRANCES PATTEE, Graduate, Department of Household Arts, State Normal School, Framingham, Mass. Illustrated. Thirteenth Edition. Revised. Mount Vernon, N. Y., A. F. Pattee, 1920. Pp. vii-543.

Manual of Psychiatry. Edited by AARON J. ROSANOFF, M.D., Clinical Director, Kings Park State Hospital, N. Y., Lieutenant-Colonel, Officers' Section, Medical Reserve Corps, U. S. Army. Illustrated. Fifth Edition. Revised and Enlarged. New York: John Wiley & Sons, Inc., 1920. Pp. iii-684.

Easy Lessons in Einstein. A Discussion of the More Intelligible Features of the Theory of Relativity. By EDWIN E. SLOSSON, M.S., Ph.D., Literary Editor of *The Independent*, Associate in the Columbia School of Journalism, etc. With an Article by ALBERT EINSTEIN and a Bibliography. Illustrated. New York: Harcourt, Brace & Howe, 1920. i-123.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

THE TREATMENT OF PATIENTS WITH SLIGHT CARDIAC FAILURE.

BY HAROLD E. B. PARDEE, M. D.,

New York.

Assistant Attending Physician, New York Hospital; Instructor in Medicine, Cornell University Medical School.

Before discussing the management of heart failure it may be well to make clear the type of patient it is intended to consider. The term failing compensation is commonly used to describe the condition of some of these patients, but this term has come to be so differently used by different people that I think it best to discard it entirely in favor of the term heart failure, which is sufficiently descriptive of the condition of the patient, so that it should need little further amplification and would be difficult to misinterpret.

Heart failure may be either mild or severe, acute or chronic, depending upon its degree or intensity, and upon the duration or suddenness of onset of the symptoms. It must also be emphasized that a practically identical state may result from a variety of different causes. Valvular disease, chronic myocardial disease and chronic nephritis with high blood pressure will produce an almost identical picture when they give rise to a slight degree of heart failure.

SYMPTOMS OF HEART FAILURE.

The symptoms in these cases may consist of a feeling of fatigue, a slightly abnormal tendency to shortness of breath on climbing stairs or on walking rapidly, a feeling of discomfort in the precordium appearing after slight exertion or perhaps only after meals, occasional peculiar sensations in the precordium which may usually be described as palpitation, perhaps sudden attacks of dyspnea coming on at night—these are the lesser symptoms of which those patients complain whose hearts are functioning near to the limit of their capabilities. In slightly more severe cases the patients will show dyspnea on less exertion and perhaps even when at rest.

Palpitation will be more frequent and usually follows exertion, and precordial pain may be so severe and sharp as to make the patient stop and rest after an amount of exercise which is not sufficient to cause shortness of breath. In these more severe cases the patients will usually show a moderate amount of edema of the ankles, perhaps present only at the end of the day, and often have a continual cough due to congestion of the lung capillaries and perhaps slight hemoptysis. These patients may show a congestion of the veins of the neck and of the superficial veins of the arms, which indicates clearly that the passage of blood through the heart is not normal. These symptoms are, of course, only diagrammatic, but should suffice to make clear the type of case with which we are dealing in any particular instance.

TREATMENT OF THE CAUSE.

This emphasis of the similarity of the symptoms is not meant to imply that an exact diagnosis of the cause of the circulatory failure is not necessary for proper treatment. A diagnosis is very important, and particularly so as it leads us to a discovery of the cause of the disease. Our first and most urgent duty in the treatment of patients with the lesser grades of heart failure is the discovery, and the treatment or removal of the cause of the disease. Latent syphilis which is attacking the aorta, or the valves, or the coronary arteries, or the muscle of the heart must be recognized and treated with sufficient intensity to prevent further damage. Chronic tonsillar or dental disease, or chronic prostatitis or endometritis must be treated and cured when they afford the portal of entry into the body for the microorganisms which are attacking the heart of the patient. When chronic arteriosclerosis is present the patient should be placed on such a dietary and hygienic regime that the bowels and digestion are as near normal as possible, and there is established an amount of work and exercise and rest and sleep which is exactly fitted to the needs of the patient, so that, if possible, the progress of the disease may be arrested.

Since the patients are suffering from heart failure we must be careful not to aggravate this by our treatment. It is not well to give syphilitic cardiac patients large doses of salvarsan at first, until it has been shown that it does not cause circulatory or other disturbance. It is not well to do tonsillectomy under a general anesthetic if it is possible to have it done under a local anesthetic. Dental operations should be done in stages so that the individual session is not too long. Genitourinary operations should be carefully considered in relation to the patient's ability to stand them. In all these circumstances the patient's heart disease must be considered first, and then the treatment of it later.

PREVENTION OF OVERSTRAIN.

Our next duty to our patients is to see that they do not overtax their hearts so they may be led gradually or suddenly to a further degree of heart failure. We must estimate their ability to perform exercise by a close observation of their reactions to the daily stresses of their lives, and by observing the effect of some simple exercise test, such as a hundred hops, or stair climbing, or dumb bell exercise. The patient must be taken into our confidence and his condition carefully explained to him or we shall never be able to achieve the cooperation which is so necessary to obtain good results. He must understand his limitations and keep within them if possible, but we must not discourage him. We can practically always hold out the hope of some degree of improvement to one who conscientiously follows the prescribed treatment.

The patient's life must be so arranged that anything which is causing a degree of discomfort, either

physical or mental, is done away with, or at least will occur so infrequently that the discomfort will not tend to become continuous. It is much better not to change the occupation of the patient unless every effort has been made to eliminate from that occupation the taxing features which are causing distress. Stopping work an hour earlier, taking a longer time for luncheon and other seemingly trivial things may make considerable difference in the patient's feelings at the end of the day and his ability to continue at work. In some cases the element of worry or of mental strain will be even more important to eliminate than that of physical exertion. This is especially so in the presence of high blood pressure or of aortic regurgitation.

The physician should carefully prescribe the amount of rest which the patient needs, whenever he feels that the heart failure is sufficiently marked to necessitate rest. Such a patient would be one who was unable to walk a distance of say four or five blocks without suffering from dyspnea or pain, or who had more than a slight amount of edema of the legs. Even these patients should not be kept in bed all of the time, for they do better if they are up and are taking exercise to the extent which will be indicated.

EXERCISE TREATMENT.

As long as a patient with a tendency to heart failure is able to be up and to take any exercise without causing the appearance of the symptoms which have been mentioned as indicating heart failure, he certainly will not be doing himself harm, and will, if exercise is prescribed properly, improve more rapidly with its use than if he avoided it. This doctrine has been the foundation of the spa treatment of heart disease for years and yet the medical profession at large has been loath to accept it. The reason probably lies in a fear of causing sudden death from heart strain during exercise, a fear which is quite unnecessary if the patients are carefully selected and the amount of exercise properly prescribed. Patients with valvular disease or with chronic myocardial disease respond well to treatment by exercise unless it is found that a very small amount will produce dyspnea, palpitation or anginal pain.

Patients with high blood pressure who do not show these signs of heart failure after a small amount of exercise are suitable for this sort of treatment, provided the exercise does not cause an excessive rise in the blood pressure, and provided that the blood pressure is not already so high or the arteries are not so sclerotic that a vessel may rupture in the brain. It cannot be said too emphatically that no patient should exercise when it produces more than the slightest dyspnea, or the slightest fatigue or any other indication that the heart is put to more than a small degree of strain by the increased demand upon it.

There are three readily available forms of exercise and the physician must decide which will prove most satisfactory to the patient. Walking out of doors, stair climbing and dumb bell exercises may be used singly or in combination, the most satisfactory usually being the one by which the patient can be persuaded to keep most carefully to the amount of exercise prescribed for him.

The indoor methods of exercise are better than walking for patients showing less cardiac ability. These forms of exercise can be employed for four or five minutes and after a brief rest for another short period. This is not practicable when walking. The periods of exertion tend to be longer with walking and the opportunity for rest after exercise is often not readily obtained. There is, however, a great mental stimulus in being out of doors in the air, and so we must encourage a certain amount of walking as soon as the patient's ability will allow it. Even when the patient is about and carrying on his business, a proper amount of prescribed exercise during the day may cause a marked improvement in his circulatory ability as shown by the amount of work which he can perform without discomfort.

The physician should determine at intervals the amount of exercise which the patient can perform without causing embarrassing symptoms, and should prescribe somewhat less than this as an exercise period, to be repeated perhaps twice or three times or rarely four times daily. The patient's maximum will often vary a little from day to day, depending upon the amount of sleep he gets, his diet, the state of the weather, or the condition of the bowels, and he should be told of this so that on off days he will not force himself to perform the usual amount of exercise. Graupner devised a method of estimating the heart's ability which has since been further developed by Barringer, and which depends upon the fact that when a heart is overtaxed by a given exercise the blood pressure will continue to rise for twenty or thirty seconds after the exercise ceases. If then, following a given exercise, the blood pressure is taken at once and again thirty seconds later, we may consider that the heart has not been overstrained if the second reading is less than the first, while if the second reading is equal to the first or greater, then we may consider that the exercise has been excessive. This blood pressure rise is a more concise and definite objective for a test of the patient's exercise reaction than is a consideration of his symptoms and an estimation of their severity, but seems to offer no other advantage.

The exercise tolerance should be tested once a week when the patient is first starting on this regime, while later on twice or even once monthly will be sufficient. To obtain results the physician must be definite in his directions to the patient. He must say, for example, "Climb these six steps three times at the rate you have just done it, and then rest for five minutes. Repeat the exercise and then rest again for five minutes. Repeat the exercise and the rest a third time and that will be enough for one period. You should repeat such an exercise period three times a day." If dumb bells are used, the exact movements should be prescribed, the rate and the number of movements in each exercise as well as the number of exercises to each period and the number of periods per day. Walking exercises should be prescribed in the same detail. This prescription of exercise necessitates close attention on the part of the physician and careful thought, but this is well worth while when the improvement of the patients under this régime is considered.

(To be continued.)

Palliative Treatment vs. Radical Treatment of Trifacial Neuralgia.—A. W. Adson (*Minnesota Medicine*, April, 1920) finds that 805 alcohol injections have been administered in a series of 318 patients in addition to 203 other palliative operations, making a total of 1,008 palliative surgical treatments. Ninety patients have had the radical operation with complete relief, while the remaining 228 are still seeking relief by temporary methods. Having divided the posterior root personally in seventy-four cases of trifacial neuralgia, Adson is convinced that the radical operation is indicated in operable cases after one or two alcohol injections, in preference to continuing the palliative measures indefinitely.

Galvanoionization in Tic Douloureux.—Jouin (*Journal de médecine de Paris*, December, 1919) reports a case of severe neuralgia of the right ophthalmic nerve of five years' standing in a man aged thirty-seven in which ionization with a three per cent. sodium salicylate treatment brought lasting relief after three sittings at three day intervals. The positive electrode was a towel dipped in distilled water and placed over the back of the neck. The positive or active electrode was placed over the pharyngomaxillary region. The current was increased at successive sittings from twenty to forty and then to seventy milliamperes, and the duration of treatment from twenty to thirty-five and lastly to fifty minutes. Two months later the condition was still good.

Sulphur Water Enemas in Oxyuriasis.—Leven (*Presse médicale*, January 21, 1920) reports uniformly successful results in oxyuriasis from the use of daily enemas of Engghien sulphurous mineral water. The rectum having first been evacuated, an enema of the water, slightly warmed, is given every evening for five successive days. The enema is administered slowly, without pressure, and is to be retained. The amount of water used is a winebottleful in the adult and a quarter bottleful in children. After five days' treatment the procedure is discontinued for four or five days, then resumed for a second series of five days, and later, if necessary, for a third series—in fact, as long as any of the worms remain in the stools.

Rational Removal of Diseased Tonsils.—Charles J. Sullivan (*Journal of the Medical Society of New Jersey*, December, 1919) states emphatically that tonsillectomy is not a trivial operation, and unless a surgeon knows how to perform a good operation, he should refer the case to someone in whom he has confidence to perform the same in the manner in which it should be done. He asserts that the dangers from a poor tonsillectomy are mostly local, such as impairment of voice, difficulty in swallowing, regurgitation of food through the nose, adhesions of the pillars, and deformity of the soft palate, while other sequelæ of a more serious nature are hemorrhage, status lymphaticus, pulmonary embolism, hemiplegia, edema of the glottis, and pneumonia. Of the various methods used and advocated in performing tonsillectomy, blunt or sharp dissection to liberate the tonsil from the pillars, followed by the application of the snare for enucleation, is most strongly advised by the author.

Specific Treatment of Hay Fever.—Francis M. Rackemann (*Boston Medical and Surgical Journal*, March 18, 1920) summarizes the results of treatment in ninety-one cases of fall (ragweed) hay fever as follows: Nearly nine per cent. of the patients were entirely freed of their symptoms; sixty-two per cent. were considerably relieved; of the remaining twenty-eight per cent., about one third showed no relief at all. These results were determined by personal communications four to six weeks after the ragweed season. Nineteen other patients did not reply. The best results are apparently obtained with a moderate amount of specific treatment. Systemic reactions occur after two per cent. of individual injections, and are not always due to an overdose. In view of the fact that so few of the postulates of experimental anaphylaxis hold good for hay fever, it is probable that the disease depends upon a mechanism which is not anaphylactic, but is closely associated with that of drug idiosyncrasies.

Treatment of Hay Fever.—Robert R. Brownfield (*Southwestern Medicine*, February, 1920) recommends the use of a five per cent. solution of calcium chloride, a teaspoonful in water, three times a day after meals. Calcium increases the resistance of anaphylaxis. Hay fever affects only those tissues supplied by the sphenopalatine ganglion. All intranasal defects should be corrected as fully as possible. The sinuses should be investigated carefully with special attention to the postethmoidal and sphenoidal cells. The region of the sphenomaxillary fossa should always be inspected for areas of congestion or ulceration and, if found, from two to ten per cent. silver nitrate should be used locally. Cocaine applied to the sphenopalatine foramen seems to produce good results. Following the use of cocaine mild astringents, such as, silvol, cuprol, aniline red and quinine urea, are used. If these applications do not suffice a direct injection of the ganglion with cocaine, novocaine or phenol and alcohol will usually give relief in from one to three treatments.

Treatment of Chronic Ulcers.—Frank E. Stowell (*Boston Medical and Surgical Journal*, February 12, 1920) has employed the following treatment for seven years with practically one hundred per cent. success in all cases treated at least two weeks or at most eight weeks. In no case was the patient put to bed or kept from work. The patient sits in a chair on the insulated platform of the static machine, with his leg on a small stool elevated to body level. If necessary the foot and leg are washed with soap suds, rinsed with clear water and dried. The ulcer is cleaned with alcohol. As much dead material as possible is removed with forceps, the base is very gently curetted to remove slough and exudate, the ulcer is cleaned again with alcohol and painted with a fifty per cent. tincture of iodine. The patient is then connected with the negative pole of the static machine, the positive pole being grounded, and the static breeze and sparks thoroughly applied to the ulcer and surrounding areas. A dry dressing, or a boric acid dressing, is applied and the leg is bandaged very tightly from the foot to the knee. This treatment is repeated three times a week. After the ulcer is healed the patient must wear a tight fitting elastic stocking.

Treatment of Pelvic Inflammation.—Charles B. Robins (*Virginia Medical Monthly*, February, 1920) states that one may divide cases of pelvic inflammation into two distinct groups, the one due to the gonococcus alone and the other to the infections following abortion or labor at term. The symptoms and treatment are sharply divergent according to the group with which one is dealing. In gonorrheal cases, the infection sometimes ascends immediately after abortion or labor because the uterus is particularly open at this time. In this event, however, the disease presents the usual characteristics of gonorrhea. The inflammation is almost always a local one, with but slight absorption, and in spite of much pain and disability, the constitutional symptoms are relatively inconspicuous. In infection following abortion or labor, however, one is really dealing with a case of septicemia. The therapeutic indications, viz., diminution of absorption, increase of the patient's resistance, and allowing time for the assembling of nature's forces to combat the infection, are best met by the customary treatment for peritonitis—rest in bed in the elevated position, saline solution by the rectum, icebags over the abdomen, withdrawal of food, and no purgation. Under these measures, in a majority of cases all the symptoms subside and the patient becomes convalescent. The only indication for operation at this stage is the formation of an abscess, which may be evacuated by either vaginal puncture or a muscle splitting operation in the iliac fossa. The mortality is thus reduced to two per cent. In gonorrheal infection it is best not to operate in the very early stages because the condition may possibly undergo resolution. In some cases the author has had rather brilliant results from vaccines. In chronic cases operation is practically the only treatment to be considered, regardless of the cause of the infection.

Rapid Method of Albumin Determination in the Urine.—L. Dupuy (*Presse médicale*, February 7, 1920) uses two test tubes of the same diameter and thickness and a ten mil graduated tube. The only reagent required is the ordinary Esbach solution, consisting of ten grams of picric acid and twenty grams of citric acid in water, enough to make one litre. To obtain the standard mixture, four mls of urine containing exactly 0.1 gram of albumin per litre are placed in the first tube—such urine being obtained by proper dilution of urine of high albumin content according to indications from the weight method of albumin determination. Four mls of Esbach's reagent are then added to the urine and the tube tightly closed with a rubber stopper. This tube constitutes the standard for comparison and when once prepared will keep indefinitely. The second tube is graduated in cubic centimetres and the figures five, ten, fifteen, twenty, etc., placed at the alternate gradations up to fifty. In testing urine of suspected low albumin content, two mls of urine are placed in the graduated tube—up to the mark five—two mls of reagent added, and the mixture shaken. If the turbidity is lighter than that in the control tube, exact determination of albumin cannot be secured but the amount is known to be less than 0.1 gram to the litre of urine. If the turbidity, on the other hand, is greater than in

the control tube, a mixture of five mls each of the Esbach reagent and water is made in the ten mil graduated tube and the resulting fifty per cent. reagent added mil by mil to the urine tube until the turbidity produced equals that in the standard. The mark opposite the upper surface of the liquid in the urine tube will then indicate the number of centigrams of albumin to the litre of urine. If, in the preceding test, the albumin is shown to be greater than 0.5 gram to the litre, the urine is diluted with water to a definite extent and the test repeated. Thus, if one part of urine is diluted with three of water before the test, the reading obtained will have to be multiplied by four to obtain the number of centigrams of albumin to the litre of urine. When equal turbidity seems to have been obtained, it is well to add one more mil of the fifty per cent. reagent in order to make sure that such equal turbidity has actually been reached, the additional mil disturbing the equality. On the whole, the possibility of error in the test does not exceed ten per cent. of the total weight of albumin actually present. The test clinically takes less than five minutes to perform, and is sufficiently accurate for ordinary purposes.

Rapid Method of Estimating Albumin in the Cerebrospinal Fluid.—Ravaut and Boyer (*Presse médicale*, January 17, 1920) describe a procedure based on nepheloscopy, i. e., comparison of an artificially induced turbidity in the specimen of cerebrospinal fluid under examination with a standard of turbidity already prepared. To precipitate the albumin the following mixture is used: Crystallized salicylic acid, thirteen grams; pure sulphuric acid, fifteen mls, and distilled water, enough to make 100 mls. The standard of turbidity is produced by precipitation of a solution of 0.25 gram of silver nitrate in 1000 grams of distilled water with a solution of five grams of sodium chloride in 100 grams of water. Cerebrospinal fluid is poured into one of the authors' special tubes up to the first mark, the sulphosalicylic acid reagent up to the second mark, and the tube then closed with the thumb and shaken. In the second tube—of equal size and thickness—silver solution is poured up to the first mark, chloride solution up to the second, and the two mixed by shaking. If comparison of the two tubes against a dark background now reveals the same degree of turbidity, the proportion of albumin in the specimen of cerebrospinal fluid is one gram to the litre. If the turbidity is less in the first tube, there is less than one gram of albumin; chloride solution is now added to the second tube, drop by drop, with agitation each time, until the degrees of turbidity in the two tubes are alike, and the fraction of a gram of albumin present read off from the scale on the second tube. In the opposite event, distilled water is added in the first tube up to the definite marks, two, three, four, or five, as required, under further fractional adjustments made, if necessary, by adding small amounts of chloride solution in the second tube. After each test the tubes are cleansed with a few drops of ammonia, followed by water. The procedure is simple and rapid, and requires but one mil of cerebrospinal fluid for making the test.

Miscellany from Home and Foreign Journals

The Oculopupillary Fibres of the Sympathetic System: Division of the First Thoracic Root in Man.—William G. Spiller (*American Journal of the Medical Sciences*, March, 1920) calls attention to the fact that we know very little concerning the course of the sympathetic fibres in the brain, and discusses the views of various writers in connection with his own observations regarding the course of the oculopupillary fibres. He believes that in man these fibres do not decussate, or if they do to only a slight degree, in the pons, or below this in the medulla oblongata or cervical cord, because he has repeatedly seen oculopupillary paralysis of the sympathetic on the same side with a brain lesion. Possibly these fibres may decussate in the cerebral peduncle, but the evidence of this is not conclusive. In one of his cases it was necessary to divide the first thoracic root to remove a tumor from the cord. Oculopupillary symptoms were not present before the operation but were afterward. Both the pupil and the palpebral fissure on the same side were smaller than on the other. During the first few days after the operation sweating was pronounced on both sides of the chest and on the opposite side of the face, while the side of the face corresponding to that of the lesion remained dry. Both pupils reacted to light and accommodation. Two months later the pupil and palpebral fissure were still small but the pupil was dilatable by cocaine, so there could not have been a complete sympathetic paralysis.

Pain and Asthenia in Angina Pectoris.—R. Benon (*Presse médicale*, January 21, 1920) maintains that the anginal attack comprises not only an actual, physical cardiac pain, but also a superimposed emotional, anxious paroxysm with a sensation of constriction in the epigastrium; these two factors in combination lead to a condition of profound asthenia which, however, is generally of short duration. The physical pain of angina pectoris is the essential and initial manifestation of the syndrome, but is not always the preponderant manifestation. The angor, an expression of the high degree of emotional anxiety experienced, is a manifestation secondary to the actual physical suffering in the cardiac region. The latter may in some cases be attenuated or even slight, whereas emotional anxiety is pronounced. In certain particularly emotional subjects, the fright awakened by a slight attack of pain is so marked that the primary, essential manifestation may be overlooked by the examining physician. The asthenia following the physical pain and emotional attack may be considered a "normal" or physiological form of asthenia similar to that following trauma. The fear of death in angina pectoris seems to result from the combined influence of the physical pain and the intense subjective exhaustion, which leads to the mental conception that, as some patients have expressed it, all the processes and activities of nature have ceased. The sufferer applies to the entire outer world the concept of cessation of activity which he is himself experiencing.

Clinical, Chemical, and X Ray Examination after Pylorotomy.—L. Pron (*Bulletin de l'Académie de médecine*, December 2, 1919) having performed careful clinical tests on a patient subjected to pylorotomy for gastric ulcer with beginning pyloric stenosis, was led to conclude that in such cases the gastric ulcer is the result, and not the cause of hypersecretion in the stomach. In his patient the hypersecretion kept up in spite of the fact that the ulcer and neighboring portion of the stomach had been removed. The persistence of the acid catarrh is accounted for by persistence of the initial cause, viz., solar plexus irritation, disturbed abdominal equilibrium, and hyperpeptic gastritis—factors occurring either singly or in combination, according to the case. Even granting that hypersecretion continues in all patients subjected to prepylorotomy, the operation is nevertheless highly useful, subsequent cancerous transformation being forestalled; pain removed or greatly reduced owing to excision of the ulcerated and hyperesthetic area previously irritated by the acid chyme, and facilitating evacuation of the stomach. The operation referred to constitutes the best treatment of long standing ulcers refractory to medical measures, yet the patients should continue after the operation to follow dietetic and antisecretory drug treatment for a variable period.

Rôle of Focal Infections in Sympathetic Ophthalmia.—Clinton T. Cooke (*American Journal of Ophthalmology*, January, 1920) presents a hypothesis that there may be a possible relation between certain cases of sympathetic ophthalmia and focal infection, notably of the apices of the teeth. He assumes that Elschnig is right in supposing sympathetic ophthalmia to be an anaphylactic inflammation of the sympathizing eye, and then proposes that the following may be the course of events. First, a focal infection; second, trauma of an eye with microbic implantation in the uveal tract of bacteria similar to those in the focal infection, or of a variety which may by transmutation become similar; third, sensitization of the uveal tract by, a, local specific defense by first a zymogen with specific ferment and a splitting of the bacterial protein in the exciting eye; b, predilection for the uveal tracts; fourth, escape in sufficient numbers into the circulation of bacteria either from the first eye, or from the focal infection; fifth, a continuous or intermittent supply of bacterial protein of the same sort which has sensitized the second eye, causing an anaphylactic inflammation; sixth, sensitization of the second eye having occurred through and by reason of predilection the antigen could come conceivably either from the focal infection or from the exciting eye, which would suggest the necessity for removal of both the exciting eye and the focal infection. He also thinks that this would explain why removal of the exciting eye alone has failed to save the sympathizing eye once the uveitis has become established. This theory is worth consideration, as we really know so little about the way in which sympathetic ophthalmia is brought about.

Diagnosis of Lesions of Nervous System Produced by Violent Explosions in Close Proximity without External Lesions.—Tom A. Williams (*Boston Medical and Surgical Journal*, January 8, 1920) believes commotion to be the real cause of many of the symptoms where the skull has been injured, and that the diagnosis is made easily in the severer cases, but in the milder ones the symptoms are complicated by either hypermotivity, pithiatic symptoms created by suggestion, or by both. The most important of the objective findings in a case of commotion appear in the cerebrospinal fluid. In the grave cases, besides neurological signs and hypermotivity, there is an exudation of serum and occasionally lymphocytes, which may continue for months, and sometimes of blood. In cases less severe there is only a hyperalbuminosis with perhaps a diminution of chloride and an increase of sugar. In still less severe cases the only physical sign is the increased pressure of the cerebrospinal fluid. In the last the patient should be quite restored before many weeks; when there is albuminosis some months may be required; in the severer cases, especially when there is a considerable amount of lymphocytes present, a year or more may elapse before the patient is even free from discomfort. The best treatment consists of repeated withdrawals of cerebrospinal fluid until the pressure becomes normal, along with prolonged rest and lactovegetarian régime.

Cortical Hypernephroma of the Uterus.—Henri Hartmann (*Bulletin de l'Académie de médecine*, January 27, 1920) reports the case of a woman aged fifty-eight years who, when first seen, was extremely pale, with a temperature of 38°C ., and passing much blood, clots, and even masses of tissue from the vagina. Palpation revealed a mass similar to a placenta being extruded from the dilated os, and in the abdomen, a tumor suggestive of fibroma extending as high as the umbilicus. The protruding friable and partially necrotic portion of the mass was at once removed with the curette, and the general condition improved. Two months later, however, hemorrhage occurred again, and hysterectomy was decided upon. The annexa were found inflamed and adherent, and in the uterine cavity was a soft, friable tumor implanted on the fundus and left lateral portion of the uterine wall. Three months later hemorrhage reappeared, but an application of radium over the vaginal scar eliminated the recurrent tumor masses. Again, six months later, vaginal recurrence took place, and two small secondary masses were found upon the vaginal mucous membrane near the introitus. These were excised, radium again used in the vaginal vault, and the patient remained in good health. Examination of the various tissue specimens removed uniformly revealed cortical adrenal tissue, the tumor evidently having developed from an aberrant deposit of cortical adrenal tissue in the uterus—a condition probably not hitherto reported, though instances of cortical hypernephroma in the broad ligament, along the spermatic vessels, and even in the epididymis are on record. No suggestion of any primary focus in the adrenals themselves was clinically observed.

Ectopic Adenomyoma of Uterine Type.—Arthur E. Mahle and William Carpenter MacCarty (*Journal of Laboratory and Clinical Medicine*, January, 1920) describe ten cases of adenomyoma in the following situations: umbilicus, one; abdominal wall, two; sigmoid, one; groin, two, and rectovaginal septum, four. Pathologically these extrauterine adenomyomas are identical in appearance, regardless of where they are found, and they have large cystic areas and darker brown contents than the uterine adenomyomas. Clinically the tumors give no consistent group of symptoms on which to base a diagnosis, but their situation and slow growth suggest a benign tumor; and the occasional pain or swelling during menstruation should suggest an adenomyoma. Surgically they are to be distinguished from malignant tumors, as they do not metastasize. Microscopical descriptions of the tumors are given, and a discussion of their origin is included.

Operative Results in Breast Tumors.—Byron B. Davis, Omaha, Neb. (*Annals of Surgery*, March, 1920), from the study of two hundred cases, one hundred and sixty-six suffering from malignant tumors and forty-four from benign, states that the results obtained are encouraging rather than discouraging. He advocates a very early operation, in fact, so early that the microscope is necessary to make the diagnosis, as bound to produce better results than the operation done after the disease is easily diagnosed. The radical operation should be directed in such a way as to remove as thoroughly as possible the highways along which the disease is disseminated. The campaign of education of the public with reference to the signs of early cancer and its curability when operated early should be continued and kept up unceasingly. And finally the fact should be appreciated that every woman operated upon for carcinoma of the breast who remains free of the disease is more powerful propaganda in the community in which she lives than any tract.

Comparative Wassermann Tests of the Blood and Urine.—C. Simon (*Presse médicale*, January 14, 1920) made a comparative study of the Wassermann reaction in the blood and urine in over 200 patients. It was found that the urine of syphilis is capable of fixing the complement, the reaction developing, however, later in the disease than it does in the case of the blood. The urine Wassermann is generally negative in primary syphilis, rather frequently positive in secondary syphilis, and oftenest positive in tertiary and congenital syphilis. In over one half the cases, the urine and blood Wassermann reactions correspond; in the remainder, they are in disagreement, usually in favor of the blood, and only in one fifth of the instances in favor of the urine. Thus at times there is the same disagreement between the blood and urine Wassermanns that has been observed between the blood and cerebrospinal Wassermanns. If, as many syphilographers do, one places much reliance on the fixation reactions from both the diagnostic and the therapeutic standpoints, the above mentioned observations are of particular importance. Where the blood Wassermann is negative, examination is not complete until a urine Wassermann has also been performed.

Letters to the Editors.

THE USE OF IODINE FUMES IN INFLUENZA.

2043 Walnut Street,

Philadelphia, May 21, 1920.

To the Editors:

In a paper read before the Medical Society of the County of Kings, on March 16, 1920, I referred to the use of iodine fumes in the treatment of influenza (*NEW YORK MEDICAL JOURNAL*, May 15, 1920) calling attention to the severity of their action when inhaled directly from crystals vaporized by heat. In a very timely article published since, Luckhart, Koch, Schroeder and Weiland (*Journal of Pharmacology*, March, 1920), after an experimental study of the action of these fumes, also emphasize their danger when employed as recommended by some clinicians, i. e., directly to the nose and throat, using a container they illustrate in which a few crystals are exposed to heat and blown into these cavities by means of a rubber bulb.

It happens that I had tried the instrument which they describe and "the intense burning and peppery sensation" to which I refer in the above mentioned paper, led me to wonder how it could possibly have been used by its sponsors. A series of tests then showed that it was only when so small a proportion of fumes as that obtained from three tenth grams of iodine crystals was diffused evenly by fanning in eighteen cubic metres of air at room temperature that they could be used safely. Hence the advice to use ten grains (0.65 gram) for an average small room, which contains about forty cubic metres of air. As stated, this mixture "should not prove irritating to the eyes," otherwise too much iodine is being vaporized for the size of the room.

This apparently minute proportion of iodine in the air imparts to it a not unpleasant metallic odor, to which occupants of the room soon become accustomed. There is at first experienced a slight pungency in the upper respiratory tract, followed by freer secretory activity. In view of the known specific action of iodine on mucous membranes and lymphoid tissues, this means increased defensive activity of these structures; again, the iodine being absorbed, it is taken up by the thyroid gland and enhances its defensive activity besides, incidentally that of the body at large. The investigations of Shuffelbotham (*British Medical Journal*, April 19, 1919) in twenty different and widely separated districts in England, showed that certain gases, notably sulphur dioxide and nitrous oxide, conferred a high degree of immunity from influenza to workers using them without producing ill effects, the marked decrease of pharyngeal flora continuing as much as twenty-four hours after exposure to the fumes of these gases.

This betokens the possibilities offered by iodine also in minute though perceptibly active doses, as represented by fumes employed in the way mentioned, three or four times daily during an epidemic, particularly in view of the slight resistance of the Pfeiffer organism.

As to the use of three grains of crystals between two layers of absorbent cotton in a small inhaler, the cotton is an important factor by preventing a too rapid passage of the iodine laden air to the nasal mucosa. Its absorption was well shown in a personal case in which the inhaler was used to excess—three or four deep inhalations through each nostril every three hours, instead of a couple of inhalations three time a day as directed. While the only untoward effect was a slight temporary irritation of the conjunctiva through the lachrymal duct, the urine gave off so distinct an odor of iodine that the patient called my attention to it. This further emphasizes the need of careful directions and perhaps for a better method—a search for which would meet the avowed purpose of my paper, which was to open a new horizon for the study of influenza by all.

Indeed, any opportunity which even remotely might offer some hope of mastering this disease, the mortality of which can only be compared with that of the recent war, should be taken advantage of and developed at the earliest possible moment, in view of threatening conditions in Russia from the viewpoint of public health. Influenza is said to be endemic in several of her cities and the unsanitary conditions prevailing everywhere suggest the possibility of another epidemic next winter when the growing resumption of travel will facilitate contagion.

CHARLES E. DE M. SAJOUS.

Births, Marriages, and Deaths.

Died.

CHASE.—In Shrewsbury, Mass., on Friday, April 30th, Dr. Edwin Llewellyn Chase, aged forty-nine years.

CANTWELL.—In New York, N. Y., on Wednesday, May 19th, Dr. George Howard Cantwell, aged fifty-one years.

DEANE.—In Springfield, Mass., on Wednesday, April 14th, Dr. Wallace Harlow Deane, aged sixty-seven years.

KELL.—In Salem, Ill., on Monday, April 12th, Dr. Omar Adrian Kell, aged forty-eight years.

MAXWELL.—In Newton, Ill., on Saturday, April 3rd, Dr. John Hurl Maxwell, aged eighty-five years.

MENZIE.—In Oneida, N. Y., on Wednesday, May 12th, Dr. George L. Menzie, aged seventy-eight years.

MILLER.—In Netcong, N. J., on Friday, May 7th, Dr. John Miller, aged fifty-eight years.

ORTH.—In Harrisburg, Pa., on Tuesday, May 18th, Dr. Henry Lawrence Orth, aged seventy-eight years.

RUDDICK.—In Boston, Mass., on Thursday, April 8th, Dr. William Henderson Ruddick, aged seventy-five years.

SLACER.—In Hamilton, Ont., on Sunday, May 16th, Dr. William Hadley Slacer, aged seventy-six years.

SMITH.—In Milford, Conn., on Wednesday, May 12th, Dr. Caroline Smith, aged eighty years.

SMITH.—In Salem, N. J., on Friday, May 14th, Dr. Ellen Bradway Smith, aged fifty-four years.

WILHELMY.—In Decatur, Ill., on Friday, April 16th, Dr. Arthur Frank Wilhelmy, aged forty-seven years.

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RADIUM TREATMENT OF NONMALIGNANT UTERINE BLEEDING.*

Some Immediate Aftereffects.

BY WILLIAM P. GRAVES, M. D.,

Boston,

Professor of Gynecology, Harvard University Medical School.

The value of radium in the treatment of non-malignant uterine bleeding has become so well established as to quiet all possible opposition. In fact it may be regarded as one of the greatest boons that has befallen the science of gynecology, both from the viewpoint of the patient, and from that of the distracted surgeon hesitating to perform a radical operation in the presence of some intractable hemorrhage. On the other hand, the amazing constancy and effectiveness with which radium painlessly accomplishes its results, has imparted to the treatment a sort of magical glamour, especially among the laity, so that when patients encounter some of the unpleasant immediate aftereffects that radium is prone to cause, they are often thrown into a state of keen disappointment and sometimes of serious depression.

The object of this paper is to recount certain disagreeable sequelæ from intrauterine radiation which though mentioned by several writers have received minor attention or have been lost sight of in the reports of brilliant end results. Some of these symptoms are significant chiefly from the psychological influence which they may exert on the patient but even these, as I shall show, may be of considerable import to the patient's general welfare.

NAUSEA.

First among the specific symptoms from an intrauterine application of radium must be mentioned nausea. This symptom is casually alluded to by a few observers. J. G. Clark refers to it, but says that "nausea and vomiting are the exception rather than the rule after radiation," and in no case has he seen the symptoms alarming or persistent. My own experience has been rather the reverse, for I find that the majority of patients suffer more nausea than would be expected after a simple ether examination and curettage, in which the length of anesthesia would be approximately the same. That the nausea is due to something more than the simple effects of the anesthetic is often strikingly evidenced by the almost immediate relief that follows the removal of the radium in certain cases. In other

cases the nausea has been persistent, with greater or less intensity, for a period much longer than is seen in even unfavorable cases after a short anesthesia, where radium has not been used. In some cases there is little or no nausea after radiation, but in my experience these cases are the exception, whereas after a simple curetting they are the rule. In one of my patients violent nausea and vomiting persisted for seven days after a mild dose. The patient, a strong young woman of twenty-seven, was neurotic and apprehensive, but the severity of the symptoms could not be explained wholly by her mental attitude, nor by the small amount of ether administered at the operation.

We are accustomed to initiate the anesthesia with nitrous oxide, and to continue with enough ether for complete relaxation. This, when administered by an expert, is insignificant in amount, as the pelvic examination, dilatation, curettage, and application of radium require only a few minutes. The cause of the unusual nausea is not entirely clear. Possibly it may be explained as a sympathetic reflex from a foreign body inside the uterus, but the symptom, in my recollection, does not seem to have been particularly noticeable after the insertion of stem pessaries, or after the old fashioned practice of intrauterine drains and packs following curettage. Though the nausea following radiation is not a serious matter, it is often disconcerting to the patient who, with her preconceived notion of the magical simplicity of the radium treatment, has been anticipating an easy time of it. With the realization that most gynecological patients dread the anesthesia and its effects more than the operation itself, it should be made a routine practice to warn the patient that she is likely to experience more nausea than is to be expected after an ordinary operation of so short a duration. With such a forewarning, if unusual nausea does ensue, there is less chance of awakening the sense of disappointment and resentment which, as we shall see, may be the starting point of a train of nervous symptoms that may seriously impair the patient's health and happiness until the time when the full benefit of the radium treatment shall have been consummated.

BLEEDING.

A second important afterresult of the radium treatment is a possible continuation or reappearance of the bleeding, for the cure of which the operation was undertaken. Such bleeding may appear within a few hours after the removal of the radium, and

may persist for days or sometimes weeks, with varying degrees of intensity and constancy, before permanent cessation takes place. The amount of blood lost varies from a steady profuse flow to an occasional scanty showing, and the time of its appearance may extend from two or three days to five or six weeks. To a nervous, apprehensive woman, not prepossessed of this possible event, and confidently expectant of an instantaneous cure, the continuation of symptoms comes as an alarming shock, and the attendant who has neglected to forewarn his patient finds it extremely difficult to explain the condition. In some cases, in patients treated for menorrhagia, the next one or two periods may show no diminution, and sometimes even an increase of the catamenial flow. Here again the attendant who has not cautioned his patient finds himself in an embarrassing predicament in his perfectly truthful assurance that the ultimate result will probably be entirely satisfactory.

The recurrence of bleeding is one of the difficult problems in radiation for nonmalignant uterine hemorrhage. Its proper solution will involve the consideration of numerous factors, such as the character of the endometrium and myometrium, the amount and length of the dose, the choice of time for treatment, the constitutional idiosyncrasies of the patient, with special reference to vascular lesions, to the endocrine glands, and other factors. I have encountered troublesome afterbleeding most commonly in women with myomatous uteri. There were two serious cases of protracted hemorrhage in patients with moderately large fibroids, radical operation being contraindicated on account of dangerous heart lesions. One of these patients eventually became entirely well, with an extraordinary diminution of the myomatous growth. The other patient came later to operation, and died during convalescence from a pulmonary embolism.

LEUCORRHEA.

A third specific aftereffect of intrauterine radiation is leucorrhea. In cases of recurrent bleeding it seems to appear as the end result of the flow in the form of a thin watery discharge of a pinkish hue which gradually fades to a pale brown or colorless character. In cases where the radium application has caused a complete cessation of bleeding the same watery discharge usually ensues for a varying length of time, lasting from a few days to several weeks or months. Some patients do not notice it at all, but they are in the minority. It has been a matter of rather frequent personal observation that this characteristic radium leucorrhea appears periodically for several months at the usual menstrual time and seems to indicate an effort on the part of nature to reestablish the menstrual rhythm. The discharge is chemically irritating and if not properly treated by cleansing douches becomes foul and may set up an annoying vaginitis, as has occurred in more than one of my cases.

The origin of the discharge has, so far as I know, not been definitely determined. Its source seems to be from the endometrium. It may represent a superficial necrosis of the mucous membrane, or it may result from stimulation of the endometrial glands; probably both factors share in the process.

The specific leucorrhea following radiation has been alluded to by several writers as of little importance, and indeed in the majority of cases such is the fact. Nevertheless, I can recall three cases, and doubtless there are others that I have not followed as closely, in which the discharge persisted for months; in two of them for over a year before it subsided. These patients, although completely relieved of the symptoms for which they had received the treatment, were so distressed by the intractable leucorrhea that they keenly regretted not having submitted to a hysterectomy.

I know of no way by which this postradial leucorrhea may be prevented, nor by which it may be stopped if it is persistent. I usually perform a thorough curetting before applying the radium on the theory that it may diminish the amount of local necrosis, but whether this makes any material difference I am unable to say.

PAIN.

Pelvic pain has been described by some as one of the typical symptoms following the radium treatment. I have occasionally heard complaints, on the part of my patients, of a slight nagging pain in the side, usually on the left, which has subsided in a few days and has given no further trouble. In a small number of cases patients suffered pain of the nature of a uterine colic during the time of the radium application, the result apparently of a reaction on the part of the uterus to a foreign body within its cavity. In a few other cases, however, the pain experienced during the immediate convalescence proved to be the forerunner of later very serious inflammatory consequences. In the light therefore of present experience I am convinced that in the properly selected cases there should be no adnexal pain and that if it does occur, it must be regarded as a danger signal of grave import. Two cases will suffice to illustrate this point.

CASE I.—Mrs. E. N. H., aged twenty-four, married one year. Chief complaint sterility, excessive flow, metrorrhagia. This patient had an interesting operative history. In 1908 at the age of fifteen her appendix was removed after an acute attack. She stated that in 1910 a surgeon had ruptured cysts of her ovary under gas nine different times. In 1913 she had an abdominal operation which consisted, as she stated, of a dissection of adhesions and the removal of the right ovary with a resection of the left ovary. I saw the patient in 1917. The uterus was in position, somewhat larger than normal, the left ovary was the size of a hen's egg, tender, and probably adherent. An application of fifty mgm. of radium was made for four hours. Metrorrhagia recurred in a few months and a second small dose of radium was given. At that time the left ovary was not enlarged. Immediately after the second application an inflammatory process started up on the left side with acute enlargement of the ovary. The patient suffered from severe pain and was in the hospital for more than three weeks. After leaving the hospital normal periods were established but with extremely severe dysmenorrhea. A year later, although the cyst of the ovary had subsided, the tenderness of the left side and the dysmenorrhea were so severe that hysterectomy was

advised and performed. A moderate number of adhesions were found in the pelvis. The patient's pelvic symptoms were entirely relieved by the operation.

A patient with a previous history such as this woman had should never be treated with radium.

CASE II.—Mrs. G., aged forty-eight. Gave a history of severe menorrhagia with clots. Had one child twenty years before, followed by severe puerperal sepsis. Was in a hospital nine weeks. Examination showed normal sized uterus and a small irregular rather tender mass adherent to the posterior wall. Question of radium or radical operation. As the patient was very flabby and a poor surgical risk it was thought best to take a chance with a small dose of radium, inasmuch as the original inflammation was twenty years before. Fifty mgm. radium was applied for five hours. The patient made a good recovery and sent a satisfactory report one month after the operation. Six months after the radium treatment it was reported that the patient had had a large abscess which had discharged through the rectum. The patient was seen and examined, and an extensive pelvic inflammation throughout the pelvis noted. She was treated by palliative measures for about three weeks, but the condition continued to get worse and operation was decided upon. At the operation the pelvis was found to contain a foul, sloughing, conglomerate mass implicating the intestines. The pelvic organs were removed and the pelvis cleaned as well as possible, but the patient died in a few days from general peritonitis.

In this case the question arises as to whether the pelvic inflammation would have ensued anyway, the menorrhagia being a premonitory symptom, or whether the small application of radium so devitalized the tissue that the inflammatory process was made worse by the treatment.

Too great emphasis cannot be laid on the danger of making intrauterine radium applications in the presence of pelvic inflammation. Even though the active inflammatory process existed years before and there remains only a few peritoneal adhesions radiation is attended with risk. Inasmuch as an old inflammatory process is sometimes missed both in the history and with the most expert preliminary pelvic examination, it stands to reason that even with great care occasional untoward results are sure to be encountered; and anyone who says that the intrauterine application of radium for bleeding is attended with no danger knows little whereof he speaks.

The injurious influence of radium on chronic inflammatory pelvic conditions, is perhaps the most important reason why in the extensive clinical use to which radium is destined very soon to be put, its employment, in gynecological practice at least should be limited to responsible and welltrained operators.

RENAL SYMPTOMS.

Some mention has been made in the literature of a reaction on the part of the kidneys to radiation. I have had an opportunity of observing, in another clinic, the onset of an acute nephritis following an intrauterine treatment, in the case of an elderly

woman who had a cardiorenal history. I have collected no specific data on this point in my series of cases, nor have I seen any systematic report in the literature throwing light on the subject. Nevertheless, there is sporadic evidence that caution should be exercised in treating patients with renal disease.

NERVOUS SYMPTOMS.

Nervous symptoms following radiation are of peculiar interest. If the menses are inhibited, hot flushes are common, but not constant. They occur in about the same proportion as after hysterectomy with or without the ablation of the ovaries. Some think they are less intense and annoying, others think they are more so. In my experience I cannot see that there is any marked difference one way or the other. They seem to follow the same law as, after radical operations in that they are intensified by complicating discomforts and temporary disappointment over the result of the treatment. The influence of the ovarian secretion is strikingly illustrated in cases where, after a period of amenorrhea, the menses are reestablished, with a complete synchronous disappearance of hot flushes. As after hysterectomy, the hot flushes when present are usually amenable to ovarian therapy, preferably in the form of the residue or of the whole extract. Occasionally, however, in a patient with an unstable vasomotor equipment, the so-called ablation symptoms, chiefly in the form of hot flushes, may be extremely severe, persistent, and intractable to endocrine treatment. We have had one such case in which the symptoms have continued unabated for over a year.

In many cases, happily, hot flushes are entirely absent or quite insignificant, and if there are no disquieting sequelæ such patients acquire in time a sense of physical and mental wellbeing that is extremely gratifying. On the other hand, the question has arisen in my mind whether in certain neurotic individuals radium may not exert a specific depressing influence on the nervous system. Such a temporary influence has been suggested in the observation of several cases. One patient, a middle-aged school teacher, intelligent but illbalanced, attempted to describe a peculiar sinister effect which the radium had had on her whole being, physical and mental. Another patient, an apparently normal and selfpossessed woman of forty-seven, told me at the end of a month that she was experiencing a continual sense of panic and apprehension such as she had never before felt, and in this case there had been absolutely no other specific disquieting complication following the treatment. In several cases with or without mental manifestations there has been a rather protracted period of physical depression not to be accounted for by the patient's previous health, nor by the effects of the slight operation. Although such evidence as the preceding is of course untrustworthy, especially in view of the almost superstitious awe which the extraordinary properties of radium have roused in the imagination of the laity, nevertheless, we do not yet know the full powers of radium, and it is not inconceivable that it may exert a profound influence on the whole organism in certain individuals who possess an unstable nervous constitution.

It is to be noted that I have observed these nervous symptoms as distinctive sequelæ only in cases in which the application has been intrauterine. That is to say, I have not observed them specifically after simple vaginal application for cervical cancer. This is suggestive but not conclusive evidence that the deleterious nervous effects may be exerted through the agency of the ovaries, which are naturally more susceptible to intrauterine than to vaginal radiation.

If to the possible specific effect of radiation on the nervous system there is added a delayed convalescence with some of the disturbing symptoms mentioned above, there may result a chagrin and disappointment on the part of the patient which may seriously effect her wellbeing. This outcome is entirely comparable to the occasional ill effects of a hysterectomy, and proportionately as frequent.

The various points brought out in this paper are presented not for the purpose of depreciating the great value of radium in the treatment of non-malignant uterine hemorrhage, but rather to warn those who have not yet used it for this purpose that the immediate convalescence from a given treatment is by no means always a bed of roses. It is the wish of the writer to emphasize both to the profession and the laity that radium is a powerful and dangerous agent, and that in certain cases, not always recognizable, its use is attended with the gravest risks. The possibilities of radium for harm have not been sufficiently exploited in the literature, and it is the duty of those who are using it to spread the propaganda of caution, in view of the general and perhaps indiscriminate distribution which radium is inevitably soon to enjoy.

ENDOCRINE THERAPY OF HIGH BLOOD PRESSURE.

Preliminary Report.

By SAMUEL WYLLIS BANDLER, M. D.,

New York,

Professor of Gynecology, New York Post Graduate Medical School and Hospital

The first endocrine used in gynecology was ovarian extract. The use of corpus luteum and the administration of thyroid extract followed. Then came the introduction of suprarenal extract, pituitary extract, thymus, mammary, and extracts of the various glands and glandular structures, including parathyroid, pineal, testicular and placental. Through the use of these products in the treatment of sterility, amenorrhea, dysmenorrhea, menorrhagia, fibromyomata, lactation atrophy, the annoyances of the climacterium and other conditions, many byeffects are noted and many associated conditions which have no seeming relation to the condition or the treatment are affected. In the administration of the various gland products in the nausea, vomiting and toxemia of pregnancy, and in their use for the purpose of promoting lactation, associated results different from those that are looked for may be noted. In the study of the physiological and pathological processes occurring in the various periods of a wom-

an's life from puberty through adolescence, in association with pregnancy, and on through the climacterium, the action and influence of the ductless glands becomes apparent.

A study of glandular interrelations and observations of the numerous types of malrelations leads into a maze of seeming complications. These apparently unrelated and diverse conditions gradually become unraveled when we take three most important points into consideration. 1, The same type of malrelation between the more important endocrines produces different effects according to the associated activity of the less understood glands of the endocrine chain; 2, the same form of malrelation between the more important glands may produce physical, visceral, metabolic, functional, mental, or physical deviations from the normal; 3, the element of attraction, based on reasons as yet not well understood, permits any one or more of the various types of overactivity or underactivity of endocrine function to exert its most marked effect on any one of several different organs or structures in the body.

The more frequently any combination of endocrines, given for a definite purpose, affects favorably an associated condition the wider becomes the range of therapeutic endeavor, even though the mechanism whereby this added result is produced is not always apparent. So numerous and so varying are the by-effects recorded in endocrine therapy, that it is safe to say that in gynecology and in obstetrics, we find a key which has unlocked and will in the future unlock many of the puzzles in medicine.

In noting the results of the therapeutic use of the endocrines mentioned, their influence on high blood pressure is one of the most interesting observations. The thyroid gland, for instance, sensitive and active as it is in the female, is fortunately sensitive and active because of the important part it plays in menstruation, in nidation of the ovum, in protecting the maternal organism during pregnancy, and through the protective control which it exerts over kidney functions and the renal epithelium.

In the infectious diseases, among all the endocrines contributing to the resistance against bacteria and their toxins, the thyroid plays a rôle of the greatest importance, and this holds true to a special degree in pregnancy. There is a relation or normal balance existing between the various endocrines, and of not the least importance is the balance between the thyroid gland and the posterior pituitary. Overactivity of the posterior pituitary, in view of its relation to the cerebrospinal fluid and to the excretory function of the kidneys, may produce changes interfering with health, and this interference may take place during pregnancy. In the latter, because of the presence of the ovum, the fetus and the placenta, the condition often assumes a character and form different from that noted under any other circumstance. In pregnancy, a normal activity of the thyroid aids in limiting overactivity of the posterior pituitary and the adrenal medulla.

In normal, well balanced persons there is a certain relation between the element of fear and the element of courage. Fear is an emotion existing for the purpose of promoting caution, and in primi-

tive days and in animals tends to selfpreservation. Anger, curiosity and courage are factors which oppose fear and flight. When knowledge, experience, repetition finally limit or delimit the action of these two opposing instincts and emotions, conscious action is carried out with understanding according to the inherent reactions. Woman was made with the element of fear and caution more pronounced than in man because woman, the mother, was not supposed to be the fighter. Man, primitive man, the fighter, was endowed more with courage.

Now that we know that the balance between the component parts of certain endocrines is different in woman than in man, we can recognize not an accident, but a purpose in these distinctions. If man has more anterior pituitary and adrenal cortex and cells of Leydig than woman, we know these glands to be responsible for many physical, mental and psychic male attributes. If woman has more posterior pituitary, glandular thyroid and adrenal medulla, we know that these glandular structures are essential to her special functions. When in pregnancy the placental gland stimulates the anterior pituitary and the adrenal cortex, these two most important secretions necessary to the protection of the mother, and to the growth of the embryo, are supplied in increasing degree. When the placenta and the thyroid under normal conditions prevent overactivity of the posterior pituitary and the adrenal medulla, a purposed action becomes evident.

When the thyroid swells and becomes more active before menstruation, it does so in preparation for the increased work it has to do if fecundation takes place. This swelling of the thyroid is produced as a part of the premenstrual constitutional changes and is probably promoted by the corpus luteum. Continuation of thyroid activity is a normal condition and is essential not only to the growth of the ovum, but in its relation to the posterior pituitary, the adrenals, and to kidney function.

To illustrate the action of thyroid in its protective rôle over the renal epithelium, two cases are mentioned briefly:

CASE I.—Mrs. O. Examined every two weeks during her pregnancy. The urine was normal; blood pressure normal. A week before full term the patient acquired a mild influenza, with coryza, and a temperature of 100.5°. Bicarbonate of soda was administered. Two days later, after the temperature had become normal, there appeared slight edema of the eyelids. The urine showed albumin and some casts. The blood pressure was 140. Thyroid extract one tenth grain was given every three hours in conjunction with bicarbonate of soda. In three days the blood pressure was normal, the urine was perfectly normal. The patient was confined three days later. Thyroid extract at longer intervals was continued for two weeks.

From the viewpoint of the endocrines, nothing is of greater importance than the family history. It is of the greatest interest to note and observe how an endocrine condition following a typical course in a parent or grandparent is manifested as a totally different ailment in the children or grandchildren. The mother of this patient was operated on for fibroids many years ago. Her blood pres-

sure too was markedly reduced by endocrine therapy.

CASE II.—Mrs. W. Pregnant three and one half months, not nauseated, somewhat sleepy. Had a gripe cold and was treated by a physician who after four days said she was all right. Three days later, when her family physician was called, he found her mentally irrational, passing eight or twelve ounces of urine a day with a temperature of 101.5°. The urine contained albumin and casts. He gave her acetate of potash and colonic irrigations of sodium bicarbonate and the amount of urine rose to thirty-six ounces. When I saw her, her knee jerk was exaggerated, her blood pressure was 110, she answered all questions, had no facial, tongue or hand paralysis or paresis, but was sleepy and drowsy. My diagnosis was acute nephritis with intracerebral pressure and hypothyroidism, because of the slow pulse.

When first seen she was passing only ten or twelve ounces of urine a day containing albumin and casts. In this patient we see as the result of influenza a kidney condition, parallel to many of the preeclamptic and eclamptic cases, except that the blood pressure was low. In the preeclamptic state blood pressure is high because of posterior pituitary overactivity. In this case involvement of the pituitary (the slightest form of encephalitis lethargica) resulted in a diminished posterior pituitary secretion. In eclamptic cases the important conditions are posterior pituitary excess and lessened thyroid secretion. This patient improved and became normal on a quarter of a grain of thyroid three times a day and from the bicarbonate of soda and glucose Murphy drip. With any rise in blood pressure my obstetrical patients are put on small doses of thyroid as a routine.

Observation and therapy have convinced me that the pituitary, particularly the posterior lobe, plays the most important rôle in fibromyomata of the uterus.

The following is a short history of two patients, subsequent to operation:

CASE III.—Mrs. A. Hysterectomy for multiple fibroids in 1913. March 27, 1919, complained of headaches, blood pressure 170. Headaches removed by endocrine therapy. April 6, 1920, patient stated that for weeks she had had "pain in the heart," was nervous and had severe headaches. Urinary output for twenty-four hours when measured was thirty-eight ounces. Endocrine therapy was given. April 14th, blood pressure 160, felt better in every way. April 30th, blood pressure 150.

CASE IV.—Mrs. M., hysterectomy for fibromyomata, August, 1918. March 8, 1920 suffered from severe headaches, stiffness of the neck and marked flushes. Blood pressure 180. May 7th, after endocrine therapy, blood pressure 160. May 21st, after endocrine therapy, blood pressure 140, flushes had disappeared.

Basing the treatment of high blood pressure on the theory of posterior pituitary overactivity as the causation of fibromyomata, and taking into consideration the blood pressure and not infrequent tendency to glycosuria in these cases, the same methods of treatment were applied in other instances of which the two following serve as excellent illustrations.

CASE V.—Mrs. H, April 26, 1920, complains of nervousness, pain in the left arm, sleeplessness and a sense of fright without cause. She was an old patient of mine. Her amenorrhea was of four years' duration, since which time she had suffered from severe flushes. The flushes ceased a few weeks ago, since which time neuritis appeared. She had a pulse of 120 and blood pressure of 180. She resembled what might be called adrenal shell shock. May 5th, after endocrine therapy, she slept better, was much quieter, and noticed less palpitation. Her blood pressure was 160, pulse 90. May 15th the blood pressure was 140.

CASE VI.—Mrs. V., April 23, 1920. Patient suffered from backache. She had severe occipital headaches, pain between her shoulders and down the back of her legs. Her condition dated back to a diphtheria treated by antitoxin five years ago. Examination showed a retroversion and laceration of the cervix. The pulse was 120, blood pressure 170. On April 30th, after endocrine therapy, the blood pressure was 130. May 7th, endocrine therapy being continued, blood pressure was 120. On May 14th an examination of the patient showed the blood pressure to be 120, and the pulse 90.

I discussed the relation of altered endocrine activity with several of my friends of clinical experience, with the hope that they might put my theories to the test in a wider range of cases, especially in men. There is no reason why a gland extract should not produce the same effect in the two sexes, aside from certain special and specific physiological functions. The theory concerning glycosuria, based on pituitary overactivity, is giving me most promising results.

The following two cases are among the few referred to me for the purposes of testing the efficacy of gland extracts for hypertension. The preliminary report presented is rather brief but the records of such cases may prove a stimulus for further study.

CASE VII.—Mr. W., blood pressure 150. He urinated four to five times nightly. He was told by his physician that his residual urine was due to prostatic enlargement. The therapy was directed solely to the blood pressure. March 22nd the blood pressure was 150, on April 6th blood pressure 140, May 4th blood pressure 130, May 13th blood pressure 110. The patient no longer urinated at night.

CASE VIII.—Mr. L., blood pressure 192, albumin 1.3, urinated at night, innumerable hyaline and granular casts on April 15, 1920. This condition was noted a year ago, after severe influenza six months previously. Diet and treatment and packs had no effect on his symptoms or kidney condition. On April 26th, after endocrine therapy, blood pressure 155; May 3d, blood pressure 150. May 24th, the endocrine therapy was continued, the blood pressure was 155, albumin not diminished; only a few hyaline and granular casts.

In closing this preliminary report, I wish to say that in none of the ambulatory cases was any change made in the previous diet of the patients, not a tooth was pulled, nor a tonsil removed.

134 WEST EIGHTY-SEVENTH STREET.

SOME INTERESTING EXPERIENCES IN OBSTETRICS.*

BY GEORGE L. BRODHEAD, M. D.,
New York.

In the selection of a subject upon which to address an audience, made up as it is of men who are interested in many branches of medicine other than obstetrics, I shall present some experiences which have been interesting to me, and which may bring to mind similar or even more interesting experiences in the practice of members of the society who at some time have been engaged in obstetrical work.

One of these instances comes to my mind, the case of a patient who had acute articular rheumatism, a patient in whom nearly all of the joints were involved, and who therefore could be moved and examined only with great difficulty. About one week postpartum, the house surgeon asked me to examine the patient, as he had felt a tumor in the left hypochondriac region. Before making the examination, as the bladder seemed to be overdistended, I catheterized the woman and drew off ninety-six ounces of urine, the so-called tumor gradually dropping lower in the abdomen until finally it was felt to be the normal involuting uterus, in the proper position well below the navel. This woman had been examined each morning on rounds by the staff, and the nurses reported that urine was being passed regularly. Overflow had undoubtedly occurred from time to time, but the fact had escaped observation from day to day that there was great over distention of the bladder. Since that time I have seen a number of patients in consultation where the only trouble was a retention of urine. One physician, a wellbalanced hospital man, called me in to see a case of possible ectopic gestation, but it seemed to me that a full bladder was the cause of obscurity in the diagnosis. After the urine was withdrawn, the three months pregnant uterus was easily palpable, and the physician then told me that some hours before, as the woman was bleeding slightly, he had ordered a hypodermic injection of morphine and he said he simply had not thought of the possibility of an overdistended bladder. In many postpartum cases the fundus of the bladder is mistaken for the fundus of the uterus, and this overdistention, causing displacement of the uterus, may lead to incorrect diagnosis.

At another time, a young negress, in labor, was taken to the operating room with a cervical dilatation of three fingers. I could hear no fetal heart, which I attributed to hydramnion, but several of the interns, as well as a number of students, heard fetal heart sounds distinctly, and many of them were able to count the heart. I felt much chagrined, and was about to go and have my ears examined, when I heard a shriek, and rushed upstairs to find that the membranes had suddenly ruptured, and a small macerated fetus had been deposited on the floor.

Shortly after this we had a large Polish woman on the table, and as I could hear no fetal heart sounds, and the bones of the head seemed rather soft and freely movable, I made a diagnosis to the

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students of a macerated fetus. Several minutes later I was very much embarrassed to see a fine ten pound baby born, crying lustily. All of which goes to prove that in obstetrics one must not be too sure, and it is far safer to leave an avenue through which to escape in the event of a wrong diagnosis.

In my first year of practice, I took care of a patient who was finally delivered by forceps. When the placenta came away I noticed that the entire chorion was missing. Having tried out for one year at the Sloane the experiment of making no effort to recover retained chorion, I said nothing to the patient or practical nurse, believing that in a few days the chorion would be expelled. Three days later, the puerperium having been absolutely normal to date, I returned home for my office hours to find that there had been repeated calls of great urgency to come to see the patient. When I reached the house I found the woman bright and cheerful with a normal pulse and temperature, but the practical nurse, with the greatest contempt for my neglect written all over her face, brought me a basin containing the entire chorion which had been expelled *en masse*. The nurse was much surprised when I told her that naturally the membrane, which I knew had not come away at the time of labor, would come away as it did later. At the time of the next labor four fifths of the chorion was again retained, and came away uneventfully. My experience at the Sloane, corroborated by all of my subsequent experiences, has convinced me that retained membranes may be left in the uterus with impunity, and it is much safer to leave them than to invade the uterus for the purpose of their removal.

I will now call attention to an experience which illustrates the possible danger of the uterine douche. One of my patients, on the fourth day postpartum, had a moderate elevation of temperature and a somewhat foul lochia, for which I gave a uterine douche of normal salt solution or weak lysol. Almost immediately afterward the patient had a chill, a pulse of 150, and delirium, during which she struggled to jump out of the window. A neighboring physician was hurriedly summoned and succeeded in quieting her. The temperature, which had risen to 104°, slowly came to normal, the pulse rate decreased, and in several days the patient was well again. Some of the uterine contents were washed out through the tube, or the uterus contracted forcibly, forcing some of its contents into the general circulation, this causing the violent disturbance. I have known a temperature of 107° F. to follow a uterine douche, and in many instances severe reactions have followed their use. If uterine douches are to be given, the fluid should be warm (not over 105° F.) and the douche bag should be held about one foot above the level of the vagina. The use of this method is rarely followed by a reaction.

One of the most interesting cases of death of the fetus is the following:

CASE I.—Mrs. K., aged twenty-three, married five months, came to my office November 17, 1917. The pelvis was absolutely contracted, and the uterus seemed to contain a four and a half months' fetus. On December 12, 1917, the uterus was no larger than before, and no life had been felt. Diagnosis

was made of death of the fetus. There was slight bleeding for three days following the examination at the office. Two months later the uterus was enlarged to the size of a six or eight weeks' pregnancy. The patient was advised that a curettage could be performed, or she could use hot douches and ergot. The patient elected the latter plan, and three days later she aborted and made a speedy recovery.

Another patient, who had suffered from toxemia in two previous pregnancies, came to me November 20, 1919, stating that her last menstruation was September 20th to 24th and she had every reason to believe that she had conceived within a week afterward. Her general condition was good, there was slight nausea at night, and the uterus was found to be enlarged to about the size of a two months' pregnancy. During the next six weeks she had nausea and vomiting much of the time, and there was profuse salivation which continued until Christmas. On January 17, 1920, the patient felt well, and the uterus appeared to be about three and a half months' pregnant. On February 19, 1920, after slight bleeding for several days, she passed a small fetal sac, containing a fetus three quarters of an inch in length of apparently four to five weeks' development. Judging by the size of the fetus, pregnancy must have been interrupted about November 10th, and we are at a loss to understand why the nausea and salivation continued for so long a time after life had ceased. Still another patient retained a four to six weeks' fetus for a year, during which time there were no symptoms except amenorrhea.

These case reports are only a few of a comparatively large number which we have seen. The products of conception may remain in the uterus from two to twelve months or longer without symptoms, the uterus finally expelling the ovum as a foreign body. It is not infrequent to have a history of threatened abortion, with bleeding, to be followed months later by the expulsion of a small degenerated mass of tissue, and this possibility must always be kept in mind when making a prognosis in cases of threatened abortion.

Some years ago I was called to see a patient who was apparently in labor, endeavoring to expel a large fibroid. In the distended vulva was a large smooth mass, the size of a fetal head, and the woman was suffering with typical expulsive second stage labor pains. She was urged to enter the hospital, but refused, and not until many hours later, when she had expelled a six and one half pound fibroid from the vagina was her condition so critical that she was removed to Bellevue Hospital, where the mass was removed from its broad uterine attachment, and the patient died of exhaustion on the following day.

Fibroids as a complication of pregnancy are of the greatest interest, and the following case report is one of the most interesting which has come under our observation.

CASE II.—Mrs. M., a negress, aged thirty, was admitted to my service at the Harlem Hospital on October 12, 1917, giving the following history: Fourteen years before she had been operated upon for the removal of a left cystic ovary. Her last menstruation was April 11,

1917. In June, 1917, a physician told the patient she was six months' pregnant, though she was only at that time two to two and one half months' pregnant, and another physician told her she would be confined in August. On admission to the hospital, October 12th, there was found a tumor, apparently fibroid, of the size of a five months' pregnant uterus, somewhat oblong in shape, occupying the right half of the umbilical region and the left half of the right lumbar region. The upper border was just below the costal margin, and the lower border extended down into the right iliac fossa. A definite sulcus existed between the tumor and the six months' uterus, which was pushed well over to the left. The tumor was solid in consistency, regular in outline, not contractile, freely movable, not attached to the overlying tissues, and apparently attached to the uterus. Two weeks after admission the tumor was very tender to superficial and deep palpation, and an ice bag was applied giving great relief. With the growth of the pregnant uterus the tumor was pushed upward and to the right. The patient was closely observed, and was allowed to proceed to term, and on January 8, 1918, the patient was normally delivered of a seven pound female child in good condition. After waiting forty minutes for the expulsion of the placenta, the latter, which was found to be slightly adherent, was extracted manually. The placenta was partly above and partly below a contraction ring, but was easily removed. Two thirds of the chorion were retained.

After the birth of the child, and before the placenta was extracted, the uterus was at the navel, and the tumor filled the right hypochondriac and right lumbar region. The mass measured from seven to eight inches in the transverse and four to five inches from above downward. There was only moderate bleeding, and the uterus contracted well. On January 10, 1918, at 10 a. m., the tumor was very tender, and the woman appeared sick. She had a temperature of 101° F., pulse 140, respiration rapid and shallow. The mass was apparently attached to the uterus by a thick pedicle. At 6 p. m. the tenderness had increased, and at 10:30 p. m. laparotomy was performed. A median incision was made, and a large fibroid, the size of a five months' uterus was removed from the posterior wall of the fundus of the uterus, with eight smaller fibroids varying in size from a marble to a lemon. The patient made an uninterrupted recovery, and left the hospital with the baby in good condition. Against the advice of some of the staff, who saw the woman earlier in the pregnancy, to operate at once, the writer believed that the patient might go safely to term. Conservatism should be the rule when considering fibroids in pregnancy, and by careful observation, and if necessary, prompt interference, children can often be saved, whereas by a more radical procedure, pregnancy is unnecessarily interrupted. I am glad to report that several months ago this patient gave birth normally to another child, with no complications whatsoever.

Another patient, who had consulted several well known gynecologists, had been advised to have her large fibroid uterus removed. She was very anxious to have a child, and we advised

her to become pregnant and determine later whether she could carry to term or not. Recently we performed the Cæsarean operation, delivering her of a ten pound healthy girl, and removed a number of large fibroids, the patient making an uneventful recovery.

PELVIC HEMATOMA FOLLOWING NORMAL LABOR.

CASE III.—The patient, aged twenty-six, primipara, with a normal history during pregnancy, went into labor at term, the membranes rupturing with the first pain. After about eleven hours of labor, the patient was very tired, and as the vertex was on the perineum, a very easy low forceps operation was done, a female child in excellent condition, weighing eight and two-sixteenths pounds, being easily extracted. The placenta was easily expressed twenty minutes later. Almost immediately after the placenta was removed, the patient began to complain of pain in the rectum, and in spite of several doses of morphine given subcutaneously the pain increased in severity. There was muscular twitching and later on several convulsive seizures, which the nurse on duty thought were eclamptic.

The blood pressure and urine, however, were normal, and the patient was gradually quieted with morphine and hyoscine in repeated doses. At the time of catheterization, five hours after delivery, the posterior wall of the vagina was purplish, but no rectal or vaginal examination was made. On the following day, examination revealed a tense tumor, bulging the posterior vaginal wall upward and to the right, and pushing the anterior wall of the rectum well backward to the left. There was also an area of hemorrhage in the skin of the left buttock, near the anus, about four inches in diameter, the general appearance being conveyed of a large bruise at that point. As could be seen in the temperature chart, the pulse for the entire puerperium was, with two single exceptions, never over 100, and was always of good quality. The temperature ranged between 98.4° and 101.8° for twelve days following confinement, being invariably lower in the morning and higher in the evening.

There was a certain amount of pain in the bladder region, and it was necessary to catheterize the patient a number of times. The pain gradually diminished after the first twelve hours, during which time the blood was dissecting up the rectovaginal septum.

The blood count was: Leucocytes, 8,000; polymorphonuclears, seventy-two per cent.; lymphocytes, twenty-four per cent. On the twelfth day after delivery the temperature, which had ranged about 100° in the evening for days rose to 101.8° with a pulse of 94. It was decided to operate and an incision was made in the posterior vaginal wall just above the hymen, at a point where there was a small opening in the wall, through which blood was slowly draining. About six to eight ounces of dark clotted blood, without odor, were removed, and the cavity was lightly packed with iodoform gauze.

On the following day the temperature rose to 103.4°, but the pulse was only 94. From this time on, the temperature steadily decreased, reaching the normal on the seventeenth day postpartum and con-

tinuing normal thereafter. Pelvic hematomata following delivery are very rare; the chief symptom during the internal hemorrhage is very severe and persistent pain in the rectum, and the recovery in this case was rapid after the incision and drainage of the blood mass.

AN INTERESTING CASE OF UTERINE INERTIA.

CASE IV.—The patient was admitted to the Harlem Hospital on November 18, 1918. The woman was a multipara, with a normal pelvis, who had had short easy labors, the last two being one hour each. The patient stated that the membranes had ruptured spontaneously five days before admission, and the previous night she had bled a moderate amount. Pains had been present since the day before, but the patient had been comfortable the entire day. No life has been felt during the day though the obstetrician thought the fetal heart was heard at 9 a. m. in the right upper quadrant. The cervix was long, soft, and admitted two fingers. The presenting part could barely be reached by vaginal examination, and no diagnosis of presentation could be made, though we believed that the presentation was not vertex. The meconium was stained, a small amount of foul smelling fluid was draining away. The uterus was tense, not tender, and no position could be made out. The patient's general condition seemed to indicate no intrauterine hemorrhage, and the diagnosis was primary inertia with a dead fetus.

The best treatment seemed to be the introduction of a large No. 5 de Ribes bag, and after full dilatation, the method of procedure could be determined upon. The bag was inserted at 4.30 p.m. At 10 p. m. the bag came out, the cervix was about four fingers dilated, and loose cranial bones were felt. There were no pains during the next eighteen hours, and the patient was in good condition. At 4 p. m. November 19th, the cervix was four fingers dilated, the head in R. O. P. position above the brim. There was a foul discharge from the vagina. Three doses of pituitrin were given without any effect upon the contractions of the uterus.

As there had been no progress, it was decided to perform craniotomy. The blades of the cephalotribe were applied, but at once slipped off, so the right foot was seized and easily brought out. Traction on the macerated foot failed to cause advance, and the cervix was found thick and contracted about the upper thigh of the fetus. The patient vomited and had a chill; the temperature was 102° rectal, the pulse was rapid, and the woman complained of back-ache and was very restless. A hypodermic injection of morphine sulphate, one quarter grain, was given, and the patient put to bed, where she soon "felt as well as before the operation." It was thought that with rest and slight intermittent traction, the cervix would undoubtedly dilate and delivery occur. At 8.30 p. m. the woman had two hard pains, and in five minutes the child was born. The fetus was not large, there was no hemorrhage, and the patient was in good condition. There was a mild febrile puerperium for seven days, after which recovery was uneventful.

This case will undoubtedly call to your minds similar cases of primary uterine inertia encountered in your own practice.

CÆSAREAN SECTION COMPLICATED BY SECONDARY SUTURE OF ABDOMINAL WOUND.

CASE V.—The patient, aged thirty-seven, had been married eighteen years, and had never been pregnant until about the first week of April, 1917, when she had her last menstruation. For several months she had no idea she was pregnant, but when first seen at my office in the latter part of September, the diagnosis of pregnancy was easily made and life had been felt for about a month. The pelvic measurements were normal, and there was a large mass of scar tissue in the left ischio-rectal fossa. A fistula which was present occasionally discharged. The patient was very nervous, and was a moderate user of alcohol and cigarettes.

On December 27th the blood pressure suddenly rose to 170, edema of the face and legs appeared, the urine contained five per cent. albumin, many red cells, no casts, and was scanty. On account of the age of the patient and being a primipara, the oxemia, and to a slight extent the scar in the ischio-rectal fossa, the patient was advised to have a Cæsarean section, to which she at once consented. At 9 p. m. a classical Cæsarean operation was performed and a living child weighing six and five sixteenths pounds was extracted. The uterus and abdominal walls were closed in the usual manner, and four retention sutures of silk gut were used. During the operation there was no hemorrhage, and it was estimated that the total blood loss during the entire procedure was not more than four ounces.

During the first few days after the operation the lochia were more profuse than usual, but at no time seemed sufficient to require packing. On Christmas morning, however, at 4:30 a. m., about fifty-five hours after operation, the house surgeon reported that the abdominal dressings had been soaked with blood. On the way to the hospital I called for Dr. Lester Unger, believing that a transfusion of blood might be necessary. While preparations were made for the closing of the wound, Doctor Unger made blood tests which are given below. The wound was found open during its entire length, no trace of catgut visible, the omentum lay in the bottom of the wound and a very small amount of dark blood clot was found adherent to the wound edges, but there was not one bleeding point. The wound was again closed with No. 2 chromic gut and retention sutures again placed. The patient was in fairly good condition, and stood the operation well.

Dr. Unger's blood report was as follows:

Hemoglobin	38 per cent. (Sahli)
Erythrocytes	2,000,000
Color Index	1 minus
Leucocytes	12,000
Blood platelets	100,000
Bleeding time.....	Longer than 10 minutes (Normal 4 to 6 minutes)
Capillary resistance test.....	Slightly positive
Puncture test.....	Negative

Because of the urgency of the condition an examination of a smear of blood was omitted. Only those tests were done which were necessary to establish a diagnosis. The prolonged bleeding time, diminished platelet count, positive capillary resistance test, led to a conclusion that the patient had a purpuric tendency. This plus the anemia and the clin-

ical history of persistent oozing was an indication for transfusion.

By the Unger method, 800 c.c. of blood was transfused, the patient's color became pink, her pulse was excellent. About an hour after the transfusion, pulmonary edema developed, but soon responded to treatment. The puerperium after the secondary operation was normal in every way, and the patient left the hospital in excellent condition. A blood count on January 19, 1918, showed 3,760,000 red cells, hemoglobin seventy per cent. The toxemia may have been partly responsible for the failure of the abdominal wound to close properly, but the blood tests, together with the history of bruising easily, seemed to indicate that in this case the purpuric tendency was probably the cause. The recovery after transfusion was complete and most satisfactory.

CÆSAREAN SECTION FOR TOXEMIA OF PREGNANCY.

CASE VI.—The patient was referred to me by her family physician on July 10, 1919, giving the following history: aged twenty-six, married one year, no pregnancy up to the present time. Three years before she had been operated upon for multiple infarcts with suppurative kidney, the right kidney being removed. There was no evidence of tuberculosis. The surgeon had advised her to become pregnant, and at the time of her first visit to me she appeared to be six to seven weeks pregnant, the last menstruation having been from May 7th to 14th. The pregnancy progressed normally up to December 31st, about seven months, when the urine suddenly showed albumin (ten per cent. by volume) acetone and diacetic negative. The blood pressure rose to 160, and under eliminative treatment the excretion of urine was satisfactory; another twenty-four hour specimen examined on January 2, 1920, showed a moderately large amount of albumin (1.5 grains to the ounce, eighty grains in the twenty-four hours), a trace of acetone, no diacetic acid. There were 4.8 grains urea to the ounce, a total of 263 grains for the day. The microscopic examination showed no blood, a moderate amount of pus, a small number of hyaline casts; apparently a pyelitis with renal involvement.

The danger of the situation was explained to the family, and conditions weighed carefully. We had the choice of interrupting the pregnancy of seven and one quarter months with the bag or bougie, leaving the patient constantly exposed to the danger of again becoming pregnant. With one kidney already possibly seriously involved, subsequent pregnancy seemed most inadvisable. The other plan of treatment consisted of performing the Cæsaean operation, thus insuring in the greatest measure the life of the small premature infant, and at the same time sterilizing the patient. The latter plan was selected as the better, and on January 3, 1920, at 9:30 a. m., a classical Cæsaean operation was performed, a male child weighing three pounds and four ounces was extracted in good condition, three small fibroids were removed, and the proximal ends of the tubes were excised, the uterus closed in the usual manner. The patient made a good recovery from the operation, and fortunately the child has done well also, weighing eight and one half pounds at

the present time. The blood pressure rose at one time to 190, but slowly fell to about 140 at the end of several weeks. The urine has continued to show albumin in varying amounts, with a few hyaline casts at times and a moderate number of pus cells.

On January 15th Doctor Bugbee examined the patient, and his report follows: Urethra congested, bladder capacity eight ounces without discomfort, fundus moderately congested, sphincter congested, trigone congested, ureteral orifices congested about the left side, length left ureter thirty cm., calibre normal, and urinary flow rapid and clear. Urine from left kidney (catheterized) colorless, water clear, acid, no visible sediment, albumin very heavy, urea six per cent., no casts, occasional red cells, very small number isolated and slightly massed pus cells, numerous isolated and occasional flaked ureteral epithelia, no crystals, no bacteria, radiograph negative.

The congestion about the left ureteral orifice and the trigone indicates an infection from the left kidney. The clear urine and negative findings other than the presence of albumin and pus in the catheterized specimen show that the infection is subsiding.

The nephritis unfortunately has persisted, showing the wisdom of interference, as Doctor Bugbee reported that on May 7th the urine while free from infection showed a heavy trace of albumin, and numerous very large hyaline, fine and coarse granular, epithelial and finely fatty casts.

The question naturally arises, "Should a patient with one kidney undergo the strain of pregnancy?" Also, if toxemia develops, as in this case, should the patient be allowed to run the risk of a subsequent pregnancy?

It is with the object of bringing out discussion on these points that the case has been reported.

THE RELATION OF APPENDICITIS TO INTRAPELVIC DISEASE IN WOMEN.*

By FRANK C. HAMMOND, M. D., F. A. C. S.,
Philadelphia,

Adjunct Professor of Gynecology, Temple University; Visiting Obstetrician to the Philadelphia General Hospital; Visiting Gynecologist to the Philadelphia Hospital for Contagious Diseases; Assistant Gynecologist, Samaritan Hospital, Philadelphia.

Authorities differ radically in regard to the relative frequency of appendicitis in the different sexes. Nevertheless it occurs with sufficient frequency in women to make it important to the gynecologist as well as to the practitioner. Clinical experience shows that the diagnostic problem is often a perplexing one, when it is necessary to differentiate between inflammation of the appendix and involvement of the internal organs of generation of the female. The diagnosis prior to puberty is comparatively easy. It is important to bear in mind that appendiceal and adnexal disease coexist in a great number of cases. Appendicitis in the female may be mistaken for pyosalpinx, ovarian abscess, suppurating ovarian cyst, torsion of the pedi-

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cle in ovarian cyst; ectopic gestation, abortion, or even for dysmenorrhea.

The position of the appendix has received a great deal of attention from various authors, and great stress has been laid upon its peculiarities of position. It is true that occasionally the appendix is found in peculiar places, but it is equally true that in the vast majority of cases the appendix and the symptoms it manifests are found in the right iliac fossa, a description of its position which, while it is restricted in area, is infinitely to be preferred to the definite points of McBurney. The surgery of the acutely inflamed appendix is truly the surgery of a region, and properly cannot be cramped within the space of a square inch. Occasionally the appendix is wholly or in part an extraperitoneal organ without complete peritoneal investment, and therefore is difficult to find. As a rule the appendix is found in the right iliac fossa pointing upward and inward, upward and outward, or downward and inward. Disease may distort it and alter its position, and adhesions may bury or obscure its normal relations or outlines. Two positions are of importance, because of their influence on diagnosis and operative removal; the so-called retrocecal or retrocolic position, and the pelvic position. In the latter the appendix points almost directly downward and is wholly or in great part within the pelvis proper. It is in this latter position that it invariably involves the pelvic viscera of the right side in women.

The teachings of the late Dr. J. B. Murphy, of Chicago, have left an indelible impression when we come to the consideration of the symptomatology of appendicitis, and in many ways it is well to follow his lead. I believe that his insistence upon the chronological order of the various symptoms is too dogmatic and it would be well for the clinician to be on his guard in this respect, and ever be ready to place reliance upon his examination of the patient, rather than upon his success in drawing from an acutely ill patient an exact chronological history in reference to the order of appearance of the so-called classic symptoms. The signs and symptoms to be borne in mind are as follows: Pain, nausea and vomiting, tenderness and rigidity, increased temperature and pulse rate, leucocytosis, and eventually the appearance of a mass. Rigidity of the abdominal wall is the mainstay of diagnosis in acute inflammation about the appendix, for upon the skillful elicitation of the sign of rigidity depends the correctness of the diagnosis in doubtful cases.

One should always take a careful history of each case, otherwise much valuable data will be overlooked, which would be helpful in making a correct diagnosis. The clinical history of some pelvic affections simulates appendicitis so exactly that a differential diagnosis is extremely difficult. In many cases the differential diagnosis is of importance chiefly from its bearing upon the technic of the operation, as in any case surgical intervention may be imperative; at other times palliative treatment may be indicated if pelvic disease is present, whereas, if it is an appendiceal attack, delay may cost the patient's life.

In the study of a case the questions which arise

are: Is the case one of appendicitis? Is it a case of pelvic disease? Or do lesions of both organs exist? Inflammatory disease of the right tube and ovary are most frequently confounded with appendicitis. The chief reliance is to be placed on the history of the onset of the attack. Acute pelvic inflammation is usually preceded by a vaginal discharge and sometimes dysmenorrhea; whereas, in appendicitis a history of digestive disturbances or of previous attacks of pain in the right side of the lower abdomen is given. In appendicitis the initial pain is likely to be colicky and general, and later invariably becomes localized in the right iliac fossa; while in pelvic disease it is more steady and less severe, the local pain and tenderness are situated more deeply in the pelvis and inguinal region, and the most exquisite tenderness is elicited by pressure over Poupart's ligament. With a supervening peritonitis the differential diagnosis is practically impossible. The source of error in the differential diagnosis between disease of the appendix and the adnexa is due to the spatial proximity of the two organs, and more particularly to the fact that the two processes are interdependent and often associated. An adherent appendix may infect a tube, or the latter become involved by a contiguous perityphlitic exudate. Conversely, appendicitis may develop secondarily when the appendix becomes adherent to the diseased tube, and a perisalpingitic process may extend to the cecum.

Ruptured ectopic pregnancy, pyosalpinx and ovarian tumors with a twisted pedicle are frequently mistaken for appendicitis. The sudden acute onset, often accompanied with nausea and vomiting, is strikingly suggestive of appendicitis; the pain however is seldom colicky. An accurate account of the events leading up to the attack, together with a careful bimanual examination, will usually make clear the diagnosis. Sudden agonizing pain at the onset, immediately followed by fainting and definite evidence of internal hemorrhage, are practically pathognomonic of ruptured ectopic pregnancy. The acute initial pain of appendicitis may be followed by syncope, but other evidence of hemorrhage is lacking. Ovarian cyst with twisted pedicle is usually easily recognized by means of a pelvic examination, under anesthesia if necessary. In all cases the most important factor in making a differential diagnosis between appendicitis and pelvic disease is the recognition of the fact that confusion may exist.

Appendicitis is not an infrequent complication of fibroid tumors of the uterus. When an appendicitis is acute and suppurative, the operation should be directed to the appendicitis alone when feasible, and the tumor disregarded. I have seen a few cases, however, in which the tumor was so large, that it was impossible to reach the appendiceal abscess until the tumor was first removed. I recall one case of hysterectomy, for fibroids, where a gangrenous appendix was found, although the condition was unsuspected.

At times it is most important to differentiate between gonorrheal pelvic peritonitis and appendicitis. Gonorrheal pelvic peritonitis rarely has a fatal issue, and in the acute stage it is amenable to medical treatment. The contrary is generally true of appendicitis.

Sometimes it is necessary to observe the patient for twenty-four hours before the question can be decided. When the appendix hangs over the brim of the pelvis it may be involved in a gonorrheal pelvic peritonitis. In this case, however, the prognosis, so far as the appendix is concerned, is no worse than that of the gonorrheal peritonitis, only the outer coats of the appendix being involved, and the infecting organism (gonococcus) differing decidedly from the streptococcus or the *Bacillus coli communis* of the ordinary appendicitis. In appendicitis frequently there is a history of previous attacks associated with indiscretion in diet, habitual overeating, and chronic intestinal indigestion. The pain at first is not well localized, the entire upper abdomen being more or less affected. Later it becomes localized about the appendiceal region. The gastrointestinal symptoms are more marked in appendicitis, the nausea, vomiting and constipation are more pronounced and less likely to quickly respond to treatment. The pain and tenderness in appendicitis are at a higher point, and more or less confined to the right side.

The diagnosis of coexisting affections is often extremely difficult, as the symptoms arising from the one affection may completely mask the other. When the patient is known to be suffering from some pelvic inflammation, the development of an appendiceal attack may unfortunately be attributed to an exacerbation of the pelvic disease. The greater severity of the abdominal and constitutional symptoms in appendicitis should suggest the complication. In doubtful cases an exploratory section entails less risk than delaying the operation until the diagnosis is made clear. In all cases of pelvic disease where there is a possibility of error, the abdominal route is preferable to the vaginal. Acute appendicitis, occurring in a patient who is known to be the subject of an ovarian cyst, naturally suggests torsion of the ovarian pedicle; fortunately early abdominal section is indicated in either case. The surgeon must be on guard when a tumor or other pelvic affection is discovered during the course of an examination in a case of appendicitis, not to mistake it for the sole cause of the symptoms.

Robert T. Morris considers that so many ineffective appendicectomies are done upon a basis of incomplete diagnosis that greater care should be exercised. The most important single diagnostic point upon which he depends is the following: Pressure with the examining finger on the abdominal wall an inch and a half to the right of the umbilicus and a trifle below, done deeply enough to bring out a response from the right group of the lumbar sympathetic ganglia. There is definite evidence that we are to look to the appendix for the source of that particular irritation, provided that the left group of sympathetic lumbar ganglia is not hyperesthetic. This applies to the chronic cases.

Appendicitis complicating pregnancy, labor and the puerperium demands especial consideration on account of the diagnostic difficulties and the extreme gravity of the complications which may arise and menace the life of both mother and child. It is now generally known that abdominal pains and tenderness developing during pregnancy may be due to appendicitis; that abortions may be caused, and that

puerperal fever may result from it. It is not necessary to assume a direct etiological relationship to account for the occurrence of appendicitis during pregnancy, and probably in the majority of cases the connection is accidental. The normal appendix is subject to the same conditions during pregnancy as at other times; but when the appendix has been prepared by antecedent disease, or when adhesions and kinking are found, due to the alteration in its anatomical relations, there is more or less danger of exciting an acute attack. The forcible contractions of the uterus and its sudden change in position after delivery are extremely dangerous when the appendix is adherent to the uterus or adnexa, and especially when the uterine wall forms part of the wall of an appendiceal abscess. The diagnosis is often difficult. A typical case is easily recognized, but if the pain and tenderness are not definitely localized, and if constitutional disturbances are slight the symptoms are often mistaken for threatened abortion; and if the attack occurs during labor the appendiceal symptoms may be attributed to the labor. Appendicitis developing after delivery may simulate puerperal infection, and may be accompanied by an infection of the uterus.

There is another class of interesting cases, namely, in women who at each menstrual period suffer from pain in the right iliac fossa, which simulates, at each period, an attack of appendicitis. These patients are invariably not relieved until the appendix has been removed.

At times, due to a very fat abdominal wall, or diseased adnexa which are not palpable, and other difficulties that may arise in the physical examination of the patient, it will not be possible to say whether there is coexisting appendiceal and adnexal involvement. The condition will have to be classified as an acute surgical condition of the lower abdomen and an incision made that will afford the best approach to the suspected pathological condition.

Glado has described what he terms the appendiculoovarian ligament, a peritoneal fold which is continuous with the mesoappendix and passes forward to merge with the superior border of the broad ligament. This is a fairly constant anatomical structure, and permits of more or less free communication between lymphatics of the joined organs, as has been demonstrated by injecting specimens with colored fluids. The appendix has been found to be adherent to the ovary, the tube, the broad ligament, and to the uterus.

The discussion of this subject may be concluded as follows:

1. The more we see of appendicitis the greater respect we have for the disease. Those who have not had a large experience will find that what at first seemed to be a straightforward disease has become one of the most difficult and treacherous. The only means of distinguishing the different types of the disease is a large experience, and even then it is frequently difficult.

2. A careful history should be taken of every patient.

3. The right chest in every instance should be carefully studied.

4. A bimanual or rectoabdominal examination

should be made as part of the physical examination of every female patient beyond the age of puberty.

5. At the time of operation if an incision is made for the exposure of the appendix, irrespective of the physical condition of the appendix, the surgeon's finger should be passed down into the right pelvis to palpate the right adnexa.

3311 NORTH BROAD STREET.

PREGNANCY IN ADVANCED CARCINOMA OF CERVIX.

*Operative Delivery by Caesary; Recovery.**

By GEORGE EREY SHOEMAKER, M. D., F. A. C. S.,
Philadelphia,

Gynecologist to the Presbyterian Hospital.

The problems of the individual case are often complicated by the conditions which are found when the patient is first seen. These conditions may practically constitute an emergency and the choice of operation may be limited, as appears in the following instance.

CASE.—Mrs. A., forty-seven, para VII, was brought in by ambulance when actually in labor, with a history of pulmonary tuberculosis and asthma of long standing. There had been no early symptoms of pregnancy. For six months there had been irregular uterine hemorrhage and increasing abdominal enlargement, with loss of weight. Within two days the hemorrhage had been extreme, requiring packing by her physician. There were laborlike pains, chills, temperature of 102° , pulse 124, leucocytosis 28,000, rising to 32,000. Apparently the membranes had ruptured within twenty-four hours.

On examination an irregular mass some three and one half inches in diameter, globular in form, was found in the vagina. It was recognized as a growth infiltrating the entire cervix and extending well beyond the vaginal junction into neighboring tissue. The cervical canal had not begun to dilate, there was no tendency to obliteration of the cervix, the cord was prolapsed, the soft fundus was at the navel. The diagnosis was pregnancy with dead child; epithelioma of cervix; impossible delivery by natural processes; patient in labor with sapremia, hemorrhage, and beginning exhaustion.

The obstetrical problem presented was: 1. No radical operation could be undertaken with the hope of eradicating all the cancerous disease. 2. Abdominal section with removal of uterus and contents, including the cancerous cervix, in a woman who had been in labor two days, who had been repeatedly packed for hemorrhage outside the hospital, and who was sapremic and in poor condition, afforded a prospect of almost certain death. If labor continued, the rigid cancerous cervix might tear off with fatal hemorrhage, but could not dilate.

It was argued that if the cancerous area of the uterus were rapidly removed with scissors and cautery and the stump cauterized, the field would be made relatively nonabsorbent and relatively sterile.

At the same time, the remaining portions of the uterus would be dilatable, so that with craniotomy of the dead child the uterus could be rapidly emptied. The cord had prolapsed above the vaginal packing and had previously separated at two points. Under gas ether the electrocautery was used to separate the bladder attachment in front, to peel it well off, and to ring the diseased area all around. The growth was seized with lionjaw forceps and rapidly cut away with scissors and cautery until no rigid tissue remained. The artificial opening into the uterus, now admitting several fingers, was surrounded by readily dilatable tissue. Gloves and instruments were now changed. Two fingers and narrow retractors were inserted into the uterus as guides. The head was seized by lionjaw forceps. The brain substance escaping reduced the size of the cranium; one c. c. of pituitrin was administered. The head and body were readily delivered by traction and pressure on the fundus, followed immediately by the placenta which apparently had become already detached. The placenta was pinkish red in color; the body of the child was darkly congested; female; length twenty-eight cm. There was surprisingly little hemorrhage from within the uterus and comparatively little from the cauterized uterine ring. No ligatures were required. A packing of iodoform gauze and plain gauze was introduced into the fundus and continued into the vagina, which absolutely controlled all bleeding. The bladder was not injured. The patient returned to her bed with a pulse of 128, which was only four beats higher than when she left it. The amount of bleeding in the next two days was small and rapidly diminished. The gauze was entirely removed in forty-eight hours, a light iodoform gauze dressing being replaced in the vagina.

The subsequent progress of the patient was not complicated by abdominal or uterine symptoms. There was no tympany, no tenderness and no bleeding. The pulmonary tuberculosis increased in severity, the right lung giving evidence of extension of the old disease. At the end of three weeks the patient was out of bed, eating a full diet, with no soreness or pain, very slight vaginal discharge, no bleeding. Involution had progressed normally. There was no evidence of localized pelvic inflammatory disease. There was some irregular fever with perspiration at night and cough, due to the lung condition. The leucocyte count was 12,400; the pulse 96. The report of the pathological laboratory was squamous celled carcinoma. As radical operation for removal of the disease is out of the question, the future treatment will be palliation with radium.

In pregnancy at term with a living child, in the presence of extensive cancerous disease of the cervix, in the absence of infection, the operation of election would be Caesarean section, with or without an attempt to remove the cancerous cervix. The conditions here presented did not admit of such a choice. The method adopted shows what may be done by cauterization and opening the uterus well forward under the reflected bladder. The result has vindicated the method selected. It is not to the advantage of the mother to apply the increased risk

*Read before the Obstetrical Society of Philadelphia, April 1, 1920.

of a hysterectomy, if necessary to leave cancerous tissue remaining.

In the nonpregnant advanced carcinomatous uterus, one cuts and burns away the gross disease with surprising freedom from hemorrhage and often with a prolonged period of improvement. In the application of this procedure to the uterus pregnant six months, one might fear greater hemorrhage, but by avoiding direct severance of main vessels at the sides, the cooking by the cautery controls bleeding well, while ample dependent drainage is secured for the uterine cavity by opening it below.

1906 CHESTNUT STREET.

PRESERVATION OF THE PROCREATIVE FUNCTION IN WOMEN.

BY FRANCIS WARD LANGSTROTH, M. D.,
New York,

Consulting Gynecologist to the New Jersey State Hospital, Trenton;
Visiting Surgeon, St. Bartholomew's Clinic
and Hospital

Perhaps the title of this paper might better have been the conservation and restoration of the procreative function in women, since it is not my purpose at this time to enter into a discussion of the psychological, sociological, and economic problems which are invariably involved in all the different phases of sex relation, prophylaxis, and hygiene. It is rather to consider the pathology of some of the more common diseases of the female generative organs and to point out what conservative surgery can offer as a cure for these conditions.

While we have the greatest respect for Dr. Ephraim McDowell, who performed the first ovariectomy in this country, at Danville, Kentucky, on December 13, 1809 (1), still we cannot but wish, when we consider the desecration to which the ovaries have since been submitted (2), that before this gynecological pioneer showed us how, he had first shown us when to remove ovaries. Looking back upon this wholesale unsexing of the human female, with all its attending mental anguish and physical suffering, we can free ourselves from gloom by realizing that the dawn of a brighter, saner, and more conservative era has awakened. The golden light of knowledge now pierces the darkness of ignorance so that in the future we shall recognize and remove the cause of ovarian and tubal disease, conserving all but the most hopelessly involved organs.

Let us now review those advances in medical and surgical knowledge which make possible this new era in gynecology to which I have just referred. Billings was one of the first to call our attention to the rôle of focal infections as a causative factor in general and local diseases (3), and although in the hands of thoroughly capable diagnosticians and surgeons his ideas have been most fully and abundantly proved to be correct, how many physicians, yes, and surgeons too, are today still treating the symptoms and operating upon the results of these focal infections without a careful systematic search for the original foci of the disease.

Is it not strange that while for years we have been ready to attribute the cause of tuberculosis,

pneumonia, contagious and infectious diseases, and other pathological conditions, to the invasion of the body by various pathogenic bacteria, many still hesitate to accept the fact that most of these same bacteria become domiciled in certain favorable localities in the body and that these in their parasitic existence may become the cause of chronic diseased conditions of the whole system. Certain structures of the body seem especially prone to harbor pathogenic bacteria, and other structures to suffer from the chronic toxemia and to show the pathological changes and symptoms produced by this toxemia, only later becoming themselves actually infected. Thus primary infections of the tonsils, teeth, antrum, and sinuses are only too frequently followed by exophthalmic goitre, arthritis, nephritis, endocarditis, and other pathological conditions. Chronic primary foci in the appendix are undoubtedly followed in many cases by changes in the cecum and colon, the omentum, gallbladder, and stomach.

I have digressed thus from the subject of this paper only to bring before you more forcibly the fact that focal infection of the cervical endometrium is the primary cause of the greater proportion of all diseases of the female generative organs, and also a very potent factor in many conditions of ill health in the female. For many years we have recognized chronic inflammatory conditions of the uterus and pelvis. The symptoms are well known to all: Leucorrhea, menstrual disturbances, dysmenorrhea, amenorrhea, metrorrhagia, the more or less constant backache and bearing down pains, headache and malaise, all accompanied by more or less digestive disturbance. These in brief are the classical symptoms of uterine and pelvic disease which we have been accustomed to ascribe to endometritis.

Let us consider what really occurs in these cases: An infection takes place in the endometrium of the cervical canal. The infecting organism may be the gonococcus, streptococcus, staphylococcus, colon bacillus or other organisms which have not yet been thoroughly studied. It is not the purpose of this paper to discuss how these infections occur. Some of them, of course, are of gonorrheal origin, others follow miscarriages and confinements, and I believe quite a number occur in early infancy. When the child suffers from diarrhea the feces readily enter the short vaginal tract, and thus the cervix becomes the site of a colon bacillus infection which may persist for years. The fact to emphasize is that these infections always remain, so far as the endometrium is concerned, confined to the endometrium of the cervix. There is no such disease as endometritis of the uterine body. Nature has evidently placed a barrier to infection at the internal os.

Curtis examined a series of 117 cases in which the uteri had been removed at operation, and found that only a small proportion of them had any bacteria in the cavity of the uterine body; nor did he find histologically any of the classical signs of inflammatory changes. His work agrees with that of Hitchman and Adler, and of Kundrat and Engleman (4). These infections of the cervix then do not spread up through the cavity of the

uterus, but, as I stated in a previous paper (5), they spread, as Sturm Dorf first pointed out, through the lymphatics, which course upward from the lymph spaces in the cervix through the myometrium and out into the broad ligament, and thus to the tubes and ovaries (6).

This ascending lymphangitis eventually leads to the formation of connective tissue around the muscle bundles of the uterus, which connective tissue in turn interferes with the rhythmical contractions of the uterine muscle, causing painful menstrual periods, and at the same time producing uterine congestion, for the veins of the uterus and broad ligament, having no valves, depend upon the rhythmical uterine contractions to aid in the circulation of the blood. After this lymphangitis has lasted for some time there are produced changes in the tubes and ovaries. The tubes become thickened and distorted; their lumen is often stenosed or occluded. Their fimbriae become agglutinated so that they are unable to transmit the ovum to the uterine cavity, or perhaps an ovum impregnated in the tube is unable to escape into the uterus, and thus sterility or ectopic pregnancy may follow.

The capsule of the ovary becomes thickened so that the graafian follicles often do not rupture on time, thus causing amenorrhea. The ovary becomes studded with graafian follicular cysts, some of which may reach a large size. Again, a graafian follicle having ruptured may, on account of the thickened condition of the ovary, remain open and thus keep up the menstrual flow, causing metrorrhagia, or two follicles may rupture within a short time of one another, causing metrorrhagia.

These secondary conditions in the tubes and ovaries vary according to the virulence of the infection and the resistance of the patient. In very acute infections we are likely to see a pelvic cellulitis or pelvic abscess; at other times acute pus tubes and ovaries. In the more chronic cases the tubes, ovaries, and uterus are bound down in the culdesac by plastic exudate and resulting fibrous tissue, so that at operation they are released with the greatest difficulty. In some cases, either on account of the arrangement of the lymphatics or because of the close anatomical relation between the tube and ovary and appendix on the right side and the pelvic colon on the left, these latter structures suffer from marked inflammatory changes, often resulting in the formation of exudative fibrinous adhesions, and in one patient whom I operated upon recently there was found a large inflammatory ulcer of the pelvic colon exactly at the place where the tube rested upon this part of the sigmoid.

In my service at the New Jersey State Hospital at Trenton, there were made recently cultures from sixty cases of endocervicitis. An analysis of the growths obtained from these cultures showed the following bacterial findings: Cases cultured, sixty; negative, six; *Streptococcus hemolyticus*, one; streptococci not specified, nine; *Staphylococcus albus*, four; staphylococci not specified, three; *Micrococcus albus*, four; colon bacillus, nine; *Bacillus pyocyaneus*, one; common organisms, five; mixed infections, eighteen. Among the mixed infections were found some of the various combina-

tions: 1, *Streptococcus aureus* and gram negative bacteria; 2, gram positive and coccus not determined; 3, streptococcus, staphylococcus and tubercle bacilli; 4, streptococcus, staphylococcus, and *Bacillus subtilis*; 5, *Bacillus coli* and *Bacillus Hoffmanni*; 6, gram negative bacillus, *Staphylococcus albus*, and *Bacillus coli*; 7, *Bacillus coli* and gram negative; 8, staphylococcus and *Bacillus coli*; 9, staphylococcus, streptococcus, and *Bacillus coli*; 10, staphylococcus and smegma bacillus; 11, streptococcus and *Bacillus coli*; 12, *Micrococcus albus* and Friedlander bacillus; 13, streptococcus and micrococcus. Gonorrheal infections have not been seen in this series of cases. In about one hundred of these cases, in my private practice, the patients have been operated upon for the removal of this focus of infection in the cervix, by a method to be described later in this paper. Ninety-five per cent. of the patients operated upon have been cured of all pelvic symptoms, and a cessation of the leucorrhea has resulted in all but a very few cases.

In a series of sixty patients operated upon in my service at the New Jersey State Hospital at Trenton, a preliminary résumé shows sixty per cent. with marked mental improvement and ten per cent. restored mentally and able to resume their former places in life. This work, however, will be reported in a separate paper.

To confine ourselves more closely to the subject of this paper, namely, the preservation of the procreative function in women, we must consider that in order to procreate, a woman must first have reproductive organs in a fair state of anatomical and functional health. In order that she may become pregnant it is necessary, first, that the secretions in the vaginal canal are not detrimental to the spermatozoa; it is known that strongly acid secretions and pus cells from an endocervicitis will destroy the spermatozoa and thus prevent pregnancy; second, that she ovulates, and third, that she possess tubes capable of transmitting the mature ovum to the uterine cavity. It is necessary that after conception takes place her uterus shall be capable of retaining and maturing the fetus until full term, and then by the mechanism of labor delivering the mature fetus into the world. Of course high amputation of the cervix by the Schroeder method interferes both with conception and with carrying and delivering the fetus if conception occurs. This has been fully discussed by Leonard, and very recently by Pavlic (7). On the other hand, tracheloplastic operations, such as the Emmet, do not remove nearly all of the infected endometrium of the cervix, and therefore do not prevent or cure the pathological changes just described as following chronic endocervicitis. The use of the uterine curette only aggravates the condition as it is not only unable to remove all the infected cervical endometrium, but also is likely to carry the infective organisms into the healthy uterine cavity. At the same time it often removes so much of the corporeal endometrium as to interfere seriously with the menstrual period. However, if the endocervicitis is allowed to continue eventually, in most cases, the pelvic organs will become so diseased that unilateral or bilateral salpingo-oophorectomy or hys-

terectomy will become necessary, and either of these operations, of course, finally terminates the individual's procreative powers and often leaves her in a permanent neuroasthenic condition.

What then can we do to preserve the procreative function in women? Or, what is the same thing, to save women suffering from disease of the generative organs from, on the one hand, radical mutilating and unsexing operations, and on the other, a steady advancement of the disease which will eventually leave the unfortunate patient just as sick and hopeless as the radical surgical procedures just mentioned? I feel now as a result of my personal observations of 100 patients in my private work and over sixty in the gynecological work at the New Jersey State Hospital at Trenton, who have been operated upon for removal of the focus of infection in the cervix by a method invented and first described by Dr. Arnold Sturmudorf (8), that I can truly say that much can be done for these unfortunate women.

I desire at this point to present very briefly, in illustration of some of the contentions of this paper, three case histories: First, a case occurring in my service at the New Jersey State Hospital at Trenton which illustrates the possibility of the spread of infection from a diseased tube to the adjacent bowel; second, a case from my private practice which illustrates the reestablishment or rather the establishment of the menstrual cycle upon a normal basis; in this case the menses had never before been normal, either as to time or characteristics; third, a case referred to me recently, which illustrates a return to mental equilibrium and stability by the removal of her foci of infection.*

CASE I.—E. R.; preliminary examination by Doctor Langstroth, October 2, 1919; retroverted, slightly prolapsed uterus, with infected cervix. A conical plastic enucleation of the cervix was recommended, and fixation of the uterus from above. If found that the cervix could not be brought down for satisfactory enucleation, hysterectomy might be indicated.

Operative history.—Extirpation of both tubes; appendectomy and resection of the sigmoid, performed December 18, 1919, under the direction of Dr. Henry A. Cotton, medical director, New Jersey State Hospital, at Trenton; Dr. Francis Ward Langstroth, of New York, surgeon to gynecological division; Dr. Jerome Lynch, of New York, surgeon to gastrointestinal division; Dr. Hicks, of Trenton, New Jersey, anesthetist. Anesthesia was begun at 2:45 p. m.; operation was begun at 3:15 p. m.; operation ended at 5:05 p. m.

Operative findings (Doctor Langstroth).—The left tube and ovary were adherent to the sigmoid. There was marked inflammatory condition of the tube, which was congested, swollen and thickened. A rather extensive ulcer of the sigmoid was found where the tube was adherent to this structure. The left ovary contained a large cyst. The right tube and ovary were markedly congested. This ovary contained numerous small retention cysts. There were three cysts in the peritoneal layer of the left

tube. The right tube and ovary were bound down also with rather dense adhesions. Both tubes were resected, the ovaries were left, and the broad ligament turned in so as to leave no raw surfaces. The uterus resumed a normal position after the adherent tubes were freed. By preserving the ovaries, menstruation in this case will not be interfered with. The cervix was still infected and would have to be enucleated at a later date.

Operative findings (Doctor Lynch).—On the apex of the sigmoid there was a depression or dimpling which on palpation gave the impression of an excavating ulcer. This was probably due to the inflammatory tube being adherent to the sigmoid. No glands were found. Just above the cecocolic sphincter was a marked elbow deformity, with adhesions of the omentum to the base of the triangle. There was some doubt as to whether this ulcer was malignant or not. It was decided that it was not malignant, but in view of the narrowness of the bowel, it was decided to resect. The bowel was resected. The anastomosis was afterward attached to the parietal peritoneum, the sigmoid was sutured to the peritoneum on both sides, and the drain was put in the aboral end of the wound. Wound closed.

CASE II.—Mrs. X., thirty-four years old; two children, very difficult labors; oldest child eleven years old; second child died a few hours after birth, evidently from fracture at base of skull. Patient had never been robust, but had remarkable endurance and recuperative powers. Menstruation started at about thirteen years of age, was never regular, and was accompanied by a good deal of pain. The flow was dark and clotted and the period prolonged for a week or more. Menstruation occurred only about once in two or three months, and when the patient was about sixteen years old the periods stopped for nearly one year. The family doctor thought she had tuberculosis. Had always had one or two very severe headaches every month, accompanied by persistent vomiting. For the past fifteen years these headaches had not been quite so frequent, because they seemed to accompany the menstrual period, which had been very irregular, as mentioned above. These headaches could be brought on by the administration of corpus luteum, and I have come to the conclusion that this patient had an anaphylactic reaction to her own corpus luteum secretion. On account of these nervous symptoms she was operated upon about seventeen years ago; fixation of right kidney, without relief. Nine years ago she was operated upon for acute appendicitis, and the appendix broke during removal. She seemed better during the following year, but I believe this was only partly due to the appendectomy, although the appendix showed three distinct areas of scar tissue in various stages of contraction, indicating former attacks of inflammation, and partly to a complete rest and vacation that she had had the summer following the appendectomy. Her cervix was severely lacerated during the first labor; it had undoubtedly been infected for many years, as she had been under treatment for pronounced leucorrhea when seventeen years of age. An attempt

*The history of Case III was omitted on account of lack of space. It will appear in the author's reprints.

was made by some surgeon to repair this about six years ago, but the resulting condition was worse than before the operation. Three years later her second child was born. Two years ago her tonsils were enucleated. She obtained some benefit to her general health from this operation. In December, 1918, she flowed twice; in January, 1919, she missed her period. Early in February, 1919, she was taken during the afternoon with severe cramplike pains in the abdomen, low down on the left side. These pains were very severe so that she had to lie down. I examined her at this time and found a very sensitive mass the size of a lemon in her left pelvis, apparently connected with the left tube or ovary. The right side was negative and the uterus in normal position. The cervix was lacerated, nodular, and firmer than normal; it was evidently infected.

A diagnosis of ovarian cyst with twisted pedicle was thought probable, although the possibility of ectopic pregnancy was thought of, but the symptoms did not seem severe enough for this condition. To be safe, however, the operation was performed that evening. Conical plastic enucleation of the cervix was carried out with extreme difficulty on account of the scars and loss of tissue resulting from the former attempted repair of the cervix. By careful dissection a satisfactory flap was obtained, the diseased tissue was removed, and the os successfully relined. The abdomen was opened in the median line so as to give an opportunity to repair an extensive separation of the rectus muscle which had resulted from her previous pregnancies.

The uterus was found normal, except for two minute fibroids which were removed. The right tube was congested, and the ovary on this side contained several small retention cysts. The left tube was markedly congested but not adherent. The left ovary was almost replaced by a multilocular retention cyst which had a rather broad pedicle. The cyst was acutely inflamed. This cyst was resected, leaving what ovarian structure was not damaged. The rupture of the abdominal wall was closed by careful suturing. Recovery was uneventful. During the past year the patient has menstruated every month on time, for the first time in her life. The flow has been normal in color, there has been no pain, and the time of flow has been reduced from seven to eight days to four to six days. The headaches still continue in a moderated form. They probably do not last as long, because the graafian follicle is more quickly absorbed, as is shown from the diminished time of the menstrual period. I believe the headaches will last in this case till after the menopause. Her general health during the past year has been the best it has ever been, despite the fact that she has been under severe nervous strain on account of severe sickness of members of her family. The remarkable point in this case is the establishment of the menstrual function on a normal basis after both ovaries had suffered extensive damage from the prolonged infection.

Summary and conclusions.—The female reproductive organs must be in a fair degree of anatomical and functional health in order that the woman may successfully procreate. As a result of my observations I believe that fifty, perhaps seventy-five, per

cent. of all parous, and twenty to twenty-five per cent. of all nulliparous women, have infections of the cervical endometrium. Any marked increase in the amount of secretion so that it becomes noticeable at the vulvar orifice (commonly recognized as leucorrhoea) is an almost positive indication of cervical infection, since the vaginal mucosa is free from glands, and any secretion from it is a transudate and not an exudate, and the cervix does not over secrete unless it is infected. The majority of women suffering from endocervicitis will eventually need surgical treatment. Uterine infections are primarily located in the endometrium of the cervix up to the internal os. We almost never see an endometritis of the corporeal endometrium. The infection from the endocervicitis spreads through the lymphatics, causing the various diseased conditions of the uterus and adnexa described in this paper. They never pass upward through the uterine cavity. The only method of cure in these cases is complete removal of the endometrium of the cervix up to the internal os, with a careful relining of the denuded area with a flap of mucosa from the vaginal surface of the cervix. This operative procedure should be carried out only before the tubes and ovaries are hopelessly diseased. After extensive study I believe it can be determined which patients can be cured by this method of operation in nearly ninety per cent. of all cases examined.

Technic of operation.—This operation, invented and first described by Dr. Arnold Sturmdorf (9), consists of making a circular incision completely around the vaginal surface of the cervix, after first securing the cervix with proper forceps. This incision should be as near the external os as possible, at the same time avoiding any diseased mucosa. The vaginal mucosa is now dissected from the cervix all the way around, well up to the vaginal vault, so as to form a complete cylindrical flap composed only of mucosa. Care must be taken to avoid injury to the bladder, circular arteries and rectum. The denuded cervix is now secured and drawn downward and outward, and the whole cervical endometrium removed up to the internal os with a special knife. No muscle tissue is removed, so that the functions of the cervix in labor are not interfered with. Two special mattress sutures are now inserted to draw the flap of vaginal mucosa up to the internal os and thus reline the cervix. In cases where the pelvic disease is advanced to some extent the abdomen should be opened and hopelessly diseased organs removed, always allowing for the recuperative powers of the tubes and ovaries when the original focus in the cervix has been removed. As stated above, I now have under observation over seventy-five patients who have been operated on by this method. In all these cases the results up to the present time, both as regards pelvic condition and general health, are most gratifying.

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17 EAST THIRTY-EIGHTH STREET.

CASE OF UTERUS AND BOTH OVARIES IN INDIRECT INGUINAL HERNIA SAC.

By NELSON A. LUDINGTON, M. D.,
New Haven, Conn.

The unusual contents of a hernial sac is the reason for recording this case. I have been unable to find record of similar condition.

CASE.—V. S., female child aged nineteen months. Full term, normal birth. About a month after birth a swelling was first noticed by the mother over the left external inguinal ring. This swelling remained constant in size, and did not disappear when child was asleep. No truss was applied.

The patient first came under the observation of Doctor Smirnow who failed in several attempts to reduce the sac. He noted the hard nodular character of the mass and inclined to the diagnosis of a cyst under tension. The examination showed a symmetrical swelling over the left external inguinal ring the size of a silver dollar, not adherent to the superficial tissues and freely movable on the deep structures. It was dull to percussion and gave only a suggestion of an impulse when the child cried vigorously. To palpation, the mass under the skin was hard and nodular, apparently not very sensitive, and refused to yield to taxis. In spite of the history of irreducibility and the absence of a history of vomiting, I felt that it was probably an omental hernia.

At operation the sac was found to contain the uterus, both tubes, both ovaries, the broad ligament, and a small knuckle of gut presented itself during the procedure. The presence of the ovaries lying close to the uterus gave the nodular sensation which was found on examination. The deep epigastric artery was seen on the mesial side of the sac, which should therefore be classed as an indirect hernia. The sac was intimately adherent to the cremaster fibres and infundibuliform fibres. I believe the hernia was congenital. The operation performed was a routine herniotomy. The convalescence was uneventful.

1252 CHAPEL STREET.

TECHNIC OF VAGINAL PALPATION OF THE URETER AND URETEROTOMY.*

Their Advantages and Possibilities.

By A. M. JUDD, M. D., F. A. C. S.,

Brooklyn,

Gynecologist to the Kings County, Jewish, Long Island College and E. N. Y. and Brownsville Hospitals; Consulting Gynecologist, St. Joseph (Far Rockaway) Hospital; Swedish Hospital; East New York Dispensary; Consulting Obstetrician, Coney Island Hospital; Eastern District Hospital and Dispensary.

It is an aphorism in the profession that the difference between the general practitioner and the specialist is that the latter always makes a rectal examination. One might add that the difference between the tyro in gynecology and the master is that the latter palpates the ureters. Quite frequently vaginal palpation of the ureters reveals a source of disturbance previously unexplainable.

On a previous occasion I have discussed the technic of palpation of the ureters *per vaginam* (1), and I will quote from the previous paper at length in order that the subject of the evening may be better understood.

At that time I stated: "About two years ago we began in our clinic to feel the pelvic portion of the ureter while making vaginal examinations, and as time went on and we became more adept we arrived at the conclusion that one has not made a complete vaginal examination nor a complete dictation unless, in addition to the usual findings, he has included the ureters. It is as important as the palpation of the tubes and the normal ureters are more easily palpated than the normal tubes, and they can be felt in ninety per cent. of the cases during routine vaginal examination. Some of the writer's friends seem to doubt the palpability of the ureters, and this article is written with the end in view that he may be able to prove that they are palpable."

The ureter, in its course within the pelvis, lies in front of the internal iliac artery and crosses the inner aspect of the obturator nerve and vessels, and of the obliterated hypogastric vessels. About the level of the ischial spine the ureter bends somewhat inward above the fascia of the pelvic floor to reach the bladder, passing beneath the lower part of the broad ligament of the uterus, and lies to the outer side of the cervix uteri and upper part of the lateral wall of the vagina. It is accompanied in the lower part of its course by the uterine artery, which crosses it on its anterior aspect not far from its termination.

In the early seventies gynecologists began to talk about the approach to the ureters for the purpose of diagnosis, but it was not until 1875 that the ureter was catheterized by Simon, who was guided by the finger, which was placed in the bladder after urethral dilatation. Pawlick, in 1880, entered the ureter directly, guided by external anatomical landmarks. Sängner (2) stated that he was placing before the medical public something that was entirely new, citing cases with their symptomatology and physical findings of pathological conditions of the pelvic portion of the ureters. These cases were

*Read at a stated meeting of the Section in Obstetrics and Gynecology of the Buffalo Academy of Medicine.

mostly those that had been treated for long periods for cystitis, and he remarked that it was peculiar that he had not before included palpation in his vaginal findings.

The subject has received scant attention since that time as the cystoscope has withdrawn atten-



FIG. 1.—Palpation of the ureters.

tion with its finer methods of diagnosis of bladder, ureteral, and kidney conditions from the more ancient method of palpation. Gynecologists have seemed satisfied with their more gross findings in the pelvis, to the exclusion of the finer points in the technic. In all the recent published references to palpation of the ureter the statement is made that only that short portion of the ureter which is in contact with the anterior vaginal vault is accessible to palpation. The only exception to this is the original article published by Sanger, in which he states that the ureter is palpable from the base of the bladder into the parametrium and even higher.

In Kelly and Burnham's book we find the short, trite statement that the normal ureters can, in most cases, be readily palpated vaginally, qualifying the statement that the pelvic ureteral tracts can be traced in the vagina from the ureteral orifices at the trigonum back to the broad ligaments at the side of the cervix. Dudley in his work on gynecology, published in 1913, stated that inflammation of the ureter, as indicated by tenderness on palpation *per vaginam*, if unrecognized, often leads to disappointment in the treatment of cystitis.

The normal ureter, according to my belief, is easily palpable from the side of the pelvis, just above the spine of the ischium, although in some cases it lies as much as four cm. above the spine, where it lies underneath the peritoneum and previous to entering the broad ligament in the course of its entrance into the bladder. Undoubtedly in the case of a thickened ureter from ureteritis, or from any cause whatever, it can be easily palpable to a far greater extent, as has been exemplified in some of our own findings.

Contrary to the general method advised, which is that palpation be made for the ureter in the anterior

vaginal fornix, I suggest beginning at the lateral vaginal fornix, using the left index finger for the left ureter and the right index finger for the right ureter. The normal ureter presents itself as a slender cord, with its convexity outward and forward, and with a restricted mobility, due to its anatomical relationship with the peritoneum and side of the pelvis. It is smaller than a goose quill, feeling about the size of an ordinary leather shoestring. It is best palpated by sweeping the finger above the point of its location and then slightly bending the ends of the fingers, as one might in picking the strings of a guitar, sweeping them down over the ureter, straightening the finger out and going back and bending it again before going down, always getting the feel of the ureter from above downward, and not from below upward.

Palpation of the ureters opens a great diagnostic field. Among conditions discoverable are the following: An acute ureteritis, diagnosed by simple tenderness along the line of the ureter. Chronic ureteritis and periureteritis are shown by tenderness and thickening; the greater the extent of the periureteritis the greater will be the lessened mobility of the ureter. Tuberculosis of the ureter and kidney gives a thickened, nodular feeling, with tenderness and restricted mobility.

Calculi and gravel in the ureter furnish a most brilliant field for diagnosis. It is my belief that these conditions can often be detected where the waxtip ureteral catheter fails to disclose a stone, particularly if the stone is smooth and pocketed. Further and larger experience than I have had at present in the surgical relief of ureteral calculi will, I believe, result in simple removal of the calculus by an incision into the ureter *per vaginam*, although I admit that in the first case offering where such an operation is possible the abdo-



FIG. 2.—Examining right suspensory ureter.

men will be first opened in order more readily to care for a possible accident in the way of cutting the uterine artery. This is simply as a matter of precaution and not because I expect such accident to happen.

Pyelitis of the kidney gives a thickened, tender,

pelvic ureter. Palpation of the ureters in pyelitic conditions in pregnancy is especially valuable. Double ureters may also be palpated. Sânger makes a statement that the pelvic portion of the ureter should always be palpated before undertaking and completing any kidney procedure. This can be carried out in the male through the rectum. Parametrial exudates and bands from old, extensive tears, which displace, surround, constrict, or kink the ureter, cause ureteritis and symptoms which are often mistaken for cystitis, and local treatment of these parametrial bands and exudates will result in a complete symptomatic cure. The results following the absorption of parametrial exudates may cause conditions which will require surgical relief of the scar formation which interferes with the patency of the ureters.

As proof of the foregoing statements, I offer the accompanying x ray plates taken with the x ray catheters in the ureters with the palpating finger so placed as to feel them, together with drawings of the examining hand palpating the ureters. The



FIG. 3. X ray plate with catheters in the ureters.

above exemplification of my earlier ideas and work are of value as the forecast of the surgery of the lower ureter as done by me and reported in this paper.

As far back as 1879, Thomas Addis Emmet (3) reported three cases in which he had found calculi obstructing the ureter: in one case, he removed the stone by forceps after opening the bladder, and in another he removed a stone weighing ninety-eight grains by an incision through the vaginal vault. He described the operation as follows: "As the patient lay on the side, with a speculum introduced, I cut down on the stone with a pair of scissors while an assistant kept the parts prominent by pressing backward and upward with a sound in the bladder. As soon as I reached the stone, I enlarged the opening forward toward the neck of the bladder, this being the only safe direction to avoid entering the peritoneal cavity. After considerable difficulty, I succeeded in getting hold of the stone and withdrawing it without having entered either the bladder or the peritoneal cavity." Since the

time of this operation, the technic has changed but little. I quote from Emmet because of his eminence in our special line of work; a brief review of the progress of ureteral surgery will be of interest at this juncture and one cannot do better than quote from a paper on the subject by an-

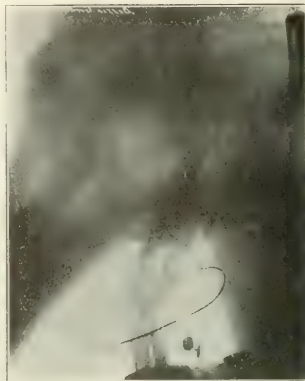


FIG. 4. X ray plate with catheters in the ureters.

other later worker in the same field, Dr. J. Wesley Bovee.

In the seventies, efforts toward segregation of the urine were being made, and very ingenious methods, some of them very severe, were brought to light. That of Tuchman, illustrated by Morris in his last work (4), was especially cruel. It was a forceps very much like a lithotrite; by means of its beak the ureteral orifice on one side was grasped to prevent the urinary escape from the corresponding side. In this way the urine coming from the opposite kidney was secured in the blad-



FIG. 5. X ray plate with catheters in the ureters.

der. In 1875, Simon practised extreme dilatation of the urethra, and by aid of a finger introduced into the bladder, ureteral catheterization was done.

In 1881, Grünfield published his attempts at using reflected light in the vesical endoscope. In 1884, Morris proposed rapid dilatation of the female

urethra and urethrotomy just in front of the prostate in the male, then proceeding transversally to remove calculi from the very lowest portion of the ureter.

Desault, in 1887, used and recommended his kioto for incising the ureterovesical junction in

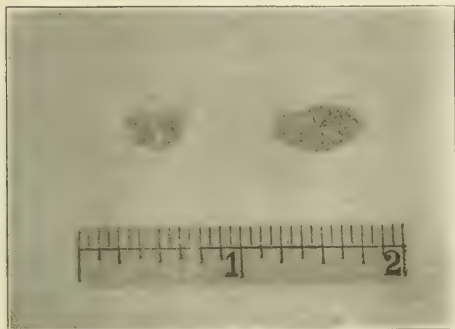


FIG. 6.—Showing size of stones.

order more easily to reach and remove calculi in the lower ureter. In 1888, Richmond, of Missouri, succeeded in removing a stone lodged near the exit of a ureter by means of rapid dilatation and the introduction of a finger and tenaculum. During the decade from 1880 to 1890, we find that efforts toward exploration of the ureter and obtaining the contents of them were made. Following the work of Grünfield and Simon, Newman of Glasgow, in

1883, devised an electric lamp which could be introduced into the bladder and its interior, including the ureteral orifices, readily seen. In 1888 Bozeman, of New York, succeeded in catheterizing the ureter through a vesicovaginal fistula and in flushing out the pelvis of a pyonephrotic kidney. Grünfield's speculum and mode of catheterization will readily suggest themselves as the progenitors of



FIG. 7.—Showing position of patient.

Kelly's method and instruments, though Pawlik has made objection to Kelly's assertion of originality.

It remained for Fenger, in 1892, first to perform successfully an operation for valvelike constriction of the ureter. The following year Herman Mynter did the second successful operation of this kind.

In 1892, Alsberg reported his case of dilatation of the ureter for stricture. In 1893, he furnished us with the report of the beautiful work Kelly had done in ureteral catheterization. He employed the catheter of Pawlik through the speculum of Simon and by bladder illumination by reflection from a head mirror. Kelly's work popularized ureteral exploration.

The treatment of calculi may first claim our attention, since the diagnosis and treatment of this condition are very much studied at present. The employment of the x ray is the simplest procedure known for the purposes of diagnosis and were it accessible at all times and completely reliable no other method would be comparatively valuable. Unfortunately such conditions as calculous anuria may render a patient in a secluded place so ill that this method of investigation is necessarily precluded. Moreover calculi may be of sufficient size to block the ureter and give no shadow in the radiograph. This would be true of calculi composed entirely of uric acid. That the calculus com-



FIG. 8.—Cervix pulled down, traction sutures laid, and line of incision.

posed of organic matter, largely or wholly, does escape detection by this method is generally understood. For this reason especially must other means of examination be employed, although the necessity of constant manual attempts to palpate the ureter is a *sine qua non* of dexterity in treating other conditions of this structure. Palpation will ever have its important position.

Israel, in 1896, reported two cases of removal of calculi by vaginal ureterotomy, but later returned to the use of the extraperitoneal route that he devised. Cabot and Freyer have employed the vaginal route for the removal of calculi from the lower third of the ureter with success, while in England, Lowson, Catterell, Fenwick and Barling have all reported similar results. B. R. Schenk in summarizing the literature of these cases reports for the removal of calculi in the lower two inches of the

ureter through vaginal ureterotomy thirteen cases with one death; rectal ureterotomy chosen by Ceci whose patient died twenty-six hours after operation; vesical ureterotomy of which there are reported five cases with one death; and ureterotomy through a perineal incision done once successfully.



FIG. 9.—Exposed ureter.

How frequently vaginal ureterotomy may be used in cases of calculi impacted in the ureter, becomes evident when we consider Brown's report that the largest number of calculi in the ureter will be found impacted in the lower two and a half inches of the tube. A consideration of the anatomy of the ureter will reveal the reason for this. There are three points of constriction in the ureter; one point about two inches below the renal pelvis, another at the pelvic brim, while a third is about half an inch from the vesical orifice of the ureter. The highest point has a diameter of about a seventh of an inch, the middle point a diameter of a quarter of an inch, and the lowest point a diameter of about a tenth of an inch. In the female, we have ready access to this portion of the ureter through the vagina. For the last two or three inches of its course it runs between the two layers of the broad ligament in relation to the upper vault of the vagina where it can be reached without danger of wounding the peritoneum.

In the operation to be described, after the vaginal wall is divided, the finger is readily pushed up into the broad ligament and the tissues can be pressed aside until the stone is reached. If then the incision is made on its under side, the chance of injury to the peritoneum is slight.

Before proceeding to a discussion of my technic of vaginal ureterotomy, I wish to again bring to your attention the opinion of the master, Dr. J. Wesley Bovee, who, in a discussion of Doctor Young's article on the surgery of the lower ureter said, "I thoroughly agree with the position taken by Doctor Young as to the relative merits of the different routes for reaching the ureter, particularly as re-

gards surgical work upon the lower part of it. In the female for the lower two inches of the ureter, the best operation is through the vaginal wall."

The position in which the patient will be placed for operation is a detail of the utmost importance, as I shall attempt to show. The dorsal position does not give the same room as does the lateroprone posture. For operation upon the left ureter, the right lateroprone and for the operation upon the right ureter, the left lateroprone posture should be chosen. This gives one a cleaner field, as the slight bleeding which occurs will sink to the lowest portion of the vagina and, as can be easily understood, will, in the above chosen position fall away from the operative field. For those who are not accustomed to the Sims's posture in gynecological work, this change from the dorsal position will at first be puzzling, but as one becomes more familiar with its use, it will be chosen more and more frequently. I have removed stones from only two patients in this posture (see Fig. 10) but those two cases have shown me the ease with which it can be done. I feel that patients will present themselves where the stone may be lodged higher than the broad ligament portion of the ureter but still within reach of an operator, through the vagina, the limit of applicability being dependent only on the possibilities of isolating the ureter from its surrounding structures and pulling it down to the vault of the vagina, splitting it over the site of the stone, removing the stone and allowing the ureter to fall back. By improvement of this technic the patients will be spared much of the danger and shock of a more extensive procedure, such as an incision above Poupart's ligament, or in the loin, extraperitoneal though it may be, or an even more

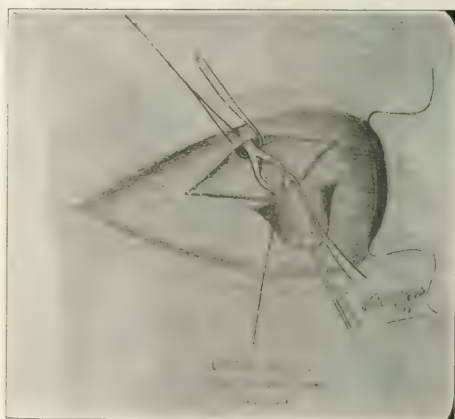


FIG. 10.—Ureter incised. Stone delivered through incision.

hazardous and difficult technic, that of a transperitoneal ureterotomy.

A striking illustration of the advantage of the vaginal route over the transperitoneal one was demonstrated recently when at the same hospital, on the same day that the author removed a stone

from the ureter by the method advocated in this paper, the operation lasting thirty minutes with no shock and convalescence so rapid that the patient was out of bed in five days, a general surgeon in a transperitoneal procedure requiring two hours removed a stone low down in the ureter with considerable postoperative shock and morbidity.

The figures presented are drawings from an actual case, and will illustrate the successive steps of the operation. As will be seen from Figure 7 the patient is in the right lateroprone posture, the case being one of left ureteral stone. In Figure 8 is shown a tenaculum pulling the cervix downward towards the surface of the table, placing the tissues of the upper or left vaginal fornix upon the stretch, the introduction of traction sutures of silk and an incision through the vaginal mucous membrane transversely to the direction of the ureters. Figure 9 shows a ureter with a contained stone, that has been isolated by blunt dissection, raised on two blunt hooks, and Figure 10 shows the ureter incised longitudinally with the stone ready for removal.

As a finished technic one may or may not attempt to close the incised ureter. In both of my cases this was attempted but the patients drained urine vaginally for a few days in spite of it.

A small submucous rubber tissue drain extending to the wound in the ureter without any attempt to close the ureteral wound, to be left in for twenty-four to thirty-six hours, is suggested.

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BLOODLESS REMOVAL OF THE VULVO-VAGINAL GLANDS.

By DOUGLAS H. STEWART, M. D., F. A. C. S.,
New York.

If the field of operation is obscured it is both a handicap and a nuisance to the surgeon; but the bleeding that accompanies the usual excision of the glands of Bartholin has among other shortcomings the fact that it carries out of the tissues the injected anesthetic. In the further description of a method tending to a bloodless operation it is taken for granted that pus or other fluid, if present, is re-

cutting edges or cups of the instruments are here negligible, for the main purpose is to select an instrument with arms properly spaced; the cutting element is ignored because the whole of the cutting surfaces must be so, adjusted as to clear all tissue,

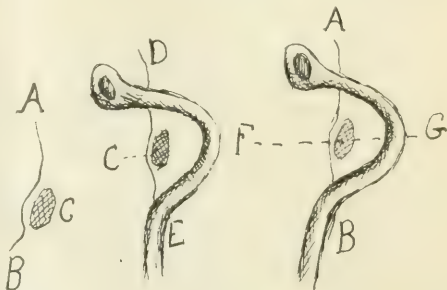


FIG. 2.

FIG. 3.

FIG. 4.

FIG. 2.—AB equals vulvar margin distended by C equaling gland. Patient's left side.

FIG. 3.—DE equals the instrument in place with its cutting edges free in the vagina and the mode of employing a postnasal or adenoid forceps at once becomes clear.

FIG. 4.—FG represents the line for anesthetic injection as well as that of the proposed incision.

completely. If a special instrument is desirable a Bozeman's uterine dressing forceps with a serrated jaw and screw lock may be altered to such an instrument. Any instrument that has a bite that is

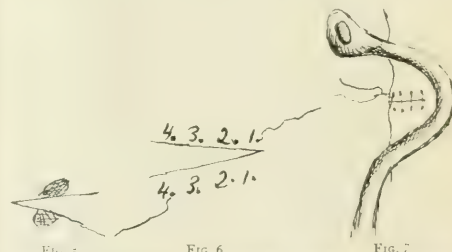


FIG. 5.

FIG. 6.

FIG. 7.

FIG. 5.—The scheme of wound with halt a gland on each side. The lower half may be lifted or pulled out with forceps. The upper half of gland is usually connected with the bulb and should be twisted out.

FIG. 6.—The scheme of stitches (continuous or interrupted).

FIG. 7.—The finished wound; when the sewing is completed the clamp is removed.

not too powerful and that approaches a form midway between a capital letter U and a capital V will answer the purpose. The idea is to shut off the blood from the gland on three sides, to produce pressure on the gland that will tend to shell it out-



FIG. 8.—Lateral view of instrument or clamp, showing space between arms.

moved by puncture, so that anatomical relations are not disturbed by much swelling. No new instruments are necessary.

From among the many designs for postnasal or adenoid forceps some one or more may be selected as fitting for the purposes of this operation. The

wards or toward the median line and that will hold the parts steady until the operation is completed. The important precaution is to select a clamp with separated arms so that crushing or bruising is avoided.

128 WEST EIGHTY-SIXTH STREET.

UTERINE HEMORRHAGE.*

BY J. THOMPSON SCHELL, M. D.,
Philadelphia,

Surgeon in Chief to the Northwestern General Hospital.

Uterine hemorrhage as a symptom covers a wide field. The subject has been so carefully and exhaustively gone over by many more capable and experienced gynecologists than myself, that I present this paper simply as a review of the subject for our mutual benefit with the hope that it will at least tend to freshen our memories and help to recall half forgotten clinical pictures that will prove useful in our work. To begin at the logical beginning, let us for a moment consider normal menstruation, for after all it is from this normal standard we must draw our conclusions.

In looking over the literature I have reached the following conclusions: 1. The average age at which menstruation begins is the fourteenth year, and it ends at the forty-eighth year. 2. Climatic and geographical environment does not have as much influence on the beginning and ending of menstruation as was formerly believed. 3. The average length of time for a normal period is four and one half days. 4. The normal amount of flow can only be crudely estimated by the number of protectives used; different authorities give the amount from two to eight ounces with an average of six ounces. 5. The character of the normal menstruation blood is as follows: It is more watery and paler than normal blood and is mixed with detritus and excretions of the cervix, uterus, and vagina, and it does not clot. This noncoagulability is now supposed to be due to a local influence of an ovarian secretion exerted on the endometrium. 6. The interval between the menstrual periods is twenty-eight days in at least seventy per cent. of cases. The length of menstrual life is an average of thirty-four years. If we take four and one half days as an average duration of menstruation and allow thirteen periods to each year, we find that 1,989 days in a woman's life are spent in menstruating, or to put it in another form, five years, five and one half months. Of course, with a large number of women, pregnancy and lactation reduce this calculation considerably. The poor begin to menstruate later on an average than the well to do and reach the menopause earlier. This is probably due to hard work and poor nourishment. As a rule, when puberty comes early the menopause is somewhat delayed and women of this type usually menstruate more profusely and have a special predisposition to myoma formation. Nulliparous women and virgins tend to reach the menopause somewhat sooner than do parous women.

Uterine hemorrhage is of two kinds, one of which is periodical, that is to say, associated with normal menstruation, and is therefore called menorrhagia (monthly bleeding); the other, which occurs at no regular intervals and stands in no manifest relation to menstruation, is therefore metrorrhagia or simple uterine bleeding. They often coexist, however, and have the same characteristics. There is

no difficulty in recognizing an uncomplicated metrorrhagia, but the recognition of a menorrhagia is more of a problem.

Menorrhagia.—What do we really mean by this term? Where does normal menstruation flow end and menstrual hemorrhage begin? This is a difficult and at times an impossible question to answer, for a strong and plethoric woman will have a normal flow that would be considered a hemorrhage in a frail anemic patient. Each woman, however, soon learns her individual norm which she can comfortably bear and realizes that if it is greatly exceeded for several months her general health begins to suffer. In general terms it may be stated that menorrhagia exists when two or three times the usual amount of blood is lost, coming away in spurts, or accumulating in clots in the vagina to be discharged at intervals. A notable characteristic of menorrhagia is the fact that the flow is greater when the patient is on her feet and moving actively about.

There are two types of menorrhagia, one which is excessive in amount and another which unduly prolongs the flow beyond the normal limits. As stated before, the causes of menorrhagia and metrorrhagia are often the same, so for convenience let us consider them together. During the first decade following puberty menorrhagia is not uncommon and may be very severe and intractable. Some of these young patients are chlorotic and anemic, but in others the cause of the bleeding is obscure. It may be, and doubtless often is, due to some disturbance in the internal secretion of the ovaries or of other secretory glands, or it may be due to the results of defective musculature of the uterus; undoubtedly some cases of menorrhagia in youthful patients are the result of masturbation. Menorrhagia may be the result of passive congestion of the uterus and is not infrequently seen with retroflexion and prolapse of the uterus. In cases of this kind there is usually associated a varicose condition of the veins in the broad ligament. Excessive or abnormal coitus is sometimes a cause of menorrhagia.

Acute infective diseases, especially influenza, are sometimes a cause of this condition. Chronic endometritis was formerly considered a frequent cause of menorrhagia, but the mucous lining of the uterus is primarily a spoil for the implantation of the impregnated ovum and doubtless for this reason nature has provided that it be comparatively immune to infections and malignant growths and, except during the puerperal state, it is protected against all infective organisms except the tuberculosis bacillus and the gonococcus. Even tuberculosis of the endometrium is quite uncommon, while gonococcus in its passage from the endocervix to the tubes resides only for a brief time on the endometrial surface and rarely leaves any permanent trace of its sojourn.

The classical dilatation and curettage treatment has undoubtedly been performed many times unnecessarily and is often entirely useless in menorrhagia, as the cause is seldom located in this tissue. Chronic metritis, however, follows incomplete abor-

*Read before the Northern Medical Society, Philadelphia, March

tion with retention of small portions of fetal tissue or blood clots, which at times becomes semiorganized and attached to the uterine wall and serve as a continual source of irritation to the mucosa. Hypertrophy of the endometrium is not a very common cause of menorrhagia, but in a condition technically called polypoid gland hypertrophy intractable menorrhagia does result.

Menorrhagia in its most characteristic and constant form occurs in connection with uterine myomata, especially in the submucous variety. Hemorrhage from submucous fibroids does not come from the mucous membrane covering the myomata but from the freer portions, and is always venous in character. Myomatous polyps and mucous polyps of the cervix and endometrium are frequent causes of menorrhagia. Menorrhagia of the preclimacteric and climacteric periods is very common. This is due to many causes, especially fibroids, occasionally hypertrophy of the endometrium, but often no cause can be found. Lack of tone and disturbances of the internal secretions of the ovaries are no doubt frequent causes. Malignant disease of the uterus, including carcinoma of cervix and fundus, sarcoma, chorioepithelium, adenocarcinoma, are all too frequent causes of menorrhagia and constitute the most urgent demand for careful examination, for it is not enough to diagnose a menorrhagia but we must seek until we find the cause of this condition. Many a woman has gone to her grave because the medical practitioner was too willing to be satisfied with a diagnosis of a climacteric menorrhagia, when a careful search would have revealed a beginning malignancy. Careful examination of scrapings, examination of the cavity of the uterus by the use of a metrameter are absolutely demanded in all cases of menorrhagia, especially at or near the menopause. Carcinoma of the fundus is a disease of women over forty and usually over forty-five. The uterus is usually enlarged but not always and the cervix is hardly ever involved. The hemorrhage is unaccompanied by pain, but is persistent, lasting ten days or longer, and the discharge is likely to be dark and often watery; it is only odorless in later stages. In consequence this disease very often is unrecognized until too late for surgery to effect a cure, which in the earlier stages is often satisfactorily brought about; hence the great importance of a careful diagnosis. I have a record of twenty-eight cases of carcinoma of the fundus in which the patients have remained well beyond the five year limit. This type of carcinoma is diagnosed by uterine scraping or by the examination of the cervix by dilatation with the Hirst metrameter, followed by a digital examination of the cavity of the uterus. When a woman at or about the climacteric period has an atypical flow, whose uterus is not nodular or enlarged, the possibility of this condition should be considered and a positive diagnosis should be made. Sarcoma of the fundus is a much rarer condition, and, as a rule, there is more pain, more odor to the discharge and earlier cachexia.

Chorioepithelioma or deciduoma malignum is a new growth after a normal pregnancy or abortion or after the expulsion of a hydatidiform mole. Profuse hemorrhage beginning six weeks after ter-

mination of labor leading to a profound anemia is strongly suggestive of deciduoma. A fetid watery discharge is sometimes present; pain may be present but is not a prominent symptom. Sometimes an irregular fever is associated, without leucocytosis. The uterus is usually enlarged to about the size of a three months' pregnancy. Polyps, subinvolution, extrauterine pregnancy, chronic inversion, valvular heart lesions, anemia, and many other factors will cause menorrhagia or metrorrhagia, and this review could be lengthened indefinitely. How then are we to make a diagnosis?

Let us first consider the age and condition of the patient. If she is a young girl, malignant disease of any kind may generally be excluded and in all probability several other local causes; the irregularity probably being due to slow and imperfect development of the uterine vessels, chlorosis is a factor in some cases, and there is also a tendency for menorrhagia to follow influenza, pneumonia, scarlet fever, and similar infections. Uterine polyps are a cause in this group of cases. Familial tendencies must also be borne in mind, and disturbance of internal glandular secretion and masturbation must not be forgotten. In unmarried women between thirty and forty years of age slight retroflexion will often cause a rapid increase of the menstrual flow. When the onset is gradual it is probably caused by a polyp or a fibroid tumor and sometimes tuberculosis of the Fallopian tubes. In married women a threatened or incomplete abortion must always be assumed until its existence is disproved. Almost every woman who presents herself in the late thirties with a fibroid tumor and menorrhagia will usually give a history of an excessive flow for some years previously, the cause of which had not been recognized. After thirty-five, cancer comes into play as an active cause of hemorrhage. The frequency with which this disease exists makes it imperative to be always on the watch for it, in order that it may be recognized at the earliest possible moment. Every week of delay is precious time lost.

In investigating a case of metrorrhagia or menorrhagia, a careful history of the patient should first be obtained, and the next step is a careful physical examination of chest and abdomen. I have seen a number of cases of uterine bleeding that were due to cardiac dilatation, and great improvement resulted from treatment directed to that condition. Local pelvic examination in young unmarried women should always be done with the patient under general anesthesia. In married women, a pelvic examination should be done at once. A simple inspection of the vulva may reveal the deep bluish color suggesting pregnancy, a softened cervix confirming the diagnosis. A friable cancerous cervix tells its own unwelcome story. A soft protruding polyp is easily recognized.

A bimanual examination should be next in order to detect any enlargement of the uterine body. Should there be an enlargement more or less globular in shape, it is due to pregnancy, a subinvolted uterus, a cancerous uterus, or a polyp within the uterine body. Fibroids are usually asymmetrical and

multiple. Diseased conditions lateral to the uterus, such as unilateral tumor of extrauterine pregnancy, a malignant tumor or pus tubes, can be recognized. If the diagnosis is still not clear, an anesthetic will be helpful. It is surprising how much clearer the local condition becomes with the patient under the complete relaxation of an anesthetic.

If these diagnostic means fail, then slow dilatation of the cervix with the metrameter, or curettage with examination of the scrapings should be resorted to. Hysterotomy or bisection of the uterus is justifiable under some circumstances and will clear up a diagnosis that would be impossible by another method. Let us assume in conclusion that uterine hemorrhage is always pathological and resolve never to cease in our diagnostic efforts until the cause is found; by so doing many early malignant conditions will be discovered that would otherwise be overlooked.

1318 LOCUST STREET.

THE CARE OF THE PATIENT DURING THE PUERPERAL PERIOD.*

By Ross McPHERSON, M. D., F.A.C.S.,

New York,

Attending Surgeon, New York Lying-In Hospital.

In no other period in the treatment of an obstetrical patient does intelligent supervision play a more important part than in the puerperium. Assuming that careful observations of the patient during the prenatal period have been made, that labor has been conducted with skill and success, our postnatal period should have very little in the way of pathology to disturb us.

Supposing that the condition is a normal one, what particular points do we have to consider in our care of the puerperal woman? These are, broadly speaking, three in number, namely, to see that the general bodily functions are properly carried out, that the breasts perform their function in a correct manner, and that the patient has as little suffering while establishing lactation as is consistent with the proper performance of this duty, and the local care of the genital tract.

REST.

Taking up these seriatim, the patient having been delivered the first thing to do is to secure rest for her immediately. The room should be darkened, if possible, all friends and relatives, including the baby, excluded, and the patient allowed to secure whatever sleep she feels like taking after what may have been a wearisome and painful labor. I lay a great deal of stress on this initial period of rest for the patient, and try to secure it in every case. When she wakes she will quite likely desire something to eat and drink. It will be remembered that she has used up a good deal of cell tissue during her labor by her hard work, and nature will clamor for something to replace this destruction.

DIET.

If the patient is not suffering from any gastric disturbance or chronic indigestion, and there is no

other contraindication, having secured her rest there is no reason why she should not have a reasonable diet. It has been my custom for a considerable number of years not to put patients on fluids for twenty-four hours; then soft diet for two or three days, and then gradually work up to a reasonable meal, but to give them an ordinary diet from the first, and I have never had reason to regret it.

The advantages which accrue from feeding the patient are manifest. In the first place, the psychological effect resulting from giving her a meal when she is hungry makes her realize that she is not seriously ill, and therefore she feels better and happier. In the second place, she is provided with nourishment and the breast function is established earlier and more easily. Lastly, and in these days not the least important, much less disturbance is created in the kitchen if the patient eats the regular food that is served to the rest of the family, and I can see no reason why, with reasonable reservations, these patients should not be allowed to eat anything which they desire. The same applies to fluids, at any rate until the breasts begin active secretion.

CARE OF THE BLADDER.

The next in order is the care of the bladder, and here again the opinions of the various obstetricians seem to differ, the two views being, on the one hand, that any retention of urine is likely to produce a cystitis due to irritation in a distended bladder, and on the other, that the introduction of a catheter for any other than absolute cause is an extremely dangerous procedure.

Personally I concur with the latter opinion, and I never allow a patient to be catheterized except as a last resort. I have seen more cases of cystitis caused by catheterization than in any other way, and I have yet to see one caused by a moderate degree of retention after labor where no catheter has been used. A patient who has been in labor is less likely to have her bladder filled immediately after than a person in normal life, due to the fact that she probably has not taken in as much fluid during her labor as she would normally, and has been using her sweat glands and respiratory apparatus with considerably more vigor than in ordinary life. She has, therefore, thrown off more moisture by this means, so that there is less for the kidneys to do and the bladder does not fill. It is a matter of observation that the bladder does not distend in the average case as rapidly directly after parturition as at other times. Furthermore, it has much more room in the abdomen to distend, and the patient will not experience the same discomfort immediately after labor as before.

How many times have we seen patients go for ten or fifteen hours without voiding and then be catheterized only to secure 150 c.c. or 200 c.c. of urine, showing that the operation was entirely unnecessary? No man, no matter how careful his technic or how great his skill, can catheterize a patient several times at this period without grave danger to the bladder from an ensuing cystitis, when the ordinary treatment by means of the suggestion of running water, giving considerable quantities of

*Read before the Medical Association of the Greater City of New York, February, 1920, New York.

fluid, warm stupes, or an enema containing some glycerin, will easily be productive of satisfactory results. I feel that this point is most important in the care of the puerperal patient. Occasionally the administration of an ampule of pituitrin seems to be of some value in this regard also.

THE CARE OF THE BOWELS.

The next thing in order is the treatment of the bowels. As some of you may know, I have for several years been engaged in a careful investigation of the use of cathartics in the puerperium. I was brought up with the idea that it was highly important to secure free daily evacuations of the bowels, but after hearing Dr. J. O. Polak, of Brooklyn, state that he had given up the administration of routine catharsis in his puerperal patients, believing they did better where the intestines were not stirred up and also that the local conditions were kept more aseptic than where loose bowel movements were spread about the genitals, I started over three years ago to see what the effect would be where we gave no cathartics at all. In a paper (1) read before the American Association of Obstetricians and Gynecologists last fall, I reported the final results in 911 cases in which no catharsis was given and a comparison made with 900 cases (practically the same number) in which ordinary catharsis was given, being approximately, therefore, 1,000 cases of each type. In the patients who received no stimulation to the bowels, the febrile morbidity was about half of that in whom the routine physic was given. Add to this the lessened labor on the part of the attendant and the other disagreeable features connected with physics and I am convinced that the method is advisable.

I do not say that there are not individual cases in which a physic may not be administered to advantage, but in the routine treatment a low saline enema was given in all cases where the bowels had not moved for three days, and this was repeated every third day, with the results described.

LOCAL CARE OF THE GENITALS AND PERINEAL SUTURES.

The next subject on our list is the local care of the genitals and perineal sutures. This merely consists of routine cleansing with whatever weak antiseptic solution is selected, in our case being a one per cent. solution of iodine, care being taken to see that the attendant has clean hands covered by sterile rubber gloves and that nothing is introduced into the vagina, this being done every four hours, and also each time that the patient voids or has a movement of the bowels. This involves no special points of treatment except those of the essential ones of asepsis. No douches or intravaginal manipulations are allowed at any time.

CARE OF THE BREASTS.

Until the milk begins to be secreted, nothing is done for the breasts or nipples, except to keep them covered with sterile gauze under which is an application of some form of ointment, either sterile vaseline or lanoline. When the breasts begin to secrete, the nipples are cleansed carefully and in an aseptic manner at each nursing, which begins six

hours after labor, when the baby is first put to the breast and is then continued at three hour intervals regularly. As soon as the secretion of milk begins to take place, nothing whatever is done for the patient unless the breasts become much engorged, when they are relieved by the application of hot packs or ice bags as the physician elects. In most instances the nipples are covered with sterilized lead nipple shields, which have given better satisfaction in the prevention and treatment of fissures of the nipple than any other one thing.

Various astringents, such as tincture of benzoin, witch hazel, glycerite of tannin, or argyrol, have been highly recommended and carefully tried, but from their multiplicity show their inefficacy.

Under the treatment outlined above cases of severe caked breasts are rarely ever seen, but should they occur the pain is relieved by one or two doses of codeine, which is usually sufficient, and fluids are restricted. Too much stress cannot be laid on the importance of the most careful asepsis in the handling of the nipples, and if proper care is observed in this regard infection will seldom occur. In fact an infection of the breast occurring under modern care should be regarded as a very distinct reproach to the attendant. This practically covers the care of the normal puerperal patient in whom no complications arise and leaves us to consider only the length of time which she shall remain in bed.

LENGTH OF TIME A PATIENT SHOULD REMAIN IN BED.

Here again we have a question which has aroused considerable discussion and regarding which there are several opinions. Personally I see no reason for setting a definite period of time for keeping a patient recumbent; as the whole subject seems to me to be entirely a relative one with regard to the individual case, and I see no reason why one patient should be kept in bed three weeks and another two, or any period in between, the whole process being dependent entirely upon the rate of involution of the pelvic organs and the abdominal walls. There is no doubt in my mind that early rising is, in general, a very pernicious thing. The abdominal wall is one of the most important factors in holding the abdominal viscera in position, and much of the visceroposis which we see in women who have given birth to children is due to a relaxed abdominal wall. I am convinced that this relaxation has in many cases been increased by early rising and having the weight of the viscera thrown forward before the wall has recovered its normal tone; this, having once occurred, is permanent. Drainage is secured by allowing patients to turn on their abdomens twice a day and exercise by calisthenics and massage when it can be obtained.

Several years ago, at the Lying-In Hospital, we made observations on patients who had been permitted to get up early, and found that we had many more cases of subinvolution of the uterus for treatment than we did in those who were kept in bed a few days longer or until the uterus had involuted well down into the pelvis. I, therefore, cannot regard early rising, either for the purpose of defecation or otherwise, as an advantageous procedure.

I know that many will not agree with me, but I still have to be convinced in this regard.

This, then, concludes the care of the normal puerperium, and you will see that in connection with the patient's treatment I have mentioned but three drugs in addition to sundry astringents, pituitrin, iodine, and codeine. With iodine or an equivalent antiseptic wash, mercury, salvarsan, quinine in malaria, occasionally some of the so-called tonics, which, of course, are of questionable value, such as iron, arsenic, and occasionally some of the opiates or coal tar analgesics, we are equipped for almost anything in the way of medication which may arise, and I will now spend a few moments speaking in a general way of some of the complications.

COMPLICATIONS.

Infections.—Of the obstetrical complications which may arise during the puerperium, of course the most feared and most important are the infections, and while these will seldom arise where proper aseptic technic has been observed throughout the antepartum period and during delivery, we shall see from time to time cases where such technic has not been observed and where the patient is infected throughout a greater or less portion of the genital tract. Evidence of such infection will naturally be shown by fever, increasing pulse rate, foul lochia, tenderness in the uterus and adnexa, increase in the patient's leucocytosis and in the polymuclear count, and by positive blood cultures.

The treatment of these infections has given rise to a great deal of study, many theories, and many different methods of handling the case, and to discuss the matter in detail would be beyond the scope of this paper. Suffice it to say that, in general, support of the patient by diet, fresh air and postural drainage, with the evacuation of any frank abscesses which may form, constitutes the best treatment at the present time.

Local irrigations, curettings and what may be termed meddlesome interference have practically been abandoned by those who have had the most experience and given the most consideration to their cases. The vaginal and intrauterine douche has died hard and has come to life sporadically, but its ghost is now practically laid, and it is hardly conceivable that the intelligent obstetrician of the present day should advocate douching after observing the results of investigators all over the world, which show not only how worthless but how dangerous these douches are. The same applies to the operation of curettage and more or less to serums, vaccines, intravenous solutions of one sort or another which we have all tried with little, if any, good results.

The operation of blood transfusion in the bacteremias is having some vogue, and appears to have a more logical basis for its employment than most of the intravenous manipulations. The whole problem, however, as has many times been remarked, is one of prophylaxis. If we observe a careful technic, we do not have the infections; but if infections do occur from causes which we could not control, supportive and hygienic treatment seem to offer as good results as anything else.

Retention of Placenta and Membranes.—Careful examination of placenta and membranes immediately after their delivery will reveal whether or not any has been left behind, and if any placenta is found wanting, in my opinion it is wise to extract it. With the membranes, however, unless a very considerable portion of them are retained, it is usually safe enough to allow them to come out with the lochia, which they generally do within a day or two without causing much trouble. Should a perineal repair become infected, which in these times is most unusual, the obvious thing to do is to remove the sutures and treat it the same as any other locally infected wound.

Phlebitis of the Legs.—Again, a very unusual but very annoying complication, phlebitis of the legs, is handled by keeping the patient quiet in bed, the legs being supported by bandaging with a flannel bandage from ankle to groin, elevated on a pillow, and anodynes administered sufficient to control the pain. It is wise to keep the patient from putting the leg down for at least a week after all symptoms have subsided and to wear a support of a bandage or stocking for several weeks after she is out of bed.

Breast Abscess.—Breast abscess, should it occur, is treated in a similar manner to any abscess of the body, namely, by incision and drainage; frequently by the use of the Bier hyperemia method, which often gives satisfactory results in a surprisingly short time.

These are the ordinary complications of the obstetrical patient or the puerperium. To sum up, in treating obstetrical cases we should observe, first of all, prophylaxis; where prophylaxis is observed the aftercare amounts to nothing more than the intelligent direction of a patient who is practically physiological; little medication and little, if any, investigation of her internal condition is necessary; and if we see that her bodily functions are properly performed, that the function of lactation is well established, that she is kept externally clean and remains a sufficient length of time in bed, she will recover satisfactorily. Should the complications mentioned arise, they should be treated as described.

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125 EAST THIRTY-NINTH STREET.

Metabolic Changes in Experimental Tetany.—Tokuji Togawa (*Journal of Laboratory and Clinical Medicine*, February, 1920) noted an acidosis in parathyroidectomized puppies showing the tetanic symptoms. The antitryptic power of the serum and the nonprotein nitrogen was usually increased. In control animals which were thyroidectomized, but with a certain number of the parathyroid glands left intact, acidosis was not observed, but on the contrary a slight alkalosis was seen. The antitryptic power and the nonprotein nitrogen content of the serum did not show any marked variation.

GONORRHEAL VAGINITIS IN CHILDREN.

Dakin's Oil in the Treatment.

BY CHARLES WACHS, M. D.,

AND

CHARLES MAZER, M. D.,
Philadelphia.

PRELIMINARY REPORT.

The prevalence of gonorrheal vaginitis in children is best illustrated by the fact that, according to Hamilton as quoted by Bland, four per cent. of all applicants to the Babies' Hospital in New York were found to be suffering from this malady. Of the fifty-eight cases treated by us in the gynecological clinic of the Mount Sinai Hospital, of Philadelphia, during the past year, we were able to follow up forty-five. All of these cases were of a chronic type, some of them of four years' duration. In the treatment practically every known method was employed, with very meagre results. The ages of these children ranged from three months to twelve years, and all, with the exception of one or two, came from the slums of Philadelphia, which partly accounts for the poor results obtained where the cooperation of the mother was necessary in carrying out a complicated form of treatment.

During the early part of 1919 we gave a thorough trial to a silver paste prepared for Dr. John Cooke Hirst, which, theoretically, was an ideal treatment for gonorrheal vaginitis, in that, because of its slow solvency, it remained in constant contact with the vaginal mucous membrane for twenty-four hours. Though some patients improved temporarily, the final results did not warrant the further use of this preparation.

In April, 1919, we began the use of Dakin's oil in a series of fifty-eight chronic cases. The preparation was of one per cent. strength, freshly prepared. Our method is as follows: The child is placed in a partial Trendelenburg position, the vulva cleansed with boric acid solution, and the vagina filled with the oil, by means of a medicine dropper, the capacity of which is two drams. On withdrawing the dropper the labia are compressed for a few minutes, so that the vaginal mucous membrane is thoroughly bathed in the oil. The medicine dropper is boiled after each treatment and dried with ether. This treatment we administered every other day in the clinic, and the mother was instructed to do likewise on the days she did not come to the clinic. The patients treated thus, though somewhat irregular in attendance, showed marked improvement, both clinically and bacteriologically, within a month. Smears were taken regularly every two weeks. At the end of three months we were able to discontinue treatment in twenty-five cases with instructions to report for examination every other week. At the end of four months we had discharged thirty-nine patients, the remaining six patients, while much improved clinically, still showed pus cells and many bacteria on microscopic examination. In these cases we used one quarter strength of the standard Dakin's solution in the form of douches in the clinic, with instructions to the mother to continue the oil at home.

We had under observation four children of one family, all of whom were infected consecutively.

The primary infection occurred four years ago in the youngest child and was transmitted to the other three children two years later. They were treated in our clinic all along with but slight improvement, until the use of Dakin's oil was instituted. They are now clinically and bacteriologically negative.

Here is another striking case. S. L., aged seven, contracted vulvovaginitis four years ago following a tonsillectomy in one of our large hospitals. She was placed in the Philadelphia Hospital for treatment during the acute stage. Since her discharge from the Philadelphia Hospital, she was treated in our clinic and other clinics without improvement until the use of Dakin's oil cured her. She still comes to our clinic once a month for observation and has been negative for the past seven months. One of our patients was found to have a hairpin in her vagina and made a rapid recovery on its removal.

The oil in one per cent. strength is not irritating in chronic cases, but in three acute cases in which this form of treatment was used the oil in one per cent. strength was found somewhat irritating. We substituted Dakin's solution in the above mentioned strength with some measure of success. These cases however, are too few and too recent to speak of them with positiveness at this time.

According to Graves, an acute vulvovaginitis simulating that caused by the gonococcus may be set up by wandering threadworms from the rectum. Through the kindness of Dr. A. I. Rubenstone, pathologist to the Mount Sinai Hospital of Philadelphia, we had examined the feces in every case and found ova present in only one case. In some cases we elicited a history of masturbation and feel that this is a factor in keeping up the discharge.

Graves states that it is not always possible to tell in a given time whether or not one of these patients is completely cured, as the microscopic examination of the vaginal secretions is at times quite misleading. Hamilton, as quoted by Norris, reported fourteen recurrences in a series of sixty-one cured cases within a period of six months to two years. We have had three recurrences out of thirty-nine cases in from one to four months following their discharge. For this reason we still have our patients under observation though they have remained well for a period of seven to eight months.

We have not resorted to the complement fixation test as a guide because of its doubtful value in children. Irons, as quoted by Norris, states that occasionally in adults and more frequently in children, a fairly positive reaction occurs in persons who have never had gonorrhea. Dr. Rubenstone also asserts that the complement fixation test is not reliable in children.

Dr. Henry B. Mickelberg, at our request, experimented with Dakin's oil in a series of twenty cases of chronic gonorrheal vaginitis at the Children's Hospital. In nine weeks he discharged twelve patients with no recurrence during a period of eight weeks of strict observation.

We wish to thank Dr. John Cooke Hirst, our chief, for the assistance he gave us in the clinic and in the preparation of this report.

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NECROBIOSIS OF UTERINE FIBROMATA DURING PREGNANCY.

In a recent thesis (Bordeaux, 1919) Dr. E. Barbier has brought this important subject quite up to date. In patients with gravid fibromatous uteri accidents arise which can be explained by nutritive and infectious disturbances resulting from the fibroma and included under the heading of sloughing, necrobiosis and suppuration. These complications are uncommon and relatively few cases have been recorded, but in this class it may, perhaps, be well to include accidents arising during the postpartum which, in reality, began during pregnancy and are the cause of miscarriage. The lesions observed in the centre of these tumors are variable. They are a puriform mass, the color of wine-dregs, true gangrene, and pus. The latter type of lesion appears to be encountered during the postpartum most commonly, although this is uncommon in practice, but the explanation is not difficult to find.

The infection is due either to direct septic traumatism or, which is more usually an infectious process starting from the vagina, uterine, vesical or intestinal cavities, extending to the fibroma by the lymphatics or blood, or even the transperitoneal route. Aseptic necrobiosis has a rather obscure mechanism, but it would appear probable that it is the result of vascular changes—arterial or venous—in the production of which the gravid state perhaps plays an important part, at all events is sufficiently understood at present. In the cases we know of painful

phenomena with hyperthermic crises and peritoneal phenomena arise. The diagnosis is always a matter of some difficulty and for this reason is rarely made. Usually, it is a diagnosis of probability that leads the surgeon to interfere. The prognosis is serious for the fetus—in only four instances did pregnancy go to term—and should be very reserved for the mother, since secondary infectious processes are always a possibility.

The treatment consists of surgical intervention, and, given the difficulties of the diagnosis, it would be, generally speaking, imprudent to await the end of pregnancy. Myomectomy is to be reserved for pedunculated fibromata; in the case of certain interstitial growths this operation is more rarely indicated and subordinated to possible hemorrhage and the resistance offered by the uterine walls. Hysterectomy is the more likely operation in cases of this type. Preventive treatment consists of taking every possible precaution from the viewpoint of antiseptics in pregnant patients with fibromata and, on the other hand, the removal of fibrous tumors as early as possible after necrobiosis of the growth is suspected.

COMMUNITY POSTGRADUATE TRAINING.

It has been seriously suggested in several quarters that a license to practise medicine should be granted only for a limited period of time and not throughout the lifetime of the holder. The argument offered in favor of this plan is that, while a physician may be competent to practise medicine at the time the license is granted, he does not necessarily remain so indefinitely, unless some spur to his ambition is provided. The proponents of the plan contend that it would increase the interest in postgraduate study and that it would insure to the public intelligent, well balanced, modern medical treatment.

It must be admitted that in spite of the good which would inevitably ensue upon such a plan of action, a considerable hardship would be worked upon the practitioner and such a legal enactment would be an unjust discrimination against the medical profession, since similar restrictions are not thrown about the other learned professions. Yet the fact remains that if an engineer constructs a bridge which subsequently falls, he almost automatically ceases to be an engineer; while the lawyer, who, through failure to keep abreast of legislation and judicial decisions, loses important cases, fails to receive other legal work to do. The phy-

sician, to quote a threadbare quip, "may bury his mistakes." If the patient recovers through the processes of nature, the physician may assume the credit for his recovery, but if death or serious injury results, it is an "act of providence." He, therefore, does not necessarily have the same activating impulse as do some of the other learned professions.

That it is the physician's duty to the common weal to keep himself *en rapport* with current medical thought there is no doubt. This is an obligation which has been placed upon him by the nature of his calling and the demands of enlightened communities. That many physicians unfortunately fail to do this is deplorable, but none the less true. This is not always the physician's fault. In many of the mountain districts of our Southern States, the practitioner is in the saddle, week in and week out, and his recompense in many instances consists of about three hundred dollars a year and an assorted collection of farm products. For such an one to make a journey to a medical centre, there to receive a postgraduate training, is entirely out of the question, since his limited resources absolutely preclude it. The people whom such physicians serve are, however, quite as much entitled to good medical and surgical service as are the more fortunate communities which are situated nearer to postgraduate schools and clinics.

Since the health and welfare of the community are so intimately bound up in the proficiency of its medical personnel, it would seem to be the duty of the community to assist such physicians to receive postgraduate training, and it would be in the interest of economy and the prosperity of the State to make the expenditures necessary to accomplish this. This would seem to be a function for state boards of health which are in a position to arrange intensive courses of clinical instruction and to pay the expenses, including travel and maintenance, of the physicians taking such courses. Not only would there be a more general diffusion of medical knowledge through such a course of action, there would follow a stimulation to further study and a broadening of the point of view, an increased sense of civic responsibility, and a further spreading of the gospel of public health. Already states are beginning to train local health officers. Is it not equally important that they shall insure modern methods of treatment as well? The enlightened physician is an integral part in the community health machinery, and if he is neglected and allowed to become rusty and archaic, the community health will suffer accordingly.

THERAPEUTIC TREATMENT OF INFLUENZA.

Although influenza is not particularly prevalent at the present time, its treatment is always a matter of first importance, for we never know when a deadly epidemic may crop up and sweep away its millions. Unfortunately, therapeutic measures, or at least those now employed, seem of little avail, and the search for a specific has not been successful. The sheet anchor of treatment is rest in bed, and the earlier this course is followed the better for the patient. As for therapeutic treatment, until a sure preventive or a specific has been found, symptomatic treatment must be pursued. An attempt has been made to test the value of certain specifics by Dr. G. E. Beaumont, and some of his results are given in the *Practitioner*, April, 1920. These are: 1, Potassium iodide and creosote; 2, vaccines; 3, salicin; 4, perchloride of mercury; 5, blood transfusion. The first method was unsuccessful. Conclusions as to vaccine treatment are, that while the author's figures tend to show that vaccinated patients do better than unvaccinated, the series is too small to warrant any definite statement. It is certain that the vaccine did not produce any strikingly beneficial results.

With regard to salicin treatment, the mortality of those treated was four times greater than of patients who received no specific treatment. The average duration of pyrexia was two to three days longer in the cases treated with salicin. Bronchopneumonia occurred one and six tenths per cent. more often in the cases treated with salicin. Beaumont points out that the figures cannot be treated quite as literally as this, as all the patients who died had bronchopneumonia on admission, before the treatment could be begun. He thinks, therefore, it may be stated that salicin is of no avail once bronchopneumonia has begun; the patient may have the drug administered in large doses and yet die eight or ten days later.

Whether or not salicin, when it would be given in these large doses during the first ten hours of the disease, would prevent pulmonary complications or death in every case has not been shown, because it has been impossible to see the patients sufficiently early in every instance. It is true that from the symptomatic viewpoint salicin appears to relieve the muscular pains much more effectively than its confrères aspirin and sodium salicylate, but once bronchopneumonia has developed, salicin cannot be considered a certain cure. According to Beaumont's experience, it is probably of no greater value than other remedies extolled from time to time. It appears to have been shown that influenza is

a septicemic disease and therefore, as Beaumont says, it is logical to determine the effect of the intravenous administration of antiseptic substances. Accordingly, he treated a series of ten cases with daily intravenous injections of one c.c. of normal saline, in which one c. mm. of perchloride of mercury was dissolved. On the whole, Beaumont decided that intravenous doses of perchloride of mercury are not indicated in the treatment of influenza.

His final conclusions are as follows: 1. None of the specific methods tried has proved satisfactory in every case. 2. The temperature chart does not afford a reliable criterion of the efficacy of any special form of treatment. Patients who have had no drugs, beyond aperients, will sometimes exhibit charts as striking as those seen after the administration of vaccine, salicin or perchloride of mercury. 3. In the present state of our knowledge symptomatic treatment alone is available. This seems to be a temperate, considerate and fair presentation of the situation as regards the drug treatment of influenza.

PREScriptions FOR LIQUOR IN ONTARIO.

To keep the medical profession pure and undefiled has always been one of the high minded aims of that profession the world over. Unnumbered agencies, from quacks to cults, have repeatedly sought to tear it from the proud pedestal erected, not as the outcome of some epochal upheaval, but resulting from the accumulated wisdom and growth of years of honor fast dealings with the public. Is the prescription writing of liquor going to accomplish what the quacks and the cults have hitherto failed to achieve? The editorial in the *NEW YORK MEDICAL JOURNAL* of January 10, 1920, *The Profession in Ontario*, to judge from newspaper reports, attracted wide attention in the province of Ontario. More recent disclosures, this time from an official source, the chairman of the License Commission, show to just what extent the profession there is being bedeviled by the Ontario Temperance Act and the Referendum, which put the curse of liquor on the medical profession of the province.

Ninety per cent. of the liquor legally sold in that province is on prescriptions issued by physicians which, according to the statement of the official cited, is all unnecessary with the exception of about ten per cent. Further, ninety per cent. of the physicians in Ontario issue less than ten prescriptions a month, and the great flush of lush comes through ten per cent. of the doctors. As there are about three thousand five hundred registered physicians in that province, there are three hundred and fifty

physicians who have been bedeviled by the curse of alcohol. The love of lucre, therefore, has been the root of this evil to the medical profession.

Is this not a nice reputation to have? One Ontario physician issued 2,005 prescriptions for liquor in one single month at two and three dollars each. Another physician issued 487 coveted slips of paper in a single day. Do the people of the province of Ontario realize what they did when, in October last, they voted the curse of liquor upon the medical profession, a profession which has been good to them? In two or three years, to take the official's figures, three hundred and fifty physicians in the province of Ontario have fallen off the pedestal of high mindedness set up by the medical profession which they were bound in all honor to maintain. How long will it take to leaven the whole lump in this direction? Is it fair play to the balance of the profession that these should have made thousands of dollars, and by so doing bespattered their professional colleagues? Is it not time for a change? Surely the people through their legislators can devise some better system. The Ontario Temperance Act has had a fair trial. Surely some measure of State control would be far preferable, whereby the province would make money and devote the same to all manner of educational application, and ration those who require liquor rations on some simply devised card system.

THE NOVELIST'S USE OF PSYCHO- ANALYSIS.

It is not too sweeping a statement to assert that nothing that is merely extraneously applied is of real value or can have any real part in constructive work. At the best it can be only a convenient but indifferent tool, laid aside the moment it has opened the way into genuine material. J. D. Beresford, in *Psychoanalysis and the Novel (The Freeman, March 24, 1920)*, does well to insist that literature can gain nothing from the attempt to apply deliberately and intellectually only the various deductions and concepts which have been stated as a result of psychoanalysis. It might be said that these represent the vital process of psychoanalysis and its application to life, actual or depicted in fiction, merely as any final definition or stated conclusion just suggests the living process behind it.

This is still more true, as the writer goes on to point out, because after all nothing can be utilized with true convincing force unless it expresses the creator's own self in its various elements, his own assimilation and use of the factors of which he speaks. Therefore the writer is correct in insisting that the reve-

lations of psychic conflicts, difficulties, reactions, are more instructive and stimulating when made by a writer like Dostoevski and others whom literary fashion did not compel to an artificial recognition of psychoanalysis. No intelligent advocate of psychoanalysis could claim anything else. Psychoanalysis has always found its broadest confirmation in the very fact that it has been thus forestalled by writers of genius, but to understand why this is so there is need perhaps of a somewhat broader and clearer conception of the principles upon which psychoanalysis rests than Beresford has given. And this ought to establish as still more certain the writer's second thesis that "such a theory as that of psychoanalysis, properly comprehended and applied, may become a powerful influence in the novel of the future."

It is true that Freud's method is founded upon facts and knowledge of these facts which far precede all scientifically formulated theories. It is but a method for penetrating into these facts and making them once more the comprehended factors in the governing of life to its effectualness and well being. It is not true, however, that these facts and the psychic backgrounds which have been formed about them are so distinctly separated from our conscious self as the writer argues.

The novelist who can utilize this new psychological method is the one who finds instead of any such separateness a limitless continuity of mind such as our conscious selves can only with difficulty take into account. It is correctly stated that the new psychology permits the novelist, like any one else who would have more efficient knowledge of human life, to enlarge the field of study by introducing the intensive study of the unconscious. The end to be some day attained is well described as that "this artificial shell of the conscious will be gradually broken and absorbed to reveal the single and relatively perfect individual that has been so steadily developing underground."

It is the absence of a sharp demarcation that makes the novelist's task both a possible one and one of greater interest and convincingness to his readers. It is his to insist upon and reveal that continuity of the mind which consciousness throughout the ages has been at the greatest pains to conceal. It is not that the primitive beasts of desire lie crouching apart, nor is it simply that the alternate of a virtue or a vice is tugging at the unconscious end of a character trait apparent in consciousness. These things do tend to a separation from the rest of the personality under the influence of repression. This is not the same as a dual division which the writer speaks of as

existing within man. Such separations made through repression, if they must be noted, demand a plural rather than a dual conception. The latter suggests the sharp distinction between two different natures. Many of the desires which lie in the unconscious are not in complete accord with conscious purposes and they give to the unconscious a more strictly selfseeking tendency than consciousness admits. Yet these are but parts of the larger unified personality, which, in truth, it is the aim both of the conscious and the unconscious to serve, and because this unity is normal the full realization of the personality is a possibility and a goal of attainment. Therefore the novelist aids in the search of the factors which make this unity, or in the understanding of the manner in which they may impair it, and so assist in reestablishing it. This he may learn from psychoanalysis and in this, in truth, psychoanalysis finds itself preceded by the men of genius.

THE WOMAN AND THE DOCTOR.

Right up into the early seventies the terms gynecologist and obstetrician were unused by the laity, their definitions being woman's doctor and confinement man, these superseding the old doctor for diseases of the female sex, and the man midwife. When it was deemed necessary to consult a woman's doctor (specialist), the domestic atmosphere was heavy with anxiety.

The splendid rays of sunshine and radium threw no alleviating light on consumption or cancer, and with such a diagnosis the woman went home to be the family invalid and pass her time in a stuffy room where blinds and closed windows kept sunlight and poisonous night air out.

One greatly dreaded word was operation. Nowadays a woman likes to possess the remembrance of that which she terms "my operation." She tells all her friends beforehand and inserts into the retailed reminiscences many lies concerning her own bravery and the surgeons being terribly anxious about her. Formerly it was considered an indelicate subject, and, as major operations were only done under urgency, for malignant disease, men were, or were thought to be, reluctant to marry a young woman who had been operated on.

Women like the word gynecologist, though they know not its derivation, only its meaning, and can give this with superior elevated eyebrows to a questioning ignorant friend. There is some grumbling just now when women go to a diseases of women man, and are referred to a dentist, oculist, or only tonsillectomy is advised, because the interrelation of all organs is not yet known to the laity, and they feel they have paid unnecessary dollars to be given a complaint common to either sex. "I suppose he didn't know, but he had to find something," is often the scornful comment on the man who is imagining his patient grateful for nothing worse being found.

News Items.

Smallpox Among Indians.—Smallpox is reported to be widely prevalent on the Yakima Indian reservation in Washington.

New Medical Publication.—The *Ergebnisse der gesamten Medizin* is a new German medical publication edited by Professor Brugsch, of Berlin.

Premedical Education.—Melbourne University, Australia, has decided to abolish Latin and geometry as compulsory subjects for matriculation before entering on a medical course.

United States Civil Service.—The United States Civil Service Commission announces an examination on July 6th for the position of junior physiologist at Edgewood Arsenal, Md., at \$2,000 a year and quarters.

Medical Periodical Resumes Publication.—*Liguria Medica* has resumed publication after a period of silence. This journal, a review of practical medicine and surgery and professional interests, is published in Genoa under the direction of Prof. V. de Cigna.

Americans to Join Polish Sanitary Unit.—The War Department has authorized the enlistment of Americans who have been fighting with the Poles in order to fill the ranks of the American army sanitary detachment which has been combating typhus in Poland since last summer.

Arkansas Health Board.—At a meeting of the—Arkansas State Board of Health held March 25th in Little Rock, the following officers were elected: President, Dr. Cyrus F. Crosby, of Heber Springs; vice-president, Dr. F. O. Mahoney, of Eldorado; secretary and State health officer, Dr. C. W. Garrison, of Little Rock.

More Medicines Misbranded.—A larger number of seizures and prosecutions on the charge of false and fraudulent labeling of proprietary preparations has been made during the past year than in any other year since the enactment of the Federal Food and Drugs Act, according to a statement by officials of the Bureau of Chemistry, U. S. Department of Agriculture.

Workshop for Tuberculous Patients.—A workshop where convalescent tuberculosis patients may learn trades and useful occupations and at the same time may remain under medical supervision will soon be opened in Long Island City by the New York Tuberculosis Association and the Federal Board for Vocational Education. The workshop will offer patients opportunities to learn cabinet and furniture making, watch making and the jewelry trade.

Will of Sir William Osler.—Sir William Osler, regius professor of medicine in the University of Oxford, who died last December, aged seventy left an estate valued at £15,856 7s. 5d., with net personalty £11,650. He bequeathed his medical and scientific library (as catalogued) to the medical faculty of the McGill University, Montreal, and all his other property to his wife, but at her death, or earlier if she should wish, his residence, 13 Norham Gardens, Oxford, is to be given to the dean, canons, and governing body of Christ Church as the residence of the regius professor of medicine.

Italian Sanitary Congress.—The first National Congress for Industrial Hygiene was held in Milan from April 18th to 22nd.

Gift to Yale.—A gift of \$1,000,000 has been made to the Yale University endowment fund by the General Education Board of New York. The fund will be used for the development of the New Haven General Hospital through the medical school of the university.

Post-Graduate Drive Extended.—Announcement has been made that the \$2,000,000 endowment campaign of the New York Post-Graduate School and Hospital will be carried on through the summer. The total amount raised thus far is \$1,277,176.57.

New Medical Organization in Texas.—A branch of the American College of Surgeons was formed March 18th in San Antonio, Texas, to be known as the Clinical Surgeons of Texas. Officers are: President, Dr. Bacon Saunders, of Fort Worth; secretary, Dr. W. B. Thorning, of Houston; counselor, Dr. W. B. Russ, of San Antonio.

Military Surgeons Elect Officers.—The Association of Military Surgeons of the United States held its annual meeting recently in New Orleans. Assistant Surgeon General John W. Kerr, U. S. Public Health Service, was elected president and Colonel James Robb Church, M. C., U. S. A., Washington, D. C., was reelected secretary treasurer and editor of the *Military Surgeon*.

Limitation of Physicians' Liquor Permits.—The commissioner of internal revenue has issued a ruling limiting the number of liquor prescriptions permitted physicians to 100 for each three months, except with "good cause." The order makes it obligatory on the part of physicians to show where the liquor has gone before more prescription blanks will be issued by the bureau.

Maryland Colleges Combined.—The Maryland School of Medicine and the Maryland State College of Agriculture have been combined under the name of University of Maryland. The new institution possesses a college of arts and sciences, a military school, and schools of medicine, dentistry and pharmacy. The legislature has made an appropriation of \$42,500 each year for the medical school for the next two years, and an appropriation of \$203,000 has been made for buildings and equipment.

Death of Dr. George Morrison.—Dr. George Morrison, political adviser to the president of China and Peking correspondent of the London Times, died May 30th at a nursing home in London. Doctor Morrison was an Australian by birth and received his medical degree from the University of Edinburgh. Of a roving, adventurous disposition, he traveled over much of the world as a seaman, and during his medical career he practised at a Spanish copper mine, was court physician to the Shereef of Wazan, and served as a hospital surgeon in Australia. Then he went to China, where he was established by the *Times* as its Peking correspondent. He was credited with more influence at the Chinese capital than any of the foreign ministers, and he was amazingly conversant with the inner workings of diplomacy. In 1902 he was appointed political adviser to the president of the Chinese Republic for a term of five years.

New Public Health Service Hospital.—Plans have been completed for the new U. S. Public Health Service Hospital which is to be built at Roanoke, Va., and work will soon be started. The hospital is to be a three story structure with a capacity of 300 beds.

German Medical Congress.—The thirty-second meeting of the *Deutsche Kongress für Innere Medizin* was held April 20th to 23rd in Dresden, under the presidency of Professor Minkowski. Among the subjects discussed were the present position of immunotherapy and chemotherapy in infectious diseases.

Italian Medical Prize Competition.—The Istituto Ortopedico Rizzoli, at Bologna, Italy, announces a competition for the Humbert I prize of 3,500 lire for the best orthopedic work or invention. The competition is open to foreigners. The conditions may be learned by addressing the president of the institute. The competition closes December 31, 1920.

New Dean of Oregon University.—Dr. Richard B. Dillhunt, of Portland, formerly assistant dean, has been elected dean of the medical department of the University of Oregon, to succeed the late Dr. K. A. J. Mackenzie. It is proposed to enlarge the scope of the medical school with increased facilities for teaching and research work and the construction of special hospitals.

Tennessee State Medical Conference.—The Tennessee State Medical Association held its annual meeting on April 6th to 8th in Chattanooga. The following officers were elected: President, Dr. Leon O. Shedd, of Knoxville; vice presidents, Dr. Powell K. Lewis, of Doyle; Dr. John J. Shea, of Memphis; Dr. George R. West, of Chattanooga; secretary, Dr. Olin West, of Nashville; treasurer, Dr. Joseph F. H. Gallagher, of Nashville. The next meeting will be held in Nashville.

Meeting of Red Cross Advisory Board.—The first formal meeting of the Medical Advisory Board of the League of Red Cross Societies will be held July 5th at Geneva, Switzerland. Dr. Simon Flexner, of New York, will represent the United States. The representatives of other nations at the conference will be Professor Brodet, Belgium; Professor Madsen, Denmark; Professors Roux, Albert and Calmette, France; General Lyle Cummins, Sir Walter Fletcher and Sir George Newman, Great Britain; Professor Bastianelli and Doctor Castellani, Italy; Dr. Kinnostke Miura, Japan, and Doctor Chagas, South America.

Mississippi State Medical Association.—At the thirty-third annual meeting of this association, held in Jackson, May 11 and 12, under the presidency of Dr. Felix J. Underwood, Aberdeen, Laurel was chosen as the next place of meeting, and the following officers were elected: President, Dr. John W. Barksdale, Winona; vice-presidents, Drs. Horace H. Kinney, Okolona; William A. Johns, Corinth, and Lawrence B. Hudson, Hattiesburg; Dr. Thomas M. Dye, Clarksdale, secretary (reelected), and Dr. James M. Buchanan, Meridian, treasurer (reelected). The annual address was delivered by Dr. Seale Harris, Birmingham, Ala., on Food Poisoning.

American Climatological and Clinical Association.—The thirty-seventh annual meeting of this society will be held in Philadelphia, June 17th to 19th, under the presidency of Dr. Lawrason Brown, of Saranac Lake.

American Association of Thoracic Surgeons.—Dr. Rudolph Matas, of New Orleans, was elected president of this society at the annual meeting held in New Orleans on May 1st. Dr. Walton Martin, of New York, was elected vice-president, and Dr. Nathan W. Green, of New York, secretary and treasurer.

New Officers of the American Physicians' Association.—At the annual meeting of this society, held in Atlantic City on May 4th and 5th, the following officers were elected: President, Dr. William S. Thayer, of Baltimore; vice-president, Dr. Herbert C. Moffitt, of San Francisco; secretary, Dr. Thomas McCrae, of Philadelphia; recorder, Dr. Thomas R. Boggs, of Baltimore; treasurer, Dr. Joseph A. Capps, of Chicago.

Voluntary Hospitals in Glasgow.—During the past few months the annual meetings of many of the voluntary hospitals in Glasgow have been held and reports made public. The main burden of the statistics presented is a continual increase in expenditure over income and likewise in the number of those seeking accommodation over income. The *Glasgow Medical Journal* mentions three methods of raising money which have been suggested: 1, The provision of a number of beds for paying patients, a plan which raised various difficulties in the establishment of distinctions between one group of patients and another; 2, asking patients admitted with accident or urgent illness to pay a sum for each day of treatment; 3, the payment by insured persons without dependents of the insurance benefit due them while in residence in hospital. It is also suggested that patients suffering from surgical tuberculosis should be excluded from the general hospitals and that the municipality should take over their care.

Disability Among Miners.—Some insight into the hazardous character of mining as an occupation are contained in the Monthly Report of Investigations of the U. S. Bureau of Mines (April, 1920). The number of men studied was 168,687, of whom 6,484 were employed as miners. Of the total number of men in the 42 occupations, 39,099 were disabled and lost 1,077,683 days from their work through illness or accident, an average of 6.4 days for each of the 168,687 persons. Of the number engaged in mining 2,012 were disabled and lost about 59,300 days or an average of 9.1 days for each miner employed. Thus the disability among miners caused by accidents and illness appears to be much higher than the average for all occupations combined; among the employees of all occupations, accidental injuries cause about twenty-eight per cent. of the disabilities and twenty-four per cent. of the disability days, but among miners accidents are perhaps responsible for an even greater proportion of disability than illness. The higher disability rate among miners as compared with the average for all other wage earners holds true among employees of all ages from twenty-five to fifty-nine.

Book Reviews

THE FUNCTION OF EMOTIONAL EXCITEMENT.

Early Chapters in Pain, Hunger, Fear and Rage. An Account of Recent Researches into the Function of Emotional Excitement. By WALTER B. CANNON, M. D., C. B. New York and London: D. Appleton and Company, 1920.

The reprinting of this book offers nothing especially new in its material but so important and fundamental was the original publication of the researches and conclusions of which it is the record that it well deserves a new issue. It remains as before a valuable contribution in the groundwork upon which psychology and physiology blend in the explanation of human activity and human ills. Its exactness and carefulness of statement, explaining step by step the experiments made and the conclusions drawn from them and supported by them, make it an exceedingly instructive book for all classes of readers. It furnishes basic facts for the specialized worker in psychology and medicine and it introduces the lay reader to the interplay of facts between the body and mind in a manner to fascinate him with these marvels of science.

The author begins from the more obvious interrelationship of physiological activity with the emotional life as observed in the processes of digestion. He then proceeds to the neurological distribution, anatomical and functional, which makes this possible. He shows that this makes possible also more obscure processes by which the glands of internal secretion, under similar control, are made accessible to emotional stimulus. Thus emotion may regulate or interfere with body changes which are essential in carrying out the organic needs of the body. Important among these are the liberation and distribution of blood sugar, the restoration of fatigued muscle, production of greater coagulability in the blood; all of which are proved to be closely related to the secretion of adrenalin. This in turn is also closely associated with emotional stimulus.

Several interesting chapters show the relation of these physiological phenomena to the selfpreservative needs of the organism, which is therefore provided for under these mechanisms through the intervention of the selfpreservative emotions of fear and anger. The sensation of hunger is also such a dominant emotion, able to work thus upon the bodily mechanism to bring about adjustments which will satisfy the organic need. The principle of this extends itself to the reproductive and all other organic needs. As these are all under the control of the threefold division of the autonomic system the interrelation of the emotions has its effect in the reciprocal antagonistic action of the parts of this system. The author thus designates the cranial division as the "upbuilder and restorer of the organic reserves, the sacrificial as the servant of racial continuity, and the sympathetic as the preserver of the individual." It is therefore of the utmost importance to follow the play of individual emotions related to the functional needs in their relation to these nervous divisions and the organs innervated by them. Normal functioning through mind and body is thus brought to clearer, more intelligible

understanding and furthermore the wide range of emotional disturbances is thrown into a new light and given a more effective basis of approach whether these manifest themselves in actual physiological derangement or in psychic symptoms.

NEW BOOKS ON THE EAR, NOSE, AND THROAT.

Otorhinolaryngology. By Dr. GEORGES LAURENS. Authorized English Translation of the Second Revised French Edition by H. CLAYTON FOX, F. R. C. S. (Irel.) Illustrated. New York: William Wood and Company, 1919. Pp. i-339.

To the audience for whom it is written this will prove a most helpful book, and the specialist of wide experience will find between its covers many practical hints of great value. The facts which every general practitioner should know about the more commonly encountered diseases of the nose, larynx, and ear are set forth with admirable clarity and without theorizing. Beside definite directions as to the diagnosis and ordinary treatment of troubles in these regions, the author has especially drawn attention to what the practitioner should avoid doing—a noteworthy departure in medical writing. The limitations of the general practitioner in treatment are outlined and the conditions under which special counsel should be called are clearly stated. A most important and impressive chapter is devoted to cocaine, cocaine poisoning and cocaineomania.

The illustrations are numerous and while rather diagrammatic, picture very adequately the conditions which they are intended to portray. On the whole, it is the most practical book on diseases of the nose, throat and ear for the nonspecialist that has come to our notice.

Diseases of the Throat, Nose and Ear. By W. G. PORTER, M. B., B. Sc., F. R. C. S. Ed. Third Edition, Fully Revised under the Editorship of A. LOGAN TURNER, M. D., Ed., F. R. C. S. Ed. Illustrated. New York: William Wood and Company, 1919. Pp. i-300.

A well written, thoroughly orthodox, elementary manual of disease of the nose, throat, and ear. As is usual, in the effort to compress a large amount of material into a small compass, many of the sections are rather casual and lack sufficient detail to give the reader a satisfactory comprehension of the subject under discussion. The illustrations, the majority of which are in color, are, on the whole, unusually good.

EDUCATION IN WAR AND PEACE.

Education in War and Peace. By STEWART PATON, M. D. Lecturer in Neurobiology, Princeton University. Illustrated. New York: Paul B. Hoeber, 1920. Pp. i-106.

The author is right, entirely so, but he has apportioned the world an enormous task, the valuation of individuals, a breaking loose from such terms as masses, classes, families, and demanded a place for every man and every man in his place. He has enlisted the psychologists, but, will the overworked general practitioner, the learned judge, the harassed, knowledgeable but unscientific teacher, the father seeking necessary dollars, the pleasure loving mother and the one weary of domestic drudgery be

likely to learn or eager to deal psychic judgment out to patients, criminals, students and children? Veterinary surgeons, stock breeders, agriculturalists, manufacturers are forging ahead in getting full values, in recognizing that the best is the cheapest, but that is not the same thing as dealing with human nature.

Doctor Paton aptly says: "Although organized fury no longer menaces civilization, throughout the world morbid instability, quarrelsomeness, extravagances of all kinds, and the neurotic tendency of blaming everybody except ourselves for our misfortunes make difficult sometimes the realization that man is a rational being. . . . We draw up schemes for redeeming society much faster than we take steps to add to our knowledge of man. . . . The medical men have been occupied in getting the human machine in order to run, but have given little or no attention to the amount of strain it would stand. . . . and of the kind of work it is best fitted to perform."

Naturally, the work could only be carried on by everyone who has anything to do with national, civic or family life giving intelligent cooperation, but it is in the psychic clinic Dr. Paton looks for leaders. One low form of appeal—but it might work—would be economy in the way of taxation. Asylums, almshouses, prisons, reformatories, hospitals (except for accidents) would need less and less for upkeep. Family quarrels, prodigal sons, spoilt children, sickly infants would cease to provide inmates for them and even labor troubles might cease.

SOCIAL JUSTICE.

The Unsolved Riddle of Social Justice. By STEPHEN LEACOCK, B. A., Ph. D., Professor of Political Economy at McGill University, Montreal. New York: John Lane Company, 1920. Pp. ix-152.

The first riddle ever asked was never guessed, but Samson, wearied by his wife's continual reproaches and tears, told her the answer.' Women also figure in Professor Leacock's last riddle, but even to them he can only give a theory, not a solution, for he himself declares it unsolved.

He thinks this unanswerableness is partly due to the fact that, while economists have been seeking a key, the lock (riddle) has been changed. Conditions of labor have altered so much that the old remedies and theories of wise men no longer fit. When the outburst of fury against machinery had died down, many thought it would be labor saving. Today, the idea is abandoned. It increases the quantity of work and the hours of work, because there is a feverish haste to supply not only the world's needs, but its unreasonable desires. Not one man in ten is employed on necessary things.

He gives a lucid résumé of the relative position of employers and workers: wherein they agree, and their common attitude toward consumers and prices. Is the basic value cost of production or value of production? Again, who will quell the conflict between private gain and public good? Who deny that the private ownership of land is one of the greatest incentives to human effort the world has ever known, effort not to be depressed but regulated?

After leading us to an apparent solution for a page or two, he rounds on us with a "This is impos-

sible," then places the riddle in a new aspect. But all the time he cheerfully shows that the last century has smitten the old selfishness asunder and education has taught the worker to formulate his righteous demands instead of suffering in half articulate wrath and despair. The new social solidarity "has shown that our fortunes are not in our individual keeping. We stand or fall as a nation. The welfare of each is contributory to the safety of all."

He finds no solution in the advanced socialist forms of government unless it is to be imagined that those chosen as directors are angelic, for human nature will not suddenly change, the process of regeneration will be very long, and lazy men, vicious men, addled men will not work cheerfully even for a fair wage.

"For the adult generation of today many things are no longer possible. . . . millions of us, the vast majority of industrial mankind, are distorted beyond repair." No state can survive unless all understandingly meet the social claims of the unemployed, the destitute, the aged, and the children and resolve to meet the enormous outlay this will involve.

Now comes the woman, and exceeds Mrs. Samson, for during seven centuries rather than seven days she has not ceased to beg an answer. She shows her underfed children, her love child, her unceasing drudgery, her cramped lodging. "I cannot see the answer for the dust of conflict has obscured the field of battle," says Professor Leacock, to her, "but, as far as I believe you can solve the riddle. See that your importunity ends in opportunity, not for you but for the children as their rightful heritage. In this lies the hope of the world. Success and capacity to live we cannot give, but opportunity, we can. Strive for legislation that will not permit your children to be stunted in brain and body for lack of food and air and by the heavy burden of premature toil. Your child is a burden for the moment but an asset for the future, and has a right to be clothed and fed and trained irrespective of its parents' lot."

All old bitter-minded men should read this book to their shaming, all young and fiery men to their heartening, all dull eyed mothers to their glowing inspiration, then would the upward ascent be really begun.

BIRTH CONTROL.

Pioneers of Birth Control in England and America. By VICTOR ROBINSON, Ph. C., M. D. Illustrated. New York: Voluntary Parenthood League, 1919.

Doctor Robinson is a good publicist. Beginning with the statement "Malthus was not a Malthusian," his book deals briefly but pertinently with the leading figures in birth control agitation here and abroad, from the impeccable Malthus to such modern protagonists as Havelock Ellis. The development of the movement in itself affords interesting material for psychological study. Economic conditions today are doing so much to impress people with the folly of having more children than they can raise that Doctor Robinson may be pardoned a triumphant overtone. The book is illustrated with portraits of many of the persons mentioned.

THE POETRY OF SASSOON.

Picture Show. By SIEGFRIED SASSOON, Author of *The Old Huntsman, Counterattack*, etc. New York: E. P. Dutton & Co., 1920. Pp. viii-56.

Before the war Sassoon was an inconspicuous and irrelevant poet who published limp volumes of verse bearing such titles as *Hyacinth* and *Melodies*. Today he is an outstanding figure in the world of poetry, an artist whose pitiless portrayal of warfare is akin to that of Barbusse and Latzko. There is no glory of the trenches in the lines of this young poet who spent four and a half years in them; he is concerned not with poppies growing in Flanders fields but with "the utter baseness, the depravity and horrible futility of all warfare" (the quotation is from a recent published interview).

The present volume is not devoted entirely to war poems. Its mood is grim for the most part, but there are flickers of wonder and mirth and whimsical detachment. Sassoon is evidently just coming out of the mood of stark horror induced by the war and is orienting himself anew with respect to the world of form and sound and color, but he is no longer the same plastic lyricist. Death, he says, in one of his poems, has made him "wise and bitter and strong," and his verse shows to an extraordinary degree the responsiveness of one who has assimilated a great experience and made it part of him. That is why his war poems are not merely recitatives of physical horrors; he goes much deeper than that.

It will be interesting to watch the further development of this poet. The child of wealth and ease, he went into the war a typical product of his class. He came out to ally himself with the masses, with youth, with all the struggle and aspiration of the world. He is the master of his medium, and his work holds both strength and beauty. Above all, his verse achieves the singing quality that makes poetry remembered.

FROM THE NORWEGIAN.

The Face of the World. By JOHAN BOJER. Translated from the Norwegian by Jessie Muir. New York: Mofat, Yard and Company, 1919.

The felt want of unity in this story is paradoxically a mark of its consistent conception and expression. The author, a true idealist, has created a character in whom an almost obsessive driving in many directions disturbs the synthetic, concentrated power of an otherwise capable and determined nature. Since such represents much of the difficulty of many lives, disturbing their actual value to society, the book presents opportunity for research into reasons for such a condition. The need for this and the point of application of individual and social introspection and remedy are suggested.

Harold Mark was in earnest with life, unwilling to receive even from his teachers a false and self-complacent estimate of the knowledge they imparted. In his student days "he worked in fits and starts—and then he would idle for a time, quite certain that, even then, the others would not easily catch up with him." He was clever, he was keenly alive to all that life had to offer, in work and pleasure, in love of nature, in a human interest, in which he kept a clear perspective of his own individuality and his partial responsibility for humanity's needs and failures apart from himself. In his later devoted serv-

ice as a physician there was no morbid absorption in his daily duties to interfere with his straightforward effective acts of service, but he maintained a hearty independence of the atmosphere in which he worked.

His difficulty lay in a marked inability to concentrate, not exclusively in regard to outside interests but also to his own contentment; and the satisfaction of those about him, particularly the wife of his earlier days. He would work vigorously but he could not pull himself together and hold his interests steadily to a centralizing aim. He suffered from a haunting reproach that he sat among clean and wholesome surroundings, amid the enjoyments of life, when thousands lived amid deprivation, ignorance and squalor. With this there was a tremendous driving obsessive interest to follow in the daily newspapers all the seething, unsatisfied need and hunger of mankind manifested in the happening of events all over the world. This comes in to disturb and before long to completely overturn the happy, busy life with his young wife. It pursues him through the later years even when he has apparently concentrated himself upon the narrower duties of a small Norwegian town. It makes it more difficult to enter with constructive sympathy into the spirit and life of the people whom he there serves as hospital physician. It is perhaps the scattering force which prevents his entering deeply enough into the life of the unfortunate Ivar Holth whom he all but saves from the consequences of an erotic monomania.

This incident, filling a large part of the story, serves to reveal the author's more sympathetic understanding of the varieties in which human nature manifests itself. He represents with psychological keenness the attitude of the various inhabitants of the small Norwegian town, varying only slightly with their slightly freer or more warped point of view, of the doctor, sincerely attempting to help, and of the tortured youth himself. The writer not only interprets his characters but portrays the disturbing and inhibiting reactions which produce misunderstanding, hostility and in this case fearful catastrophe in the end. In different degree and manner the town's inhabitants are sure this young man's obsessive attachment to an inaccessible married woman and his dreamy morbid pursuit of her are signs only of an incurable and vicious nature, a Lombrosian criminal type. The doctor believes in the man as a human being, sincere in his feelings, but unguided in the exercise of them. He helps and morally supports him for a while. He fails to find the point of entry into an inner appreciation of what the young man is really striving for, into the actual erotic need and fixation which would have given less external support but more actual contact of understanding and redirection, which the man needed. He could utilize only the more superficial and discursive means of suggestion and encouragement and diversion through occupation instead of definite psychoanalysis into the inner meaning of the situation, which would have tapped for the man his actual source of personal cure and rehabilitation. The other means, successful as they seemed for a time, were not sufficient to withstand the combined pharisaical expectation of the whole village that the end of the affair would be crime. The want of under-

standing more than fulfills the most exulting evil expectation and the monomaniac becomes at the end an incendiary who destroys almost the entire town. All this plunges the eager doctor into a deeper pain of questioning in regard to all the sufferings and separated realities of the world. It finally brings him at last to a more constructive conception of the unity running through and transcending it all. He is able at last to realize some inner music which makes a world harmony of all the effort and variety of event.

Why had he been so slow in learning this, why driven so vehemently to such a scattering of his concern into so many separate phases of the world's life that he had not sufficiently concentrated himself nor found the deeper or the higher peace? Can it be because of the strong mother who stood behind him as an urging force? She had always supplied him well with material means and with warm, strong sympathy and counsel. He himself felt that this was done too well, that she was too much a power behind his life, and the mother herself is sometimes frightened by what she has done. "And she thought she had done some good in the world! Had he now come as her judge?" Psychoanalysis has grown familiar with this uncontrollable force lying at the very base of life, its power too fearful for ordinary conscious recognition, too compulsive to permit of control and use in quieter, more effective paths. It scatters the personality not only into many paths through its force but chooses a too wide field as an expression of the eagerness of the inner nature seeking escape from the original intensity of the mother interest and occupation. The very original source of power becomes then only a lashing drive. Such seems in part at least to be accountable for the hero's difficult nature and the long experience before he has grown quiet.

FROM THE SPANISH.

Their Son, The Necklace. By EDUARDO ZAMACOIS. Translated by GEORGE ALLAN ENGLAND. New York: Boni and Liveright, 1919. Pp. i-186.

Zamacois has been heralded as the Spanish Guy de Maupassant. If he had been compared to one of the contemporary Spanish writers he would have made a better showing than by his admirer's attempt to have him fill the shoes of the French master. He shows himself as a keen observer of superficial psychological actions and reactions. The stories bear a close relation to the sensational newspaper stories of a metropolitan city. These he uses as vehicles. He then spins them into closely fitting tales. Of the two stories *The Necklace* is the stronger. In it the author depicts with keen analysis the emotions of a self-centered prostitute, a woman without a single redeeming feature, the mistress of a cold, calculating deputy, and the effect she has on a young man, a mere boy, who is a student in his first year of medical work. He shows how the boy, driven by the urge which she has awakened, becomes a thief. The wavering lad totters on the brink and then, angered by the taunts of a sneering jewel merchant, grabs the necklace. The story closes with the boy dying in his room—the room which she had scented with violets on a previous visit. Now the smell of decayed blood nauseates her. Unaffected by the boy's sacrifice she

sneeringly remarks that he has stolen the wrong necklace.

Their Son is a story which shows virtue to be someone else's reward. This description may be somewhat overdone but it is all too often true.

New Publications Received

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

PETER. MIDDLETON. By HENRY K. MARKS. BOSTON: Richard G. Badger. Pp. iv-370.

THE BOOK OF THE DAMNED. By CHARLES FORT. NEW YORK: Boni & Liveright, 1920. Pp. vii-298.

SWINBURNE AS I KNEW HIM. By COULSON KERANIAN. New York: John Lane Company, 1919. Pp. vii-108.

THE CREAM OF THE JEST. By JAMES BRANCH CABELL. New York: Robert M. McBride & Co., 1920. Pp. ix-280.

A GOLDEN SCORPION. By SAX ROHMER. Illustrated. New York: Robert M. McBride & Co., 1920. Pp. v-308.

TEMPERAMENT AND SEX. By WALTER HEATON, Prize-man, Victoria University (England). Boston: Richard G. Badger. Pp. iv-144.

THE HISTORY OF TRADE UNIONISM. By SIDNEY and BEATRICE WEBB. Revised Edition. New York: Longmans, Green & Co., 1920. Pp. v-784.

SPRINGTIME AND OTHER ESSAYS. By SIR FRANCIS DARWIN, Author of *Rustic Sounds and Other Essays*. Illustrated. London: John Murray, 1920. Pp. ix-242.

POEMS BY A LITTLE GIRL. By HILDA CONKLING. With a Preface by AMY LOWELL. A Portrait by JAMES CHAPIN. New York: Frederick A. Stokes Company. Pp. v-120.

FORTY-EIGHTH ANNUAL REPORT OF ROOSEVELT HOSPITAL, NEW YORK. From January 1, 1919, to December 31, 1919. Exclusive of Detailed Medical and Surgical Statistics. New York: 1919.

VERTEBRATE ZOOLOGY. By HORATIO HACKETT NEWMAN. Ph.D., Professor of Zoology and Embryology in the University of Chicago. Illustrated. New York: The Macmillan Company, 1920. Pp. vii-432.

THE OLD HUMANITIES AND THE NEW SCIENCES. By SIR WILLIAM OSLER, B.T., M.D., F.R.S. With an Introduction by HARVEY CUSHING, M.D. Illustrated. New York: Houghton, Mifflin Company, 1920. Pp. vi-64.

WOMEN'S WILD OATS. By C. GASQUOINE HARTLEY. *Author of The Truth about Woman, Motherhood and the Relationships of the Sexes, etc.* New York: Frederick A. Stokes Company, 1920. Pp. vii-227.

INDUSTRIAL ADMINISTRATION. By A. E. BERRIMAN, ST. GEORGE HEATH, LEONARD HILL, T. B. JOHNSTON, A. F. STANLEY KENT, T. M. LEGGE, T. H. PEAR, B. SEEBROHM ROWNTREE. Manchester: Longmans, Green & Co., 1920. Pp. vii-203.

THE PSYCHOLOGY OF DREAMS. By WILLIAM S. WALSH, M.D., Fellow American Medical Association; Member American Medico-Psychological Association, American Genetic Association, etc. New York: Dodd, Mead & Co., 1920. Pp. i-361.

GENERAL AND INDUSTRIAL INORGANIC CHEMISTRY. By DR. ETTORE MOLINARI, Professor of Industrial Chemistry at the Royal Milan Polytechnic and at the Luigi Bocconi Commercial University at Milan. Second Edition, Translated from the Fourth Revised and Amplified Italian Edition by THOMAS H. POPE, B.Sc., F.I.C., A.C.G.I. Illustrated. Philadelphia: P. Blakiston's Son & Co., 1920. Pp. v-876.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

THE TREATMENT OF PATIENTS WITH SLIGHT CARDIAC FAILURE.

By HAROLD E. B. PARDEE, M. D.,
New York.

Assistant Attending Physician, New York Hospital; Instructor in Medicine, Cornell University Medical School.

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DIET.

The diet of patients with mild degrees of heart failure is usually not so important as other phases of the management, but digestive strain must be avoided as well as other exertion. Large meals, particularly meals with much liquid, will often produce symptoms of discomfort which, though referred to the stomach, are really of cardiac origin. The patient must eat enough to keep properly nourished but should not be allowed to gain weight beyond that proportionate to his height. It takes almost as much energy to carry twenty pounds of adipose tissue up stairs or along the street as it does to carry twenty pounds of books. Extra weight must be carried and blood must be pumped through the capillaries of the extra tissue, so that every additional pound of weight increases the demand upon the heart. This added burden may be just sufficient to cause a heart to show some sign of failure, whereas it would otherwise be able to carry on its work. When it is advisable to reduce the weight of a patient with heart disease, we must accomplish the reduction more cautiously than with a healthy patient, for it is important that the heart muscle should not suffer from undernourishment, and that the patient's resistance to disease should not be lowered. A few pounds a week is quite sufficient for the patient to lose.

DIGITALIS.

In every sort of patient with chronic heart failure we should consider the advisability of giving digitalis. Some patients will be found to do very well without this drug, provided they pay proper attention to the general measures of hygiene, diet and exercise which have been outlined. Other patients will be unable to remain two or three weeks without it, on account of the evident increase in their dyspnea and the resulting limitation of their effort. Nearly all patients with auricular fibrillation are placed in this category, there being relatively few who can do without digitalis, and still fewer who do not feel better while taking what is for them a proper daily dose. Still other patients seem to do well enough without digitalis for a time, but occasions will arise when their symptoms become more marked for one reason or another, and on these occasions the proper administration of digitalis helps greatly to relieve them from their symptoms. There are only certain rare conditions in which digitalis can be actually harmful, so it is quite proper advice to try the effects of a correct course of digitalis upon all patients who have chronic symptoms of heart failure.

CONTRAINDICATIONS.

There are three conditions under which digitalis is contraindicated. Certain cases with a tendency to heart block are made to show the phenomenon of dropped beats by its administration. These beats actually fail to occur, as can be shown by polygraphic or electrocardiographic records and also by the fact that no sounds are heard at the heart between the second sound of the preceding systole and the first sound of the systole following the pause. This failure of ventricular systole is due to failure of transmission (blocking) of the impulse which the auricles send down the auriculoventricular bundle and which normally causes the ventricles to contract. Digitalis will not cause such a blocking of the impulse if the bundle is normal, but in the presence of even slight impairment it may do so.

In such a case the objection to continuing digitalis is that the blocking of the auricular impulses may become still more frequent and may even result in complete dissociation of the auricles and ventricles. This will not be permanently harmful for the normal rhythm will reappear when the effect of the digitalis passes, but the pulse becomes so slow under these circumstances that the heart's efficiency as a pump is seriously hampered. If atropine is given with the digitalis in doses of one hundredth grain three or four times daily, it may be possible to continue the digitalis without the block becoming increased, but some patients have such unpleasant symptoms from the atropine that this cannot always be used.

A second contraindication for digitalis is the frequent occurrence of coupled beats due to ventricular extrasystoles in a heart, a condition more frequently found in the presence of auricular fibrillation than with normal rhythm. It indicates an increased irritability of the ventricular muscle, and digitalis should be avoided because of its action in increasing the muscular irritability. If the heart is rapid with frequent extrasystoles digitalis will usually slow the heart and at the same time diminish the number of extrasystoles because of the improved condition of the muscle from the improved circulation. Only in the cases with slow rate and where extrasystoles do not decrease as the heart slows are we fearful of the effect of digitalis. The danger is that great overirritability of the ventricle may lead to ventricular fibrillation.

A third contraindication is that the administration of digitalis may lead to an increase in precordial pain or discomfort, or palpitation which the patient may feel. One cannot predict in what cases this effect will be found, but its appearance should lead to a decrease, at least temporarily, in the daily dose of digitalis, and may necessitate a cessation of medication.

Occasionally there will be a patient with auricular fibrillation whose heart rate becomes so slow with comparatively small doses of digitalis that we feel that it is not advisable to continue it. These pa-

tients have a slight defect of the auriculoventricular bundle so that its function is somewhat below par to start with, and the digitalis only makes the latent tendency to block more evident. These patients are like those with the normal rhythm and a tendency to block, and the influence of digitalis may be continued if a small dose of atropine, one hundredth grain three or four times daily will relieve the block without causing unpleasant symptoms.

In the presence of a complete heart block, which is not due to digitalis, and which is not relieved temporarily by a hypodermic injection of one fiftieth grain of atropine sulphate, digitalis may be given with benefit, for the increased muscular irritability leads to an increase in the ventricular rate, which is desirable, and probably to an increase in the strength of the contraction. A patient with complete block may rarely be found in whom the effect of digitalis is bad, in that it leads to the appearance of attacks of the Stokes-Adams syndrome with complete ventricular stoppage. This obviously calls for the discontinuation of the drug.

(To be continued)

The Perineum as It Concerns Obstetrics.—G. Bentley Byrd (*Virginia Medical Monthly*, February, 1920) considers that a dose of one sixth or one fourth grain of morphine or ten or fifteen grains of chloral hydrate given late in the stage of dilatation promotes more ready dilatation of the parts. By delivery under anesthesia the chances of laceration are materially decreased. It is best to keep the head well flexed until the occiput has passed under the symphysis, and then complete delivery is made by extending it. This extension is effected very easily by placing the right hand, covered by a towel, about midway between the rectum and the coccyx and pressing upward, during which time the left hand grasps the head and keeps it firmly against the pubic arch. Often it is not the delivery of the head but that of the shoulder which causes laceration. This can usually be avoided by first allowing the shoulders to rotate and then drawing the anterior shoulder well under the pubic arch before delivery of the posterior one is attempted. In forceps delivery in cases with occipito-posterior position the best procedure probably is rotation with the forceps or manually, thus making the position an anterior one, and subsequent application of the forceps in the corrected position. One should never try to drag the occiput over the perineum. After the head has been brought down to the vulval outlet, the forceps should be removed and the head delivered in the manner already described. In cases in which the next pain seems likely to tear the perineum, it is best to make a posterolateral incision, thereby controlling the location and degree of laceration. As regards the best time to repair a laceration, no definite rule can be laid down. Where the patient is in good condition and has not had a particularly tedious labor, Byrd usually repairs immediately after delivery of the placenta. Where, on the other hand, there is the least anxiety about her general condition, he waits several hours at least before suturing.

Anesthesia is always used for repair, preferably nitrous oxide oxygen, but also frequently ether. Twisted silk sutures are best; many repeated perineal repairs may be ascribed to the use of catgut. The latter is, of course, used for any buried sutures. After perineal repair the patient is catheterized every eight to twelve hours until the bowels move; then she is allowed to void. The nurse is instructed to pour a one in 3,000 solution of mercury bichloride over the parts and thoroughly bathe the vulva afterward with the same strength solution.

Ectopic Pregnancy.—F. W. Gershaw (*Canadian Medical Association Journal*, March, 1920) says it is thoroughly established that once a diagnosis of ruptured ectopic gestation has been made immediate operation is demanded. Even though symptoms of collapse are profound most authorities believe this to be the safer procedure. The abdomen is opened by the lower midline incision, the hand is introduced and the affected tube and ovary rapidly brought into view. A pressure forceps is applied between the mass and the uterus, and another on the distal side of the ruptured tube; these control the hemorrhage promptly. The tubal sac is removed, but the ovary is left if at all healthy. Ligatures are then applied, the raw edges stitched together and covered with peritoneum. The woman is not sterilized as a result of this operation. When ectopic gestation is discovered in the later months of pregnancy it is generally conceded that it is advisable to delay operation until the child is viable. In operating on these patients the removal of the dead placenta is easily accomplished, as a rule, but in dealing with the living placenta the terrific bleeding attending efforts at its removal makes the operation one of extreme gravity.

Tumors Complicating Pregnancy.—H. R. Spencer (*Lancet*, February 21, 1920) reports all his cases of uterine fibroid complicating pregnancy in which the outcome was fatal or in which abdominal section was performed. From his own experience and from the literature, he summarizes the facts concerning the condition. It occurs about once in one hundred and fifty pregnancies and in a large proportion of the cases at an age over thirty. There is some evidence that fibroids are more common in sterile or virgin uteri than in the uteri of child bearing women. In the pregnant uterus a fibroid is likely to increase considerably from edema and also from a definite hyperplasia of the tissue. After delivery there is often an actual marked decrease in size of the tumor, a change which at times is unbelievably rapid. Another important change in the fibroid is necrobiosis as a result of which there is occasionally infection either by continuity or from the blood. The effects of fibroid tumors on pregnancy may be to cause ectopic gestation, placenta previa, premature or postmature labor, abnormal presentations, retention of placenta or decidua with postpartum hemorrhage, pressure symptoms, as edema of the legs, and pain or tenderness over the tumor, especially if there is necrobiosis. The diagnosis in pregnancy is frequently difficult and must be made by consideration of the size and consistency of the uterus, its outline, and the presence or absence of signs of pregnancy. The prognosis is good in most cases if

the diagnosis is made and the patient kept under close observation. Of the three fatal cases in this series, one was from a strangulated ileum caught between two subperitoneal masses and the others were from sepsis arising from infected necrotic tumors. Treatment consists in careful observation of the patient with every effort toward the carrying on of the pregnancy until a living child may be delivered, normally if possible, or by induced labor or the conservative or radical Cæsarean section as the particular case indicates.

Care of the Bowels during the Puerperal Period.

—Ross McPherson (*American Journal of Obstetrics*, December, 1919) tested the effects of omission of the customary cathartic during the puerperium in a large series of cases. Patients were placed alternately in two wards, in one of which the cathartic was administered and in the other, omitted. At the close of the test there were 900 patients who had been given routine catharsis and 911 without catharsis. In the noncatharsis cases three days were allowed to elapse, when, if no bowel movement occurred, a low saline enema was given; the bowels were then not disturbed until three more days had passed, when another saline enema was given, and so on until the patient was discharged from the hospital. Among the 900 who had catharsis, in eighty-four a temperature of 100.4° developed twice during the twenty-four hours, at some time during their convalescence, whereas among the 911 without catharsis in only fifty-three such a temperature developed. In the latter series, the number of women who had a normal bowel movement every second or third day was fairly large. None of the patients who were not given cathartics had foul breaths, headaches, coated tongues, or other time honored sequelæ supposed to occur after a day or two of constipation. Stress is laid on the lessened danger of infection from spreading about the mother's soft parts of loose diarrhetic movements.

Treatment of Toxemia of Pregnancy.—Robert E. Seibels (*Charlotte Medical Journal*, April, 1920) advises the avoidance of meat more than twice a week, also quickly growing vegetables and highly seasoned foods and drinks. The urine should be examined twice weekly and care should be exercised to have the bowels move daily. The patient should walk two miles daily and avoid motoring, dancing, tennis and bathing in the surf. Six glasses of water should be taken daily—one on arising, two in the forenoon, two in the afternoon, and one before retiring. If vomiting of a pernicious type sets in the protein intake should be diminished by putting the patient on a liquid diet for several days, forcing the water intake to the point of tolerance, daily irrigations, and catharsis with salts. When eclampsia threatens, decrease further the ingestion of protein, increase the elimination, and control the convulsions. A fluid diet, without milk, is the best. To increase the elimination, five grains of calomel should be given, followed in six hours by half an ounce of magnesium sulphate; half an ounce of magnesium sulphate to be taken every morning, a hot pack once or twice a day, and the ingestion of water forced. Rectal irrigations of five gallons of sodium bicarbonate solution, thirty grains to the pint, at a tem-

perature of 110° twice daily. Convulsions are controlled with ether and by the administration of twenty grains of chloral hydrate by rectum every four hours. The question of emptying the uterus must be considered in the severe cases. The indications for this procedure are rising blood pressure, increasing ammonia and decreasing urea nitrogen in the urine, vomiting of blood, or a convulsion. Before the third month the cervix can be dilated and the products of conception removed by curettage; after the third month, either, 1, artificial dilatation, rupture of the membranes and delivery, either normal or by version; 2, Cæsarean section—in those cases in which the condition is rapidly becoming more acute, if convulsions have occurred, or in certain patients with long, rigid cervixes. The general treatment must be continued after delivery.

X Ray and Radium Therapy in Uterine Fibromyoma.—J. L. Faure (*Presse médicale*, March 27, 1920) states that, on the whole, the x ray treatment yields satisfactory results in fibromyoma of the uterus. The disadvantages of the method are negligible, x ray dermatitis is exceptional, and the treatment does not seem capable of promoting cancerous degeneration. Comparing x ray treatment and hysterectomy, it should not be overlooked that the latter may give rise to certain postoperative results as cystitis and abscess of the parietes, and that it is attended by a mortality of from three to five per cent. The author has of late been gradually substituting radium for the x rays, and its effects have been rapid, constant, and permanent. One patient was already in a serious condition on account of a large fibroma extending as high as the umbilicus. After two applications of radium prompt improvement took place, and the uterus was reduced to normal dimensions. Surgical intervention, while attended with some mortality, yields ninety-five per cent. of immediately and permanently favorable results. X ray and radium treatments are not attended with any mortality and yield eighty per cent. of cures, but they fail in twenty per cent. of cases. Aside from the cases in which the patient's own attitude determines the form of treatment to be employed, surgical measures are clearly indicated in doubtful cases, and especially in cases in which a suspicion of neoplastic degeneration is warranted. They are likewise indicated in cases associated with fever, peritonitis, necrosis, etc.; in cases complicated by pregnancy; in acutely progressive, large fibroids, and in the presence of pedunculated fibroids, which seem to be relatively insensitive to x ray or radium treatment.

Anesthesia in Obstetrics.—Paul Appleton (*Boston Medical and Surgical Journal*, March 25, 1920) believes that when properly used with a good working apparatus, nitrous oxide with oxygen, supplemented in selected cases by ether, can be administered in ninety-nine per cent. of all obstetrical cases so as to give the patient a practically painless labor. He believes that this can be done at much less expense than is commonly supposed, and, from the purely technical point of view, it saves nervous strain, often true shock, and greatly facilitates the general management of the case.

Miscellany from Home and Foreign Journals

Prenatal Care.—C. A. Ritter (*American Journal of Obstetrics*, November, 1919) states that approximately thirty per cent. of all pregnancies are in some degree abnormal. Four per cent. of all gestations present definite toxic or preeclamptic danger signals; two per cent. of expectant mothers show heart lesions; nine per cent. possess some degree of pelvic contraction; three to five per cent. are affected with syphilis; six per cent. present abnormal blood pressure; antepartum hemorrhage is present in one per cent., and 0.7 per cent. show evidences of tuberculosis. Seven per cent. of all deaths of women between the ages of eighteen and forty are caused by puerperal infection. In the presence of these dangers the safe course is to furnish rational prenatal care in every case of pregnancy. At the present time about eighty-five per cent. of the child bearing women of America are accorded no saving degree of antepartum care. To the question whether the prospective mothers are willing to receive supervision along these lines when approached on the grounds of personal safety, the answer coming from those who have personally applied the measures is very largely in the affirmative. Obstetricians should strongly impress upon their female clientele of child bearing age the advantages to be derived from placing themselves under a competent medical adviser early in gestation.

The Wassermann Reaction and Miscarriages.—Dr. Herman Goodman (*Surgery, Gynecology and Obstetrics*, April, 1920) reports the results of the Wassermann reaction on blood taken from 1,320 pregnant women at the Sloane Maternity Hospital, New York. Of this number, eighty-nine or 6.7 per cent. gave four plus positive results, and two per cent. more gave three plus. The frank negative tests were given by only eighty-seven per cent. of the women. That syphilis, as evidenced by the serological reaction, is a fruitful source for frustrated pregnancies and comparative sterility is shown by the tables in the report. Of the four plus positive multiparæ, fifty-two per cent. had suffered one or more miscarriages, as compared with thirty-seven per cent. of the Wassermann negative multiparæ. No four plus positive patient gave a history of having been pregnant more than six times. Among the syphilitic women carrying their second child, thirty-eight per cent. had miscarried the first as compared with twenty-seven per cent. of the Wassermann negative women who had miscarried the first pregnancy. The expectancy for the four plus Wassermann multiparous women to miscarry is seventy-five per cent., while that of the negative multipara is about forty-five per cent. Doctor Goodman further reports that only one woman among the 1,320 gave a history of having had syphilis, although approximately one woman out of every eleven gave a strongly positive Wassermann reaction. The opportunity of correlating the histories and serological reactions was given Doctor Goodman by the late Prof. E. B. Cragin and Dr. R. Ottenberg, under whose supervision the laboratory tests were made.

A Case of Quadruple Gestation.—Pinard (*Bulletin de l'Académie de médecine*, February 24, 1920) reports a case of quadruple gestation in a woman who had already given birth to six children—four boys and two girls. There was no history of even a twin pregnancy either in her family or the father's. The multiple gestation caused enormous abdominal enlargement and pronounced edema of the lower limbs and suprapubic region. The patient was obliged to remain in bed for several months before labor. No albuminuria was noted at any time. Labor is believed to have set in before term. The membranes about the first child ruptured spontaneously; in the case of the three others they were ruptured artificially. About two and a half hours elapsed between the birth of the first and fourth infants. Twenty minutes after the birth of the fourth infant hemorrhage occurred and the placenta was extracted. The puerperium was uneventful. Five years later all the children—two boys and two girls—were living and well. According to Puech quadruple gestation occurs in France in only one out of every 2,074,306 pregnancies.

The Frequency and Significance of Omphalitis.—A. N. Creadick (*Surgery, Gynecology and Obstetrics*, March, 1920) reports that in a series of 2,200 consecutive deliveries, an inflammatory lesion of the umbilical cord has been found in forty-three cases. The lesion is not pathognomonic of syphilis for it was present in forty cases where there was no evidence of syphilis, and it was absent in twenty-nine cases of undoubted syphilis. The lesion arises by the extension of bacterial infection from the placenta. Bacteria are frequently demonstrable in sections of the cord. The lesion is commonly associated with prolonged labor after premature rupture of the membranes. The frequency of these infections and the resulting infant mortality may be reduced by the use of rectal in place of vaginal examinations.

Malignancy and Radiation. A Study of the Relation of the Structure of Cancer Tissue to Radiation.—Frederick Bryant (*Boston Medical and Surgical Journal*, March 11, 1920) believes in combining x rays and radium in a routine way, and would not feel justified in attempting to treat malignancy if he could not avail himself of both forms, for each has its own appropriate application. Radium is far superior for treating the cavities of the body, or, when used in a needle form or in glass emanation tubes, of piercing the mass itself so that a powerful concentrated action of the rays is obtained. It produces a greater degree of reaction without injuring permanently the surrounding tissues. The röntgen ray is more adapted to the covering of large surface areas, including the mass or scar of the wound, the metastases, and the lymphatic distributions. The most important factor in treating cancer is the control of the extensions. While radium acts with powerful local effect, it is not suited to check the general progress of the growth; deep röntgen therapy is better for this.

Appearance of Isoagglutinins in Infants and Children.—W. M. Happ (*Journal of Experimental Medicine*, March, 1920) studied the isoagglutinative reaction of 131 infants and children from birth to ten and a half years by testing their serum and washed corpuscles microscopically against the serum and corpuscles of each of the four adult groups (Moss classification). At birth the group is established in very few instances, and only once was it established in fifteen samples of blood from the cord. The corpuscles become agglutinable before agglutination is present in the serum. After one year the relative proportion of the fixed groups is about the same as in the adults. The mothers' blood was also grouped, and as a result of these findings, Happ states that it is not a safe practice to transfuse infants with their own mothers' blood without the usual preliminary tests. The breast milk of fourteen nursing women was found to contain isoagglutinins, which in each instance fell into the same group as that of the mother's blood. These agglutinins are probably not transmitted to the nursing infant through the milk.

Indolent Sores on the Fingers.—R. W. MacKenna (*British Medical Journal*, December 13, 1919) states that an indolent sore on the finger of a dentist or of a physician is frequently not considered a chancre because it is not indurated. He emphasizes the fact that chancres on the fingers do not follow the rules for chancre at the seat of election and gives the following for the chief clinical features of chancre of the finger: 1, Indolent character; 2, slow progressive increase in area; 3, shallowness; 4, scanty discharge; 5, comparative painlessness; 6, early involvement of nearest lymphatic nodes. Any of these features may be masked by a secondary infection. Because the Wassermann test fails to give a diagnosis in the early stages, it is of the utmost importance to get a microscopic diagnosis of the serum from the sore by the dark field or india ink method very early. At least three examinations of the serum must be negative before a negative diagnosis can be made. Cases are cited to show the great importance of making the early examination of the serum of all indolent sores of the finger.

Colony and Extraintitutional Care for the Feeble-minded.—Charles Bernstein (*Mental Hygiene*, (January, 1920) tells of the difference in the type of the feeble-minded who have come to be admitted into the institution within the last decade. The conclusions which he draws are as follows:

1. It is believed that with better facilities for manual, industrial and vocational training in the public schools, to make up for the lack of opportunities for physical development, home training and apprenticeship such as existed in the past, many of the borderline cases will be saved in community life and will never need asylum or custodial care.

2. The enlargement along the lines of colonization, to rehabilitate the patients who came to be cared for, thus vacating many beds in the existing institutions, and making them available for younger and more socially dangerous cases.

3. The services of many of these women could well be utilized in large centres of population for domestic

work, hand laundry and sewing, thus in no way competing with native or naturalized American labor. At least twenty per cent., and he believes even forty per cent., of all the feeble-minded and borderline cases can be successfully and economically so handled.

4. There is ample opportunity for colonization of all the available trained men on various parcels of State owned land and on abandoned or undeveloped farms, where such labor is especially needed. At the same time the individual is rendered happy, contented and selfsustaining in an environment well suited to his mental state. It is believed that if this colony system is continued and proves as successful in the future as it has in the past, it will be possible to provide for at least half of the feeble-minded who will have to be cared for by the State of New York because of dependency or delinquency. These patients will be made happier and more contented by this method of treatment, much more normal in their lives and activities, while at the same time the public will have the benefit of labor which otherwise, according to present indications, would not be available.

In connection with such a colony system, many of the boys and girls who have proved to be entirely satisfactory and amenable to ordinary family life will be placed on parole, boys on farms and girls with good families, to the extent of some five thousand at least. During the past ten years, many boys and girls had thus been rehabilitated, and the fact that a few failed was no sure proof that a mistake had been made. Many normal individuals had at one time during their lives been near failure and eventually had found themselves. A small number of complete failures should not lead to a condemnation of a system that was proving itself successful in the great majority of cases, with benefit both to themselves and to society.

Births, Marriages, and Deaths.

Died.

ALLEN.—In Corinth, N. Y., on Wednesday, May 26th, Dr. Henry James Allen, aged sixty-six years.

BOXLEY.—In Louisa County, Va., on Thursday, April 22nd, Dr. James Garland Boxley, aged seventy-seven years.

DUNAVANT.—In Memphis, Tenn., on Sunday, April 11th, Dr. Buford Nelson Dunavant, aged thirty-seven years.

GOODSELL.—In Rhinebeck, N. Y., on Friday, May 21st, Dr. James F. Goodsell, aged seventy-one years.

KELLAM.—In Washington, D. C., on Sunday, April 11th, Major Frederick C. A. Kellam, Med. Corps, U. S. A., aged thirty-eight years.

LOOPE.—In Seattle, Wash., on Tuesday, May 11th, Dr. George Lafayette Loope, aged seventy-four years.

MAYER.—In Johnstown, Pa., on Saturday, May 22nd, Dr. Louis Henry Mayer, aged fifty-eight years.

SANBORN.—In North Amherst, Mass., on Tuesday, May 18th, Dr. Joseph Lander Sanborn, aged fifty-four years.

SCOTT.—In Long Beach, Cal., on Sunday, May 9th, Dr. George H. Scott, aged ninety-one years.

SIEGEL.—In Brooklyn, N. Y., on Tuesday, May 25th, Dr. Ferdinand Siegel, aged fifty-three years.

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THE LETHAL DOSE OF RADIUM IN MALIGNANCY.*

By RUSSELL H. BOGGS, M. D.,
Pittsburgh, Pa.,

Röntgenologist, Allegheny General Hospital; Dermatologist and
Röntgenologist, Columbia and Pittsburgh Hospitals.

The results of radium treatment in malignancy depend upon whether a lethal dose is given. In giving a lethal dose the susceptibility of the malignant tissue to the radiation must be determined as well as its depth from the surface. Many are still confusing the erythema with the lethal or cancer destroying dose; the erythema dose in some instances is the lethal dose. In the past many radiotherapeutists expected an erythema dose to cure the malignant lesion regardless of the type. It was known almost from the beginning that basal cell epitheliomata and lymphosarcomata were more susceptible to radiation of either radium or the röntgen rays. Some have realized that certain types of sarcoma and carcinoma require three or more times the erythema dose. The metastases may be more malignant or less malignant than the original growth, but recurrences are generally more malignant than the primary growth. It is also true that the metastatic glands in every case do not respond to the same amount of radiation. It requires more radiation as the distance from the surface increases, and this loss of intensity must be made up by crossfiring. Therefore, it can readily be seen that radiotherapy is a difficult and complex problem, and although the subject is difficult for many to master, most of those using radium and the röntgen rays have not made a comprehensive study of either agent or malignancy.

Malignancy should be a specialty in itself, but with most surgeons and with most of those applying radium it is a side issue. Inefficient treatment so often leads to a fatal ending in favorable cases that no one inexperienced should treat even the early cases. Eradicating every malignant cell is difficult, no matter how thoroughly the method employed is carried out. Most radiologists and surgeons formerly were satisfied with the removal of the visible part of the disease. If the local growth is removed either by surgery or by radium, leaving a cancer growing edge, the patient will not be cured. Cutting out the centre of a malignant growth usually hastens metastases, because it re-

moves the natural local barriers. Antoperative raying is being advocated by some and may even be more valuable than postoperative. Even if a lethal dose cannot be given, the treatment may be sufficient temporarily to check proliferation and make the lymphatics a stronger barrier against cancer cells when operation is performed. It fact, it would seem that antoperative raying renders latent many cases of malignant growths.

Dr. William J. Mayo, in his presidential address before the Clinical Congress of the American College of Surgeons, October 20, 1919, advocated antoperative radiation in the following words:

"Radiotherapy has justly achieved a reputation in the postoperative treatment of cancer. It would appear, however, to have its greatest field of usefulness in preparing a malignant area against wound grafting during operation and its ability at least temporarily to reduce the vitality of the malignant cell. Radiotherapy, whether applied as radium, x ray, or heat, sickens malignant cells beyond the area of destruction. During this period of cell sickness their resistance is reduced and operation is most efficient; but operation should not be delayed after radiotherapy, since the period of increased cell vulnerability is short and the connective tissue development, which interferes with subsequent operation, is rapid. By properly combining radiotherapy with surgery we can increase operability, lower mortality, and increase percentage of cures. Radiotherapy destroys cells for a certain distance, but cells are sterilized at a greater distance, so that their reproduction is checked, and connective tissue is caused to develop which acts as a barrier to the further extension of the malignant process."

In calculating the filtration and the number of ports of entry or amounts of crossfiring necessary to give a lethal dose to metastatic lymphatic glands, it is not only necessary to know the anatomical situation and which chains are most prone to metastases, but we must know the depth and the density of the overlying structures. It makes quite a difference whether the glands are situated half an inch or four inches from the surface. Formerly those employing both radium and the röntgen rays paid little attention to loss of radiation by divergence of the rays or by absorption in the tissues. They seemed to think that because radium would penetrate thick metals or because a röntgenogram could be taken of thick parts, the penetrating power

*Read before Erie County Medical Society, Erie, Pa., April 6, 1920.

was all that was needed. Therefore, a majority of those employing radiotherapy give a surface erythema dose, and perhaps only one eighth or less of the dose reaches four inches below the surface of the skin. Then, if the lethal dose is from three to four times the amount of the erythema dose, the radiation at this distance through one port of entry is useless.

Every one employing either radium or the röntgen rays should make a study of the lethal and the erythema dose, and also know at what depth from the skin he is able to destroy certain types of malignant tissues. The degree of malignancy is no guide to the amount of radiation in determining its lethal dose. On account of rodent ulcer being of a low degree of malignancy, growing slowly and responding to small amounts of radiation, these circumstances led many to believe that a lethal dose was determined by the degree of malignancy of a tumor. This is erroneous. Medullary carcinoma may respond more rapidly to radiation than the scirrhus type, but it grows more rapidly and invades the glands earlier, so if a cure or even an inhibitory effect of the disease of this type takes place, both the local tumor and metastases must be given sufficient radiation. If results are going to be produced in the medullary type, the cancer cells must show effect within three or four weeks, and fibrous tissue must be forming at the end of this time. In the scirrhus type, the fibrous formation has already taken place by nature's process.

In squamous epithelioma of the lower lip an erythema dose will often partially heal the lesion, and it may remain stationary for some time; but it nearly always requires three or four times this amount to destroy all the cancer cells. Clinically much less than a lethal dose checks the growth of a cancerous process and starts fibrosis at the end of three or four weeks. It is always important in estimating the susceptibility of a growth to radiation to know the histological type.

In this connection permit me to quote the following conclusions from the article of Wood and Prime, published in the *Journal of the American Medical Association*, January 31, 1920, in their study of lethal doses in mouse tumors:

"The practical conclusion which may be drawn from these observations is that the amount of röntgen ray necessary to kill all the cells of a rapidly growing, very cellular, and highly malignant sarcoma or carcinoma in man is between five and seven erythema doses of filtered röntgen ray when the tumor is on the surface of the body. Every centimetre of tissue that covers the tumor makes an additional amount of röntgen ray necessary." They further conclude that, at a depth of ten cm. from the surface, "while many tumor cells may possibly be slowed in their progress and mitotic forms killed at such depths, it is doubtful whether all can be destroyed. The basal cell tumors and the lymphosarcomata are, as is well known, much more susceptible to radiation. Small, superficial, metastatic carcinomata are also, in some instances, more susceptible than in the primary tumor."

It is to be remembered that Wood and Prime are speaking of only the direct action of radiation on

malignant tissue, but there is an indirect effect of radiation on malignant cells by the formation of fibrosis which starts to form three or four weeks afterward. Both are important, and a lethal dose should always be given whenever possible; but less than a lethal dose sickens malignant tissue, as Mayo expresses it, and starts the formation of fibrous tissue which is a barrier against the disease. At present, by burying radium needles, a lethal dose can nearly always be given, but in the treatment of deep metastatic glands we may be compelled to depend upon both the direct and indirect effect of radiation on malignant cells.

In a paper on Radium in the Treatment of Carcinoma of the Cervix and Uterus, read before the Eastern Section of the American Röntgen Ray Society, January, 1920, I discussed the difference between the erythema and lethal doses of radium and the röntgen rays. An attempt was made to show that many were treating the local growth efficiently, but only a small number of these realized the difficulty in treating the metastatic lymphatics in the pelvis. In all malignant lesions, except rodent ulcer, radiation should consist of treatment of the local growth and the adjacent lymphatics. In treating both the local growth and the lymphatic glands, the burying of radium is a step in advance over surface applications, as it requires so much less radium to give a lethal dose. Hanley's investigation of the lymphatics have made metastases more thoroughly understood. Unfortunately there is no method of diagnosis by which we can tell whether metastases have reached a certain chain of lymphatics or not. In some cases metastasis takes place so early in the disease that it has been stated it was regional from the beginning. In practice we must regard every case of cancer as one in which glandular metastasis has taken place.

Basal cell epithelioma or rodent ulcer is amenable to treatment by radium, and if the ulceration is not deep or extensive, an erythema dose may heal the lesion, but if it is of the squamous cell variety, the lethal dose is usually three or more times the erythema reaction. In the early days this difference in susceptibility of the two types of epithelioma led many to believe that the squamous cell cancer could not be cured by radium.

When the lethal dose is given, radium is the most efficient method we possess in the treatment of malignant growths of the mouth and throat. In the early days of radiotherapy I always gave three or four times the erythema dose, which in some cases produced local necrosis, and after the lymphatic glands of both sides of the neck were rayed, either by x ray or radium, the necrotic tissue was later removed by electric coagulation or surgically. Since we have been inserting radium needles through all parts of the malignant tissue, it is necessary to resort to an electric coagulation or surgery in only comparatively few cases, the submental glands, the parotids and submaxillary glands, at least on the affected side, while the cervical glands are generally treated by the röntgen rays.

Epitheliomatous growths on the tongue and on the floor of the mouth under the tongue, as well as

those of the tonsil, even when the lesion was advanced and breaking down, have been clinically cured either by surface applications of radium, followed by electrocoagulation, or by inserting radium needles into and around the growth. Results during the past two years have been obtained by this process which could not have been obtained by cautery or any other method. In all these cases the patients received intensive radiation on both sides of the neck. In some of these advanced cases the results were of short duration, while other were clinically cured for over two years. Lately I have had curved radium needles made for embedding into the tonsil. Sarcoma of the tonsil, even if it fills one half or more of the throat, will disappear under radium treatment in nearly every case within a month, but there is a tendency to recurrence.

As a routine treatment for epithelioma of the lower lip, radium, applied from all sides of the lip, offers more than even the most complete excision. Since it has been stated surgically that no patient with cervical nodes or with more than one group of lymph nodes involved at the time of operation has remained well, it is plain to be seen that even in lower lip cases, if the patients are operated upon, anteoperative and postoperative treatment should be given.

The prognosis and treatment of mammary carcinoma can be estimated only after consideration of many factors. Hanley considers operation contraindicated when there is extensive ulceration and when the tumor is adherent to the chest wall; when axillary nodes are fixed; when there is supraclavicular involvement, and when there is indication of distant metastases. When the axillary glands are palpable there are very few cures by surgery alone without radiation, even when axillary nodes are not palpable, and when the glands are found to contain cancer cells microscopically only about twenty per cent. of the patients are cured at the end of five years. Then, since statistics show that operation shortens life in recurrent cases, it seems advisable to give both anteoperative and postoperative radiation. There is a growing tendency to remove the breast in case of chronic mastitis or suspected carcinoma, and it seems justifiable. In suspected carcinoma many assert that it is safer to remove the entire breast than to make a partial excision for diagnosis. The past history of cancer of the breast with the unfavorable prognosis, except in miniature carcinoma, has made every one pessimistic in regard to the treatment. Radium and the röntgen rays have proved valuable either as an adjunct to surgery or even alone in certain types of cases, but neither can be relied upon as a specific cure.

It is a difficult problem to give a lethal dose of either radium or the röntgen rays to all of the cancer cells in anything except the very early cases, because the breast is connected with more lymphatic chains than almost any other organ in the body. The clinical and pathological studies of cancer of the breast have shown that both surgery and radiotherapy meet with many difficulties and uncertainties. The anatomical types are many, the variations of the clinical course are so wide, the

paths of dissemination so diverse, and the difficulty of determining the actual conditions so complex, that giving a lethal dose is difficult.

After cancer cells have reached the axillary nodes, the disease soon becomes generalized and tissue in almost any part of the body may become involved. If we had an x ray microscope and it were possible to give a lethal dose to all cancer cells, the end results would be different. When it is impossible to give a lethal dose, palliation and prolongation are obtained in nearly all cases. Less than a lethal dose will frequently stop cell proliferation, produce a fibrosis of the lymphatics and obstruct or obliterate the lymphatic vessels, thereby checking cancer dissemination. In fact, radiation changes the character of the disease, rendering it more of a scirrhous form by decreasing glandular cells and increasing the fibrous stroma. This mechanical choking clinically seems to influence the constitutional resistance of the patient.

During the past five or six years it has been a common occurrence for many of the surgeons to operate on carcinoma of the breast and then refer the patient for radiotherapy, suggesting a Coolidge x ray treatment over the incision once a month for six months, omitting many adjacent lymphatics. The radiotherapist may not be familiar with metastases and the adjacent lymphatics are often left untreated. There are about twenty lymphatic chains connected with the breast and many treat only the axillary and supraclavicular inefficiently. It is impossible to determine the real value of anteoperative or postoperative treatment, as there is no way by which metastases can be visualized at the time of operation, and much of the radiation has been done in an incompetent manner.

I will report briefly two cases, in one of which both anteoperative and postoperative radiation had been given, and in the other only postoperative treatment. Both were advanced cases of carcinoma and would be considered inoperable; in each there were a mass in the breast about the size of an egg, retracted nipple, and axillary involvement. In one case the patient received a complete course of anteoperative radiation, treating the breast at different angles and crossfiring adjacent lymphatics in every direction. Eight weeks afterward a radical operation was performed. The axillary glands, which were greatly reduced in size at the time of operation, had undergone fibrous degeneration. The patient had postoperative treatment and is still clinically cured three years after operation. In the other case, the patient, without anteoperative radiation, was operated upon by the same surgeon. Postradiation was started two weeks after operation. This patient had no superficial recurrence, but died from internal metastases within a year. I could report a number of similar advanced cases which would favor anteoperative radiation, and some in which only the breast was amputated, the axilla not being opened.

Radium has taken an important place in the treatment of carcinoma of the cervix and in some institutions they are treating primary cases without operation. Many have purchased radium and are employing it in uterine cases without having a good

technic. The method of applying radium varies considerably and it is natural that the end results, as well as the amount of palliation, should vary.

At present more favorable cases are referred since the gynecologists are realizing what can be accomplished by radium. Until recently hysterectomy was the only method by which a cure could be expected, although the five year period showed a discouragingly low percentage of patients alive. It has long been realized from a microscopic viewpoint that even the boldest operator could not expect to remove all the lymphatic tissue about the base of the bladder, in the parametrium or in the region of the uterosacral ligaments.

Nearly all realize today that radium can destroy cancer cells beyond the reach of the knife. Statistics have shown that even in the operable cases of cancer of the cervix, metastasis has taken place in pelvic lymphatics in thirty to forty per cent. at the time of operation. It has also been shown that in about forty per cent. of the inoperable cases the pelvic lymphatics are free from metastases. This shows that, by any clinical method, we are unable to determine whether there is extension into the pelvic nodes. Then the pelvic glands should receive radiation, regardless of the stage of the disease. It is conceded that about seven or eight per cent. of the patients suffering from cervical carcinoma who apply for treatment are free from cancer at the end of five years. This shows that over ninety per cent. should have the benefit of radium. The results from operation are much superior in carcinoma of the fundus because the disease grows slowly, and metastasis takes place so much later in the course of the disease. A sufficient number of hysterectomies have been performed, following radium treatment within four to eight weeks, to show that in a large percentage of cases no cancer cells were found in the cervix, but that in some instances there were still traces of malignancy in the broad ligaments. This is worthy of consideration as an anteoperative procedure because it is to be expected, if this method is carried out, more patients could be cured. Two things should be accomplished by anteoperative radiation, destroy cancer cells and checking cell division.

In the early cases when radium is used before operation, hysterectomy should be performed within four to eight weeks before marked fibrous formation has taken place. Some assert that malignant cells in the lymphatics are latent until after operation, and that this seems to arouse the cells, hastening the process if the cancer growing edge cannot be removed. It seems that there is not the same danger of cancer extension in cases which have had anteoperative treatment and that the evidence is in favor of the use of radium followed by excision. Then the question arises: Should those who do the Wertheim or radical operation subject the patients to such a high mortality without all the benefit from radiation possible, or until a larger percentage of cures are obtained?

For the purpose of description, carcinoma of the cervix may be classified as follows:

First, early cases where the disease seems to be limited to the cervix and does not extend into the vaginal wall. Even in these cases, there are so many recurrences that radium should be used.

Second, where the process is more advanced, but clinically it seems limited to the uterus as the organ is freely movable, but the chances are that there are metastases in the pelvic nodes. These patients will undoubtedly derive great benefit from anteoperative treatment and the end results should be improved.

Third, where the carcinomatous process extends into the vaginal wall and there is slight fixation of the uterus. These might be considered borderline cases, and as most of them can clinically be cured by radium alone, radium should be used with operation.

Fourth, where there is marked fixation of the uterus and the disease extends into one or both broad ligaments. In many of these cases extensive glandular involvement has taken place, and in some cases metastases may have extended into the liver. These patients will derive benefit from radium. A local clinical cure may take place but usually metastases have been so extensive that there is usually a recurrence in from one to three or more years. When you consider that many of these patients live as long by radium treatment as a large percentage in even early cases, when operated upon, it means much to the patient. Many of these patients will die from internal metastases without a local recurrence.

When primary cases of carcinoma start in the cervical canal there are very few cases cured by operation. For this reason, some gynecologists assert that these patients receive more benefit from radium than operation. Time will tell whether radium alone is advisable. All gynecologists have conceded that radium is the best palliative measure in inoperable and recurrent carcinoma. Local disappearance of the disease takes place in some cases and marked improvement is noticed in a large proportion of the others. After radium treatment the offensive discharge and hemorrhage usually disappear within two to four weeks. If nothing more was obtained than the disappearance of the offensive discharge the treatment would be justified. The deodorizing and sterilizing effect is remarkable where there is a broken down mass of cancerous tissue. Many of these patients show an irregular temperature from absorption of broken down material which generally disappears after one application of radium.

In conclusion, however elusive and difficult it may seem to establish with certainty at what depth from the surface it is possible to destroy certain types of malignant tissues and under what divergent circumstances, a comprehensive study of both the agent and the malignancy has resulted in the determination of the lethal dose of radium to a degree of precision undreamed of a few years ago. By this achievement the radiotherapist, spurred by results of cases treated, has pushed farther back and beyond the twilight zone of doubt and uncertainty, and where yesterday there was groping in darkness there is today light and clearness—advanced methods of treatment of malignancy, backed by results which not only in themselves have, in selected cases, superseded surgery in producing cures, but which in combination with surgery, by both anteoperative and postoperative treatment, have increased operability, lowered mortality, and increased the percentage of cures, with the additional benefits of palliation in other hopeless cases.

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THE STANDARDIZATION OF OPERATIONS FOR INTERNAL HEMORRHOIDS.*

By Louis J. HIRSCHMAN, M. D., F. A. C. S.,
Detroit.

This is the age of standardization. Standardization has done more for American success in the commercial world today than any other single factor. In the manufacture of automobiles, railroad equipment, the munitions of war, food products and other essentials needed by man, much lost motion has been saved and higher efficiency created by the use of standardized methods, materials, and products. The various states of the Union have endeavored in the last few years to standardize and correlate their various laws in order that the highest efficiency might come to the government of a people by a people for a people by the preventing of clashes and conflict in the administration of the commonwealths.

To come closer to our own profession, a few hospitals throughout the land have profited by the experience of their staff members who served in the army or navy during the recent war and have in a measure standardized certain methods and procedures in hospital administration. Surgical dressings, dietaries, methods of skin preparation, and to a happily growing extent operating room procedures are also being simplified and standardized. In the treatment of fractures, infected wounds, burns and certain medical diseases, the recent war experience has been of tremendous value in assisting in the standardization of diagnostic and therapeutic methods.

In our own specialty it seems to me that the time has arrived to consider the standardization of certain operative procedures directed to the relief of some of the more common proctological affections. Realizing full well that the general surgeon and the gynecologist many times treat and operate in conditions which belong to our special field, the author wonders if there is not a common ground upon which we can meet and our patients benefit thereby.

The subject of the operative treatment of internal hemorrhoids has been chosen because this condition which is by far the most common one treated by proctologists is also the proctological disease most frequently cared for by surgeons who are operating in other fields. The country is flooded with all sorts of advertised nostrums purporting to relieve or cure hemorrhoids. The newspapers and magazines, as well as the billboards, flaunt advertisements of quack doctors and quack medicines all claiming to cure hemorrhoids. Those of us who are limiting ourselves to proctology have opportunity every day to see the results of this form of so-called treatment. Many general practitioners, on account of inadequate or faulty instruction in their medical colleges, know very little of the treatment of hemorrhoids and are usually quite happy to allow patients suffering from this disease to go elsewhere for relief. This too often means that the patient seeks drug store advice or institutes self-treatment as a result of the many advertisements which meet

him on every side. Unfortunately, even in our own organization there is a lack of unanimity as to the best type of operation for the relief and cure of internal hemorrhoids.

It is my purpose to introduce this subject with the hope that a discussion will be provoked out of which some definite rules of conduct in the operative treatment of internal hemorrhoids may be deduced. All operative procedures for the relief of internal hemorrhoids are modifications of one of the following types of operations: 1, The ligature; 2, the clamp and cautery; 3, excision with or without ligature; 4, crushing; 5, amputation or so-called Whitehead operation. There are a number of modifications of these methods; in fact, almost as many as there are operators, but all are based upon one of the five methods named above. All of these operations are performed with either local, general, or spinal anesthesia.

In the selection of any operation the following considerations must be taken into account: 1, Safety; 2, removal of all diseased tissue; 3, preservation or restoration of function; 4, minimum traumatization; 5, prevention of hemorrhage; 6, preservation of sphincteric continence; 7, insurance against recurrence; 8, freedom from infection; 9, prevention of pain during and following operation; 10, minimum hospital confinement and detention from ordinary occupation.

There are other minor considerations but these represent the principal factors which should be taken into account. As has been already stated, every proctologist has his own definite ideas on the subject and the results following any operation in the hands of any surgeon will vary according to the individual skill of the operator in performing that type of operation preferred and employed by him. The ligature class of operations is probably, with its modifications, the one most frequently employed. Some operators ligate before cutting, while others ligate vessels only when they spurt. Some surgeons ligate the tissues above or beneath the individual hemorrhoid, while others carefully isolate the vessels and place a ligature around each. There is much to be said for and against each method of applying a ligature. Suffice it to say, however, that a ligature placed around the blood vessels supplying the hemorrhoid before excision appeals to the author as safe, sane, and of great value in conserving blood supply and preventing needless waste. The arguments against its use are the danger of infection, the possibility of a ligature slipping, as well as of slough, and the fact that more tissue than is necessary is included in the ligature and unnecessary pain, edema, and swelling induced.

For the clamp and cautery it is argued that it is applicable to all types of internal hemorrhoids, that it can be performed quickly, the diseased tissues removed without the necessity of suturing, and the danger from hemorrhage is reduced to a minimum. Against this operation is the fact that the clamp cannot be placed deeply enough to remove all of the diseased vessels; or if it were possible to do so much healthy mucosa would be needlessly sacrificed. On account of the amount of mucosa removed contraction is likely to result. A scar resulting from a

*Read at the annual meeting of the American Proctologic Society, at Memphis, Tenn., April 22-23, 1920.

burn in a circular cavity lined with mucous membrane means a lessening of its calibre. One objection to the use of clamp and cautery operations in the minds of many surgeons is the fact that it is not a suitable operation to be performed under local anesthesia. Heat radiations cannot be controlled by local anesthesia, and the odor of burning flesh is certainly not very soothing to the patient whose flesh is being burned. It is a well known fact that there is more scar formation and contraction after a burn than any other form of trauma.

Some operators make a longitudinal or elliptical incision into the mucous membrane over a hemorrhoid and carefully excise all diseased tissues. Some place a ligature around the vessel supplying the hemorrhoid before removing the mass, while others ligate only such vessels as spurt freely. The advantages of excision are the removal of all of the diseased tissue without any unnecessary sacrifice of mucous membrane and the ability to close a wound either with or without suture with the least amount of scar formation. Like the ligature operation, excision can be performed under local as well as spinal and general anesthesia. The arguments against excision are practically the same as those against the use of the ligature.

The use of the angiobribe or other crushing instruments has been advocated by some surgeons in the treatment of internal hemorrhoids. It is argued for this method that it disposes of the hemorrhoids much more expeditiously than is possible with any other method, and that the danger of hemorrhage is not any greater than after the clamp and cautery. It may be argued against this method that in the disposal of the hemorrhoid too much normal tissue is sacrificed, as in the case of the clamp and cautery.

The amputation of the hemorrhoidal area, or the so-called Whitehead operation with its many modifications, is mentioned because of the fact that there are surgeons still employing this method. The needless removal and destruction of healthy mucous membrane in a locality where stricture is so prone to form is the chief argument against this operation. The surgeons who are still using it are either the products of a previous generation or men who are still practising ancient methods. The only claim for the operation is the fact that it removes all of the vessels involved in the production of hemorrhoids. We have all seen the strictures or the eversions and lack of continence resulting from the attempted application of a Whitehead operation or some modification of it. It will be seen from the preceding statements that all classes of operative procedures are still being used; that each has its group of advocates. There must be some neutral point at which all of these groups could meet, where the good points of each type of operation could be selected and the bad ones discarded.

The question of the type of anesthetic employed is one which should enter largely into the selection of a standard operative technic. There are a few general surgeons and a lesser number of proctologists who still believe that no operation on the rectum should be performed unless the patient is under the influence of a general anesthetic. It is

my firm conviction, after an experience covering many thousands of cases, that there is no case of hemorrhoids so severe that the patient cannot be operated upon successfully under local anesthesia. Armed with this experience I would recommend for the standard anesthetic in the treatment of internal hemorrhoids some one of the proved local anesthetics now so commonly used.

While the difficulties encountered in an individual case will always govern the variations of technic demanded, the use of the ligature before making an incision is recommended as a standard procedure. Inasmuch as most patients suffering from hemorrhoids are to a more or less degree anemic, blood conservation should be practised wherever possible. Tying before cutting is a principle which not only saves the patient's blood, but presents a much cleaner field for the operation. The general type of operative procedure recommended for a standard operation is excision. The shape, size and location of the operative wound for each hemorrhoid is governed entirely by the condition of the hemorrhoid itself. A straight elliptical, oval, kite-shaped or dumbbell wound may be employed, all depending upon the amount of diseased tissue to be removed. One should always figure on preserving as much mucous membrane as would normally line the anorectal canal in the region operated upon. One hemorrhoid may require the removal of a large amount of mucosa in its excision, while another may be completely excised by submucous removal through a straight slit in the mucosa. The use of sutures as a general rule is not advocated in a standard operation, because of the fact that infective material may be imprisoned in the wound with disastrous results.

It will be noted that nothing has been said about dilating the sphincter before performing the operation. With the proper application of local anesthesia the sphincter relaxes of its own accord to a sufficient extent to allow the removal of the hemorrhoids, and is not insulted by any attempts at manual dilatation or division. If one has been careful to remove all of the diseased tissue below the mucosa and to remove only redundant mucosa, the agglutination of the wounds would be complete in two or three days, if this healing is not prevented by the injudicious use of sutures. Another rule I would lay down for a standard operation would be the abstinence from the employment of any form of rectal splint, tampon, or packing. If hemostasis has been secured properly and the sphincter well relaxed by proper local anesthesia drainage, as well as absence of postoperative pain, will be well insured. The presence of packing, spools, tubes, and tampons acts the same as any foreign body, and provokes and induces peristaltic efforts in an endeavor to expel them. This certainly increases postoperative pain and does not conduce to the complete comfort to which the patient is entitled. There is no indication for the administration of any drugs given with a view to inhibit peristalsis. If the patient has postoperative pain, the use of some one of the opium derivatives by hypodermic injection is indicated, but no effort should be made to administer drugs for the purpose

of locking up the bowels. The administration of mineral oil the day following the operation, and daily thereafter, is of much service, and the first movement can be secured with the assistance of a saline enema on the second or third day following the operation. With the technic outlined, the patient can be on his feet and out of doors as early as the second day, certainly by the fourth or fifth. Confinement to bed and detention from business is minimized and recovery hastened by the improved circulation which follows the early resumption of exercise and normal life.

While I earnestly advocate a method of procedure which has proved satisfactory in my hands and, with many others, I realize full well that there will be many who do not agree with me. It is hoped that in the discussion to follow, if this technic is not acceptable to the fellows of this society, that they can agree on some other line of procedure that will be acceptable; and I for one will agree to adopt any other method which may be presented which will embody all of the principles laid down in this paper.

KRESGE MEDICAL BUILDING.

THE SODIUM CARBONATES.

Their Physiological and Therapeutic Value.

BY WILLIAM H. PORTER, M. D.,

New York,

Professor Emeritus, Pathology and General Medicine, New York Post-Graduate Medical School and Hospital.

The study of the carbonates of soda in their passage through the animal economy is interesting and instructive from both the purely physiological and the practical therapeutic aspects. Introduced into the system largely in the foodstuffs, the carbonates appear to be essential first in the digestive processes. Here they act chiefly in the upper portion of the intestinal canal in conjunction with the pancreatic secretion. In fact, carbonate of soda is classed as one of the chemical ingredients of this glandular secretion. It matters but little whether the carbonate of soda reaches this point in the alimentary canal directly with the foodstuffs or secondarily as a secretion from the pancreatic gland. Having reached this particular point in the alimentary canal, the sodium carbonate and the bicarbonate both aid in giving alkalinity to the chyme, thus favoring a more perfect action of the pancreatic secretion—the ferment bodies of which are found to act most powerfully in an alkaline medium.

One of the three active ferments of the pancreatic secretion, namely, steapsin, attacks the animal and vegetable fats, especially the latter, and separates them into their fundamental radicals—the fatty acid and glycerine. The fatty acid then attacks the sodium carbonate and converts it into a bicarbonate, and by the further action of the ferment body causes a union of the fatty acid and the free soda, forming a hard soap. Thus it is found that in the alimentary canal—by virtue of the presence of the sodium bicarbonate, the fats, and the ferment body, steapsin, produced by the pancreatic gland, the animal economy is constantly manufacturing both glycerine and soap.

In this portion of the alimentary canal the glycerine acts very much as it does when injected into the rectum. By its hygroscopic property it tends to attract water to itself from the more solid bodies, and so to fluidify more perfectly the contents of the gut. The soap acts as a lubricating agent, and by the combined action of the glycerine, the soap and the bile which is poured into the alimentary tract at this point, an easy passage of the intestinal contents is made possible.

Added to the foregoing chemical mutations, must be included the fact that in the reduction of the proteid material in the gastric cells sulphuric acid is produced. This acid, as soon as it is formed, attacks the chloride of sodium, which results in the formation of hydrochloric acid and sodium sulphate. This salt, commonly known as Glauber's salts, acts, as do all the saline cathartics, by its powers to arrest absorption by the intestine, and to draw water in considerable quantity from the blood contained in the blood vessels in the intestinal wall. The rapid withdrawal of water from the blood vessels is what causes the large watery stools after taking a saline.

With these facts before us, it is quite clear that Nature runs a little drug shop, as it were, high up in the alimentary canal, producing for us each and every day a dose of physic which is poured into the intestinal canal at its very beginning, its composition being Glauber's salts, glycerine, soap, and the bile acids and salts. The salts and glycerine keep the contents of the intestinal canal properly liquefied; the soap perfectly lubricates the canal, while the bile acids and salts augment peristaltic activity. When Nature's druggist properly attends to business, constipation is an unknown condition; failing to do his work properly, constipation inevitably develops.

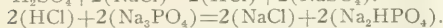
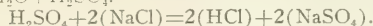
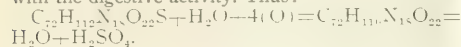
Observing this physiological phenomenon closely, it becomes apparent at once that nature is compelled to produce daily a laxative compound for the perfect movement of the intestinal canal and its contents. Otherwise there is a tendency toward a too quick solidification of the intestinal contents, a sluggish action of the muscular tunic, and the development of constipation. It further indicates that in the treatment of costiveness the chief aim of the therapist is to reestablish this natural manufacture of glycerine and soap and to augment the activity of the hepatic and pancreatic secretions, and not to resort to abnormal and artificial methods, such as the continued use of rectal enemata, and the more powerful and absolutely artificial cathartic agents. The use of mineral oils is not based on scientific chemico-physiology, but is as far from it as it is possible to get.

By a proper regulation of the diet and the administration of a reliable preparation of inspissated ox bile, together with a good preparation of pancreatic extract, and the requisite amount of sodium carbonate and sulphate, the digestive powers will be augmented and glandular activity made more nearly perfect. By this method the normal production of these physiological laxative agents will be reestablished, a better digestion and assimilation will follow, and the action of the intestinal canal will be augmented.

In beginning this line of treatment it may be necessary to add to the more natural compounds some of the more powerful, and, strictly speaking, artificial

substances in the form of laxative or even cathartic agents. As the normal physiological standard is approached, however, these artificial and strictly cathartic remedies must be diminished or suspended.

After performing their function in the alimentary canal, the carbonates are drawn into the blood and then act in helping to give the blood its alkalinity. At this point it should be remembered that the true physiological alkalinizer of the blood is the disodium monohydrogen phosphate produced in connection with the digestive activity. Thus:

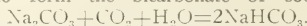


Once the carbonates are well within the system, there appears to be a constant conversion of the carbonate of sodium into a bicarbonate of the same salt, and this is followed by a steady reconversion of the latter back again into the former compound, as illustrated by the following equation: $Na_2CO_3 + CO_2 + H_2O = 2 NaHCO_3$. $CO_2 + H_2O = Na_2CO_3$. By this transmutation the carbon dioxide produced in oxidation is carried to the lungs and discharged into the air sacs. This change of soda salts might be instanced possibly as evidence of a chemical mutation of the inorganic compounds in the blood. Even here this transmutation of the inorganic substances appears to be governed accurately by the laws of inorganic chemistry; neither does it prove that the mineral compounds are promiscuously and in an unknown and haphazard manner transformed in the system at some uncertain point.

The carbon dioxide which is being formed in the glandular organs by constant oxidation of the proteid substances, the glucose and fat compounds, is an acid gas which has many of the chemical properties common to acids. The carbon dioxide is eliminated very slowly from the system by the epithelial surfaces in general—such as the integument, the alimentary and genitourinary tracts—but it is excreted rapidly and in large quantities by the epithelial coating of the air sacs. This gas is freely soluble in water, and still more so if the aqueous solution has been rendered alkaline by soda compounds. Consequently, the carbon dioxide produced in the body is rapidly absorbed by the blood and lymph which is in continuous contact with the protoplasmic masses in which the carbon dioxide is developed. The strong alkalinity of the blood, produced by the various alkaline salts that it contains, tends to neutralize rapidly the acidity of this gas as it is poured into the blood stream, and this is accomplished without materially affecting the reaction of the liquor sanguinis.

Since only three fifths of the carbon dioxide produced within the body can be held in solution in the blood plasma, the other two fifths must be disposed of in some other manner. Here again, we find definite and fixed chemical laws observed. This acid gas enters into chemical relation with the carbonate of soda found in the blood, either in the masses of protoplasm constituting the cells in which the carbon dioxide is produced, or just as it is emerging from these cells, presumably in the protoplasm itself. Here the carbon dioxide attacks the car-

bonate of soda and with a molecule of water combines to form the bicarbonate of soda—thus:



This conversion from the carbonate of soda to a bicarbonate, together with the constant discharge of the acid carbon dioxide into the blood, tends to reduce the alkalinity of the blood and cause the blood plasma to approach a neutral action. As the proteid bodies cannot be transmuted in an acid or neutral medium, it becomes clear at once that this loss must be compensated for or death must occur. This is accomplished in various ways; first, by a constant renewal in the supply of carbonates in the food; by a continuous production of the disodic monohydrogen phosphate, which is the true physiological alkalinizer of the animal economy, as fully explained in my article, *Therapeutics of Decreasing Body Alkalinity*,¹ and such other alkaline salts as may reach the blood. Whatever alkaline substance reaches the blood and tissues helps to maintain the alkaline reaction. The true physiological alkalinizer of the animal economy, however, is this special phosphate of soda. The alkalinity is maintained by the use of comparatively small quantities of this salt. It has the power to hold the other mineral ingredients in stable relation to the teeth, bones and the various structures of the body. It is also the agent by which the urine acidity is maintained. On the other hand, the carbonate of soda loses a large portion of its alkalinizing power when it is converted into a bicarbonate. The second method by which the decreasing alkalinity is compensated for is by chemical restoration of the carbonate. In this chemical combination of the carbon dioxide with the sodium carbonate all the carbon dioxide which is excreted from the system through the lungs is conveyed from its seat of production to the pulmonary organs.

The carbon dioxide, having reached the capillary blood vessels of the lungs in the form of a bicarbonate of soda, is now acted upon by a simple physical law, which is this: In the lungs, owing to the peculiar arrangement and action of the ciliated epithelium lining the bronchi, there is produced a constant rarefaction of the air in the pulmonary vesicles, and this produces, as it were, a vacuum in the air sacs. The result is that the carbon dioxide and the water in the bicarbonate of soda molecule are drawn into the air sac and tend to satisfy the vacant space, and the bicarbonate of soda in the blood reverts to a simple carbonate, the same as occurs when the bicarbonate is experimentally subjected to the action of a vacuum pump. The pressure in the air sac being less than that in the blood, the loosely combined carbonate gives up its carbon dioxide and water— $2 NaHCO_3 - CO_2 - H_2O = Na_2CO_3$, and thus we have explained the discharge of carbon dioxide and water in the expired air. Here we have another reason for the rise and fall in the alkalinity of the blood.

With the release of the carbon dioxide molecule a molecule of water is also liberated, and the carbonate of soda is reformed in the blood plasma of the pulmonary vessels. This naturally intensifies the alkalinity of the blood as it leaves the lungs, and is

¹ Read at the twenty-first annual meeting of the American Therapeutic Society, Philadelphia, Pa., May 7th, 1920.

one of the methods by which the decreasing alkalinity already referred to is overcome, and its higher alkalinity reestablished.

In this change from the carbonate to the bicarbonate and vice versa, the picking up and dropping off of the carbon dioxide molecule is so nearly simultaneous that the alkaline reaction, due to the carbonates, actually undergoes very little, if any, change.

The carbonate of soda thus formed in the lungs returns in the circulating blood to the source, of origin of the carbon dioxide, there to be again combined with the carbon dioxide and water, and converted into a bicarbonate of soda, to bring another charge of carbon dioxide and water to the lungs.

The phenomena just described might at first be regarded as proof that the inorganic compounds are split up within the animal economy in opposition to the definite and explainable laws known to chemistry. A more thoughtful consideration, however, of this whole subject in connection with the evidence at hand, proves that the phenomena of animal life are governed by the well defined and common laws which are known to be applicable to chemical substances when used experimentally in the test tube in the laboratory.

While the carbon dioxide is not an acid as commonly understood, it is nevertheless an acid gas possessing many similar properties, as, for instance, in connection with the oxidation processes of the body it exhibits the property of acids in attacking the sodium carbonate—with the ultimate formation of the bicarbonate of soda. This formation of the sodium bicarbonate is the only well defined instance in the animal economy in which a true chemical anabolic substance is produced in the body. All the other chemical changes belong more strictly to the katabolic series of transformations. In this particular instance, however, simple molecules are joined together to form one having a more complex atomic structure.

In all the other changes in connection with the growth and development of the body, the complex molecules are piled up upon themselves to form macroscopic masses, thus forming body anabolism, but when atomically transformed, it splits the compound molecule into a number of molecules that are less complex in atomic composition. Even in this anabolic process by which the bicarbonate of soda is formed, the change is not in connection with the building up or construction processes of the body, but is concerned only in the mechanical carrying of the carbon dioxide, or a katabolic element out of the system.

From the foregoing it becomes apparent that the sodium carbonate and bicarbonate are valuable agents, having power to aid in the digestive processes, to aid in alkalinizing the blood, and to facilitate a more rapid elimination of the katabolic product, carbon dioxide.

From our study of the carbonates as outlined here and that of the phosphates in another paper, we find that the problem of giving alkalinity to the animal economy is not a simple but a more or less complex one; that while all alkalis have actions in common, each salt has its own specific function, which the other does not possess.

By this close analytical study of the carbonates and phosphates of soda we learn that they both aid in giving alkalinity to the blood. We learn also that each class has specific actions which the other does not possess; as, for instance, the carbonates are active agents in connection with the digestive processes. On the other hand, the disodium monohydrogen phosphate is produced in connection with and by the digestive processes. They both enter the circulation and aid in giving alkalinity to the blood. The carbonates are feeble alkalizers, because the carbonate is so rapidly changed into the acid bicarbonate. The chief function of carbonates is to carry carbon dioxide from the seat of its production to the lungs, there to be discharged into the air sacs. On the other hand, the disodium monohydrogen phosphate is a powerful alkalizer of the blood and tissues. Furthermore, it has the power also to hold the calcium and other mineral salts in stable relation to the teeth, bones, and other structures of the body.

After the disodium monohydrogen phosphate has served its purpose within the system, it leaves the body through the glomeruli of the kidneys. It then flows down the lumen of the uriniferous tubules until it meets the uric acid molecule as it drops from the free surface of the epithelial cells lining the tubule. At this point the uric acid molecule chemically attacks the disodium monohydrogen phosphate, followed by the formation of a urate of soda and monosodium dihydrogen phosphate, thus: $C_5H_4N_4O_3 + Na_2HPO_4 = C_5H_3N_4O_3Na + NaH_2PO_4$. This monosodium dihydrogen phosphate is the true acidifier of the urine.

A noticeable fact in connection with these mineral ingredients is that they are introduced into the system in comparatively small quantities, and that their introduction takes place very slowly and continuously, twenty-four hours being required for the introduction of four grams. In large quantities they act as irritants, and do not get into the blood stream at all.

From these facts but one conclusion can be drawn. This is that each and every element introduced into the animal economy has a special and specific function to perform. This further proves that one element cannot be substituted for another and still produce the same results. Every element introduced into the animal economy, be it a physiological or a therapeutic substance, must be studied carefully and accurately by itself until we know precisely just what influence it has upon the system. When we have acquired this exact and definite knowledge in connection with all physiological and pathological processes, we can then prescribe the food products to be used, and also the medicinal agents required, in a manner which will be scientifically exact and which will produce results. When the profession has acquired this knowledge it will have earned the right to be classed as scientific. Medical men will then be true specialists in dietetics and therapeutics. In many instances, what would probably have ended in an untimely death will be followed by a prolongation of life, with many years of health, happiness, and usefulness to society in general.

46 WEST EIGHTY-THIRD STREET.

THE PHYSIOLOGY OF CARBONATED
BRINE BATHS.

BY N. PHILIP NORMAN, M. D.,

New York,

Late Major, Medical Corps, U. S. Army.

For a number of years carbonated brine baths have been used in treating a variety of cardiovascular renal conditions. The therapeutic action of this bath upon disordered circulation might be said to have been observed accidentally. Until recently its administration has been purely empirical. Many attempts have been made to give a rational physiological explanation of its action, but all these have been rather vague, indefinite, and speculative. This has fostered skepticism and provoked many debates.

There is a definite physiology for this bath, a knowledge of which is essential in order to prescribe it efficiently. To understand this physiology one must fix in one's mind the meaning of an expression that will be repeatedly used in explaining the physiological action of carbonated brine baths. This expression is the point of thermic indifference or the point of thermic comfort, which defined, means that degree of temperature of a given medium to which the nude human body, at rest, may be exposed without reaction to thermic stimuli of either heat or cold. In other words, the heat loss of the nude body in this medium at the given temperature is compensated for by the heat production of the body, and it becomes obvious that the body under this condition does not feel the sensation of either heat or cold.

This point of thermic indifference or thermic comfort varies in different mediums. For example, in air it is approximately 85° F., in water approximately 93° F., and in carbonic acid gas approximately 75° F. We understand at this point that the nude body, at rest in a room filled with air at 85° F., would be comfortable. However, if someone in this room poured water at a temperature of 85° F. upon the body, the reaction of cold would be experienced, or by allowing carbonic acid gas to escape at a temperature of, 85° F., and in such a manner as to come in contact with the body, a sensation of warmth would be experienced. Thus we find at a given temperature in one medium the body will feel comfortable, yet if placed in contact with two other mediums of the same temperature as that of the air it would experience two different thermic reactions.

This difference of the point of thermic indifference of the medium water and the point of thermic indifference of the medium carbonic acid gas explains and makes possible the physiological action of a carbonated brine bath. Therefore, in conditions of cardiovascular renal dysfunction in which there is a predisposition to congestion, or an associated congestion of internal organs, harm would be inflicted from a bath producing an excessive reaction to either heat or cold.

The thermic stimulation of cold unduly increases the internal organ congestion due to the peripheral reaction of the skin depleting the surface vessels of their blood. This reaction is a protective reflex action that attempts to conserve or diminish the

rapid loss of heat that occurs when the skin surface is exposed to direct contact with a cool medium by contracting the skin blood vessels. Thus, it becomes obvious that plain cold water or cold brine water baths would produce harmful effects. They would dry up the skin blood lakes and overflow the abdominal and pulmonary blood lakes, and the arteriovenous exchange would be rendered difficult. However, with the aid of carbonic acid gas saturated throughout a brine bath, it is possible to administer these carbonated brine baths at a degree of temperature lower than that of the medium's (water) point of thermic indifference, without the harmful effect that would necessarily be produced in a bath without carbonation at this temperature.

This is made possible because the carbonic acid gas in minute bubbles will adhere to the skin with but the thinnest film of water interposed, and may be said to envelop the body partially. The gas film protects a great part of the skin surface. Between the bubbles of gas that cover a great part of the skin are to be found areas that are in direct contact with the brine water of the bath. For the purpose of distinguishing between the film of water that is interposed between the gas bubble and the skin, we will call the place of direct contact of skin and water the point of fluid contact. Coexisting side by side, skin areas are stimulated by the brine in fluid contact and by the gas bubbles in indirect contact with the skin. The fluid contact will impart its thermic stimulus directly to the skin while the areas covered with gas bubbles impart their thermic stimulus through the interposed film of brine water. Thus, heat and cold stimuli are produced and one neutralizes or compensates the other.

We learned in discussing the definition of the point of thermic indifference that this point of carbonic acid gas is 75° F. If carbonic acid gas is saturated in the water of a bath at a temperature of 87° F., one will experience a thermic stimulation of heat that will be imparted by the carbonic acid gas because this gas's temperature is raised twelve degrees above its point of thermic comfort. For example, we will make use of a rather crude simile, inadequate in a measure, to illustrate what happens. Suppose we were to be placed in a large shell having a thin wall and sealed within this shell, the temperature of the air within the shell being 85° F. If nude and at rest one would be comfortable. However, if this shell were immersed in a large tub of water, the temperature of the water being 100° F., within a comparatively short time we would experience a sense of warmth, as the inside temperature was being influenced by the temperature of the medium which surrounded the shell. This is just what happens to the carbonic acid gas bubble that adheres to the skin and is surrounded by water of a higher degree of temperature than that of the gas's point of thermic indifference.

The water of the bath at 87° F. relatively imparts twelve-degrees of heat to the bubble, and the bubble imparts this heat through the film of brine water interposed between it (the bubble) and the skin, producing a sensation of warmth. The temperature of the brine water of the bath being 87°

F. and having a direct contact with the skin, which it covers, imparts a thermic stimulation of six degrees of cold, as the bath temperature is six degrees below the point of thermic indifference of water. Thus, we have a direct thermal stimulation of six degrees of cold water that is offset by twelve degrees of heat from the gas bubbles. Heat is less rapidly dissipated through a gas than through a liquid. Because of this physical law the gas bubble is somewhat of an insulator for body heat.

Summing up, it becomes obvious that there are two thermic stimuli produced at the same time in a carbonated brine bath—a stimulus of warmth to the areas of skin protected by the gas bubbles and a stimulus of cold to the skin which is in fluid contact with the brine water of the bath. It is possible to give a heart patient a stimulating, cold, carbonated brine bath that will not force the blood out of the skin blood lake. Because of this, the danger of overfilling the abdominal and pulmonary blood lakes is reduced to a minimum. When this overfilling of the abdominal and pulmonary blood lakes occurs, there is a loss of circulatory balance and decompensation is imminent, or in other words, cardiac reserve has been annihilated.

The rôle of the carbonic acid gas bubble having been explained we will call attention to the other bath constituents which aid the gas bubble in its work. The two salts necessary for the brine water are sodium and calcium chloride. When in solution they tend to prevent a rapid radiation of heat and aid materially to keep the water of the bath at a uniform temperature. In addition to this, the chlorides, especially calcium chloride, are irritant in property, to the extent that a permeation of the salts through the epidermal layers of the skin will produce a rubefacient action, which persists for some time after the bath and helps to keep open the great skin blood lake. This lessens the resistance to the heart as there is an equalization of the amount of blood contained in the skin, abdominal and pulmonary blood lakes. The carbonated brine bath is not complete in its essentials unless the combination of the right proportions of carbonic acid gas, calcium and sodium chloride are present. A carbonated plain water bath does not produce the same effect as a carbonated brine bath. A noncarbonated brine bath is less than useless.

Now that we understand the factors that make possible this bath in cardiocirculatory disturbances we will conclude by taking up the effect that it produces upon the heart and circulation. When a patient enters a carbonated brine bath the effect is first a sensation of chilliness, and later a sensation of gradually growing, glowing warmth. The bather should feel very comfortable after this secondary sensation has taken place. The sensation of chilliness produces a momentary reflex contraction of the skin vessels which serves the purpose of accelerating the heart's action and raising the blood pressure. About the time that the heart has reached the maximum of its acceleration the second sensation, that of warmth, occurs. When this sensation is experienced the reaction to the bath is taking place. The preliminary tension that was placed on the skin vessels because of the chilliness has now re-

laxed to the heat stimulus of the carbonic acid gas and the blood flows from the arteries through the capillaries and into the veins with lessened resistance. The acceleration of the cardiac action and the rise in blood pressure aid in a more efficient arteriovenous exchange.

We all know of the tendency of cardiovascular renal disease to produce internal organ congestion. Every one is familiar with liver tenderness and enlargement in these cases, which is, in fact, a cardinal symptom. We know that there is usually associated with this disease some form of gastric or intestinal disturbance. This is due to a stagnation of blood in the abdominal blood lake. Patients with this disease have difficulty in breathing and are subject to cough and asthmatic attacks, all due to an engorgement of the pulmonary blood reservoir. We know that the skin is dry, the feet and hands cold, the ear tips and the lips cyanotic. In other words, we know that the circulation is stagnant centrally and insufficient peripherally, excepting when decompensation is well established, when the engorgement is stagnant centrally and peripherally. There is too much blood in the abdominal and pulmonary blood lakes and too little blood in the skin lake. Any measure that tends to increase the amount of blood flowing through the skin lake or peripheral vessels will relieve the congestion in the abdominal and pulmonary blood lakes. When this is effected a circulatory harmony is established to the relief of the overburdened heart. Our therapeutics are aimed at this very objective. None are as simple and as efficient as the carbonated brine bath, which redistributes the blood through the body and establishes a proportional relation between the blood containing capacity of the three great blood reservoirs—the abdominal, pulmonary, and skin blood lakes. When this circulatory balance occurs a better nutrition of the whole body is made possible, a more efficient removal of waste products is facilitated, a better harmony of glandular function takes place, and every metabolic activity is stimulated.

The direct action of the carbonated brine bath on the heart is to slow its rate. We know that the heart is nourished during diastole or its rest period, therefore, anything that slows the heart rate will necessarily increase the rest period, and also increase its nourishment. With increased nourishment and increased removal of waste products and increased rest period the heart is given an opportunity to recuperate and store up a latent force, called cardiac reserve strength, which is of vital necessity to the heart for its proper functioning. With a diminution of peripheral resistance there is a corresponding diminution of cardiac effort which brings about a decrease in the amount of cardiac hypertrophy. Pulmonary circulation is toned up, breathing becomes less difficult, and cyanosis disappears; indeed, in rare instances, a murmur sometimes disappears. Some observers say they have proved to their satisfaction that a heart diminishes in size during a carbonated brine bath; I have never been able to satisfy myself that this occurred. It may be that I am not as keen in percussing cardiac outlines as they are and from the other point of view it may be that their enthusiasm unduly stimu-

lates their imagination. However, fluoroscopic examinations and orthodiagrams have proved to my satisfaction that cardiac size is actually diminished by a course of carbonated brine baths combined with the resistive exercises. In conclusion, it is to be impressed upon all that the success of this form of therapy depends upon the correct understanding of the physiology of the carbonated brine bath. The results that one may obtain from this treatment do not depend upon the mere taking of the baths, but directly depend upon the prescriber's knowledge of the physiology of the carbonated brine bath. It is just as necessary to know how to prescribe carbonated brine baths for results as it is to prescribe digitalis. The fact that a cardiac patient is taking digitalis is no proof that results will be forthcoming. If the prescriber does not know the physiological action of digitalis it is more than certain that he will do more harm than good. The same holds true for carbonated brine baths. The results also depend upon the correct determination of the type of conditions fitted for the baths; the technic of the bath, the rationale of the whole form of therapy, and the early recognition of contraindications.

109 EAST SIXTY-FIRST STREET.

THE DENTAL HYGIENIST AS A FACTOR IN DENTAL PROGRESS.*

BY ALBERT HENRY STEVENSON, D. D. S.,

New York,

Professor of Preventive Dentistry, Director of Courses in Oral Hygiene, Columbia University.

I shall not presume to insult your intelligence by offering a dissertation upon the value of preventive dentistry; rather, I shall concentrate upon the immediate problems and their attendant responsibilities that rest upon you as guardians of the oral health of a portion of the community.

These responsibilities have become especially heavy at this time in view of impending legislation in the State of Pennsylvania which contemplates the incorporating in the dental law of provisions for licensing women as dental hygienists. As well as I can ascertain the facts, there exist among the opponents of the new law but few men committed by prejudice to opposition to the measure, while on the other hand, there are a number who oppose it because of lack of understanding of what the dental hygienist is trained for, and what she has accomplished. To these men I shall direct my remarks, and endeavor, through the maze of misrepresentation that has befogged them, to present from authentic data facts that will prove that the dental hygienist has not only passed her period of probation but has more than justified her existence.

Latest available figures indicate that over two million persons are living in Philadelphia at the present time. Of these over three hundred thousand are children between the ages of six and sixteen. This number includes those attending the public schools, parochial schools, as well as the private educational institutions of the city. If the

conservative average of five cavities for each child is applicable here examination would reveal the presence of carious teeth to the number of a million and a half in these mouths. These carious teeth vary in their involvement from those with incipient cavities to those with hopelessly abscessed roots. This is a situation that is being conscientiously combated by the members of the dental profession here in their private offices and in such dental clinics as have been established. Would subsequent monthly examination show an appreciable eradication of this most common physical defect, or satisfactory diminution of the total number of cavities? I fear not, so let us direct our attention to the measures taken for its prevention. Relatively few dental practitioners have their patients on a periodical appointment basis, and for most obvious reasons. The overwhelming demand for remedial service and for restoring that function so necessary for health, forbids. He is the dental physician as well as prosthodontist, and as such has his time fully occupied. As a preventor of dental lesions he is seldom considered, and yet this should be his enviable distinction. That he consign a portion of the work to a trained assistant is a secondary consideration, the fact remains that it is his obligation and his responsibility to see that it is performed.

THE FIELD AND LIMITATIONS.

The value of periodical prophylactic treatment in destroying bacterial plaques on the surface of the teeth is substantiated by latest research and investigation. After agglutination, the plaque is so tenacious as to resist removal by the most persistent use of tooth brush and dentifrice by the patient, and being usually invisible is not detected until decalcification of the enamel has occurred and the initial lesion presents. Alas, even this stage often remains undiscovered, and it is not until the incipient cavity is in evidence that dental relief is sought. Intelligent use of the porte polisher by the dental hygienist will materially reduce this in the normal mouth. The periodical removal of the plaques is a preventive measure that should not be disregarded.

The average mouth presenting for treatment to the oral surgeon or to the orthodontist (to say nothing of the general practitioner) is usually unfit for his ministrations. Incrustations of salivary calculus containing decomposing food, bodies of dead bacteria as well as living organisms engaged in active proliferation, are present. To operate in such a mouth is to violate the laws of asepsis, and even a cavity preparation or an impression taken under these conditions indicates a disregard for the health of the patient. The salivary deposits should be removed with the accompanying debris—in short, the field of operation properly prepared. This the dental hygienist can and should do; a procedure entirely consistent with and contributing to the dignity of the dentist's efforts and comparable to the preparation of the field of operation for a general surgeon by his medical nurse. The licensed medical nurse has long been permitted to do this and no one has expressed the fear that some day, with the increasing number of votes by women, she will seek legal

permission to take the scalpel in her own hand and perform the operation herself.

The dental hygienist is the sanitary aide of the dentist and can assume these duties without imperiling dental practice. On the contrary she will become as invaluable as such aides of the general surgeon as the pharmacist, the dietary expert or the medical nurse.

Most of the State laws limit the work of the hygienist to the "Removal of stains and accretions from the exposed surface of the teeth" or "under the free margin of the gum." Why should we be so fearful? Because in her perfectly legal perambulations she approaches the sacred gingiva? I yield second place to no man in my respect for the investing tissues of the teeth, but with all logic and consistency I ask why the dental hygienist endangers the profession of dentistry because the perfectly hygienic operation of the removal of calcaric deposits and debris has a beneficial effect upon the periodontium.

From the very first, students trained to become dental hygienists have had impressed upon them that "Her efforts should be limited to the plus side of the oral health line," and she should not treat pathological conditions. I anticipate the question, "What is to prevent her from yielding to an impulse to investigate pyorrhea pockets, curette roots and otherwise infringe upon the province of the periodontist?" The answer is obvious.

By training her in the use of instruments designed for purposes within her field and educating her to a professional respect for those tissues beyond her province. This is being done in the schools at Columbia University, Rochester and Forsyth.

EDUCATION.

A member of the national educational council stated before your State society last April—"I know of no one who objects to her (the dental hygienist) coming if she attain the standard of education and training that the environment she is to enter requires and demands." It would be most unfortunate for the oral hygienist propaganda if these young women were poorly trained and inadequately equipped for the work they are called upon to perform. The standards for her education are in a state of evolution and deserve consideration by all those experienced in dental education. The course which she is required to traverse should be consistent with the dental course and should meet the demands of all those interested in higher dental education. In these early stages there is an opportunity for a uniform curriculum in all the schools that is not possible at a later period.

"Should the dental hygienist be educated in the dental college building?" This question propounded to the deans of twelve of the leading dental colleges resulted in eight affirmative and four negative replies. This is an evidence of a desire to associate the dental hygienist with the dentist even in training. By this association and environment she would have a growing respect for dentistry and all that it embraces, and would more fully appreciate her own limitation. This has been recognized by the directors of the Forsyth Infirmary, and

by the recent affiliation with Tufts College, the school becomes the Forsyth-Tufts School for Dental Hygienists.

The course of training should cover at least one collegiate year before graduation and if a state law could be so constructed that graduates would be compelled to serve in recognized municipal or institutional dental infirmaries for another year before the granting of their licenses, a continual supply of available workers would be assured. This is successfully applied to school teaching and other callings, but would require strict supervision. Her preliminary education should consist of four years' high school work or its equivalent, and credentials of character should be submitted before admittance. Preference should be shown those women who come from the professions of teaching or medical nursing, but excellent material originates in the dental office, where the office assistant with creditable ambitions seeks to broaden her sphere of usefulness. The theoretical subjects should be those necessary to give her an intelligent grasp of the importance of her calling, and of its relation to the work of the dentist. While I can learn of no objection to the lectures being given by members of the faculties of dental and medical schools, the efforts of at least one college to train dental hygienists in the same classes with dental students have been most unsatisfactory.

Practical work should consist of a course in tooth morphology, training in manual dexterity being obtained simultaneously with a knowledge of tooth form. The carving of blocks by hand fulfils this purpose. The operative technic on manikin heads as taught in Columbia University consists of three weeks intensive training, with the use of porte polisher and wood points until the technic is acquired. The student is then taught instrumentation for three weeks on the manikins. When she has demonstrated the necessary aptitude she is permitted to give prophylactic treatments to patients in the infirmary and devotes the remainder of the course to infirmary practice. As a result of this intensive training in specialized work, she emerges as a skillful, intelligent assistant ready to serve under the guidance of the dental practitioner. An important part of her training has been lay education and she is prepared to give demonstrations in oral hygiene either in a private office or in a class room.

STATE LAWS.

Since the legalizing of dental hygienists by statute in the State of New York in 1916, Connecticut, Massachusetts, Iowa, Maine, Colorado, Minnesota, New Hampshire, Oklahoma, Tennessee and Michigan have passed similar laws; legislation is now pending in Illinois, California, North Carolina and Pennsylvania. With the exception of New Hampshire, Massachusetts, Colorado and Michigan the laws limit this field to women and there is no evidence that even in these latter states will the state examiners permit men to qualify. Some of the state laws designate them as dental hygienists, others as dental nurses. As the word nurse is defined as "one who cares for or tends" and the word hygienist "one versed in hygiene or the rules of health" either of these appellations is quite ap-

propriate. While the preliminary education varies in the different states from one to four years high school work there is a rather fortunate tendency in the more recent enactments to require four years, assuring a higher type of matriculant to the schools. Prior to the passage of the law in New York State the contention was made, particularly in New York city, that these women if their profession was legalized, could not be restrained. Conditions in New York City had been a scandal in the eyes of the dental world because of the illegal dental practitioners. Its cosmopolitan population, combined with weak penalties in the law, made detection difficult and conviction no great hardship. It is difficult to conceive more unfavorable circumstances to introduce persons legalized to perform oral prophylaxis but prevented from doing more. But the same law that legalized the dental hygienist defined dentistry most concisely, and made annual registration compulsory for both hygienist and dentist. Over a period of four years there has not been one violation of the law by a dental hygienist.

These laws have been a direct result of the education of the public in the care of the mouth and an appreciation of the relation of the teeth to systemic disease. The slogan *pro bono publico* is a powerful stimulant to the indifferent law maker, and what the public wants it usually gets, professional opposition notwithstanding. It is as important that legislation concerning the dental hygienist be instigated by the dental profession as it is that she should be trained in a professional environment. One of the aims of the National Dental Association for this year is the legalizing of the dental hygienist in every state in the Union. While the fulfillment of this aim can hardly be expected in such a short space of time it is as certain as prohibition and, as the late Professor Osler believed, "is of far greater importance."

SERVICE.

With a determination to have the school children of Bridgeport, Conn., receive the periodical prophylactic treatments that he had so successfully applied to his private patients, and with the conviction that this was the logical means to check the ravages of dental caries, Dr. A. C. Fones trained an experimental class of dental hygienists in 1913. Despite professional antagonism, and with little encouragement from the municipal authorities, he selected an eminent faculty, a number of universities contributing to this first teaching staff.

The young women in the first group of students consisted of medical nurses, school teachers, several dentists' wives, and a number of dental office assistants. At his own expense, Dr. Fones reconverted his spacious garage first into a lecture room and then into a dental infirmary; and to it came the children of Bridgeport. This was the first public service on record. I say public service advisedly, and qualify its use as indicating all the public, rich and poor, from the well cared for child of the prosperous citizen, to the ragged urchin of the tenement. Humanitarianism should draw no class distinction, and its benefits should be conferred upon all mankind. It is but a matter of local expediency who should receive it first.

In New Zealand a prominent dental health worker devoted his energies to first giving prophylactic treatments and instruction in mouth hygiene to children of the rich, and after these salutary measures had little difficulty in obtaining ample funds to extend the work to the poor.

Dr. Fones's initial effort was more than an experiment—it was a forceful demonstration that was soon appreciated by the municipality. This appreciation was evidenced by an appropriation of \$5,000 to test the value of the preventive program in the schools. In initiating this work the monetary sacrifice was great, and was exceeded only by the energies expended by this courageous pioneer in inaugurating a system of instrumentation and polishing and in personally training the students in its technic. He has always foregone professional and social obligations to answer the call from any part of the country for elucidation upon this subject so dear to his heart.

The record of five years' work of these dental hygienists in the schools of Bridgeport is the most forceful argument for preventive dentistry ever presented. It has been a topic of discussion among educational authorities as well as health workers throughout the country.

There were four distinct parts to the system. First, prophylactic treatment, or the actual cleaning and polishing of the children's teeth, and chart examination of the mouths; second, toothbrush drills and classroom talks; third, stereopticon lectures for the children in the higher grades; fourth, educational work in the homes by means of special literature for the parents. The prophylactic treatment consisted mainly of the thorough cleaning by means of orangewood sticks in hand polishers, of every surface of every tooth. This meant that the dental hygienist would remove all stains and accretions from the surfaces of the teeth, and especially the mucilaginous films known as bacterial plaques, which are the initial step of dental decay. The treatments were given in the schools, the equipment being both portable and adapted to almost any location. Every child received the same treatment regardless of the financial status of the parent; in short, this preventive system was incorporated as part of the school curriculum.

During the period covered 125,950 prophylactic treatments were given to children, and the latest records show that of the 127 dental hygienists registered in Connecticut, forty-seven are engaged in public school work, hospitals, dispensaries or factories. During the progress of the war many hygienists volunteered their services in the evening and gave 800 prophylactic treatments to men drafted into service. This is a record of which Connecticut might well be proud.

In New York State inadequate appropriation of funds has prevented such an enviable record. The city of Rochester can show the best result, aided by the Rochester Dental Dispensary. Under date of March 9th a communication from Dr. H. J. Burkhart to me read as follows:

I could not tell you the number of prophylactic treatments given in Rochester by dental hygienists, because until this year a considerable amount of the prophylactic work was done by dental interns employed here in the

dispensary. Since January 1st the prophylactic work in the schools has been done by graduate dental hygienists and by students from the dispensary school. I expect before the first of July the dental hygienists will have done, from January to July, about 35,000 mouths. At the present time there are seventeen graduate hygienists and forty-two students at work in the schools of Rochester.

You probably will be interested to know that since I have called in the graduate dentists who have heretofore done the work, I have had fewer complaints and less trouble than at any time since the work was started here. The work of the young women and their conduct generally in the schools is very much more satisfactory than when the men were employed. I am hoping to secure enough graduates from this year's class so that in the future I shall not be obliged to use graduate dentists again to do this work.

In New York city the municipality has been slow to provide funds to engage dental hygienists in the schools. As a result there are about sixty engaged in private practice with dental practitioners. Four are in the service of the department of health; five are in the dental department of the Metropolitan Life Insurance Company; six are in charitable organizations, a total of fifteen in all. Twenty-five members of the alumni association of Columbia University, all engaged in private practice, have volunteered at least one morning a week for service in the public schools. As many of these young women are engaged by private dentists on a time basis, the service is a most commendable one. The undergraduate dental hygienists have given over twelve hundred prophylactic treatments in the Italian district this year, and almost half the class have indicated their intention of entering public work after graduation. One of our graduates sacrificed an excellent position to demonstrate the value of the dental hygienist at Mt. Alto in this State, in response to the call of Dr. Beck. The students in Columbia University have given over fifteen thousand prophylactic treatments to date.

In Massachusetts records show but two dental hygienists doing work in charitable institutions and two in the public school, and Dr. Harold DeWitt Cross writes that the reason for this is that "those who are most strongly in favor of legislation for the practice of dental hygienists have done nothing to promulgate the service in public health work." This is most unfortunate, and while not conversant with the reasons, I believe that it is but a question of time that with the increasing number of graduates from the Forsyth-Tufts school there will be many more available, if opportunity is offered. The undergraduate dental hygienists have given about 17,200 prophylactic treatments in Boston in the last three years. Statistics from the other states are not available, but it must be borne in mind that their legal enactments are so recent that organized effort could hardly have been tabulated.

RECAPITULATION.

To summarize in concrete form what I have endeavored to present:

1. The dentist as the guardian of the oral health of the community can no longer disregard preventive measures as a part of daily practice.
2. The prevalence of dental caries should be minimized by systematic oral prophylaxis under the direction of the dentist.
3. If the burden of professional duties prevent

the dentist from giving this service to his patient he should provide adequate assistance.

4. The dental hygienists should be properly trained and regulated by law. Where she has been given opportunity she has met all expectations.

5. Whether she labors in a private office or in public institutions she is rendering humanitarian service and the future distribution of her labor will ultimately be adjusted by the law of supply and demand.

6. The dental hygienist is an important factor in the progress of dentistry and the elevation of her service is a matter of concern to the dental profession which shall always supervise her activities.

7. It devolves upon the dental societies to institute appropriate legislation legalizing the dental hygienist in every state in the Union, as all such legislation should be initiated by the dental profession.

THE PHYSICIAN AND THE SOCIAL HYGIENE PROBLEM.

By WILLIAM BIERMAN, A. B., M. D.,
New York,

Instructor in Urology, Post-Graduate Hospital and Medical School;
Lecturer, Bureau of Public Health Education, Department of Health, New York City.

Even a cursory survey of human progress shows that it is not a gradual even procedure, but that it moves onward in fits and starts which are dependent on some new discovery. Present day civilization was not the logical sequence to conditions existing during the middle and ancient ages. No philosophical mind of those days, unless it were endowed with prophetic vision, could have predicted the state of society in which we now live. The discovery of the steam engine in the latter portion of the eighteenth century gave a violent twist to human events, rooted though they are by basic instincts. Without that discovery the big problems of today—economic, political, sociological, would not exist. It has vitally influenced the lives of all men except those in the back districts removed from the currents and eddies of present day civilization.

So with the progress of medicine. Without the discovery of the microscope and the researches of Pasteur and Virchow, which it made possible, modern doctors would be as dependent upon the graces of the various humors and mystic potions as were those who practised our art many centuries ago. With these discoveries medicine entered upon a new epoch where the application of phenomena observable by means of our five senses began to usurp the place of procedures whose bases were purely empirical.

When the bacteriopathological discoveries were finally accepted by the profession its members had hopes that therein lay the panacea for all human ills. They waited patiently until the gamut of all diseases could have been gone through, the specific causative organisms isolated, the specific sera and vaccines elaborated, and placed in neat little bottles properly labeled, whose contents were readily available for their waiting hypodermic syringes. At first each new discovery heightened their anticipation as later the many failures intensified their dis-

appointment. They found that what they held was not the therapeutic key to the entire domain of disease, but only to one of its provinces, vast though its extent, with many of its regions yet unexplored. How to gain entry to the rest of that domain; that is the problem—and to its solution many things have been suggested by individuals and groups of individuals who, impressed by various phenomena upon which they have stumbled, have in the enthusiasm of discovery declared that they were the sole possessors of the magic key, a turn of which would open wide the door to a universal therapeutics. These have been called the endocrinologist, the physiological chemist, the spinal masseur, the physical culture and food faddist, the psychic healer, and many others. With the shortsightedness of the extremist they have each ascribed to themselves the universal panacea, conceding nothing to the merits of others. They do not recognize that each cult is founded on a basis of real merit and that they are all factors which will play a rôle in the therapy of the future along with others, some of which are possibly still undiscovered. They are like so many Columbuses who, because they have discovered some promontories of land, think that they are now familiar with the entire geography of the globe, knowing nothing of the Chinas and Japans beyond.

There has arisen, too, a group who believe that now emphasis shall be laid on the application of all our new medical knowledge, rather than on that knowledge *per se*; and that that application be made as all embracing as possible in the prevention of disease. To many of these people the high incidence of venereal diseases in the civil population as revealed by the local examining board indicated a field particularly well adapted to the application of the ideas of preventive medicine. The results achieved in the Army through the application of those principles have encouraged them in the belief that the incidence of venereal diseases can be appreciably reduced at the present time, and possibly the black plague be completely exterminated in the future. The organizations which they have formed have already launched an avalanche of propaganda which is daily gaining increasing momentum and volume. Through pamphlets, lectures, magazine articles, and motion pictures the public is being made increasingly aware of the menace of the so-called social evil and the possibility of its prevention and eradication.

Inasmuch as this movement deals essentially with a physical aspect of man, it behooves the physician to keep step with the advances made by the social hygiene movement or gain the discredit of a public thoroughly aroused, just as he did undeservedly in the twilight sleep discussion.

All our human activities are actuated by two basic fundamental natural instincts, 1, the instinct of self-preservation, and 2, the instinct of procreation or preservation of the race. For ages man has been busy moulding that first instinct so as to correlate it with the demands of civilization. The great mass of his laws and regulations have been formulated for that purpose. With the increasing gregariousness consequent upon the development of the pres-

ent era—the mechanical age, he has bestowed increasing care upon the rules and regulations governing the conduct of man toward his fellowmen so as to minimize friction and expedite matters—all essentially along the lines of that first instinct. Thus have arisen the laws concerning real property, the laws of commercial exchange, the police laws, banking laws, insurance laws, and many other laws. From his earliest youth man is taught to respect the property rights of others. So far as that second great instinct is concerned, he does not seem to have awakened to the realization that it is just as essential to focus attention, and a great deal of attention on it too, so as best to correlate it with the exigencies of present day civilization, for his greatest peace and happiness.

Toward it he has adopted the policy of *laissez faire* so that the entire sex problem has come to be enshrouded in a mass of ignorance, at once destructive and decivilizing. While admitting, thanks to the work of Freud and his followers, though half heartedly, that the finer attributes of life, those which most clearly distinguish his from the purely animal existence, are an outgrowth of the sex impulse, he has not yet determined purposefully to guide that impulse so as to make his highest attributes higher still.

In our present day urban existence, the normal sex impulse, through the hundred and one sensuous appeals surrounding us—burlesque shows, seminude pictures, smutty stories, close physical contact between the sexes in the public conveyances and other surroundings, is aroused to erotic fancy and to passion. Under these conditions, the policy of silence on the matters of sex has proved unsuccessful, and in its place the agencies of uplift are attempting to substitute the policy of free discussion.

The name of Dr. Prince A. Morrow is most intimately associated with the origin of this movement in America, concerning which he wrote: "An international congress for the study and prevention of the diseases growing out of the social evil, in which every civilized country in the world was represented, was held in Brussels in 1902. The deliberations of this congress crystallized into a conviction that preventive measures hitherto employed were insufficient and that the whole question should be studied from a broader viewpoint, and with special reference to the social conditions involved in the causation of these diseases. Especial recognition was given to the fact that moral as well as medical issues were involved in the problem of prevention, and the congress recommended that societies should be organized in all countries for the study of the best means of every order, moral, social, legislative, as well as medical, to be employed in the prophylaxis of these diseases."

On his return from the Brussels congress, to which he was a delegate from the United States, Dr. Morrow set himself to the difficult task of promoting such societies as had been advocated. In 1905 he founded the Society of Sanitary and Moral Prophylaxis. Subsequently, many other similar organizations were founded throughout the land. All of these were merged in June, 1910, to form the

American Federation of Sex Hygiene, which merged with the American Vigilance Association in 1914 to form the American Social Hygiene Association whose purposes are stated to be: "To acquire and diffuse knowledge of the established principles and practices and of any new methods which promote or give assurance of promoting social health; to advocate the highest standards of private and public morality; to suppress commercialized vice; to organize the defense of the community by every available means, educational, sanitary, or legislative, against the diseases of vice; to conduct on request inquiries into the present condition of prostitution and the venereal diseases in American towns and cities; and to secure mutual acquaintances and sympathy and cooperation among the local societies for these and similar purposes."

This society soon realized that in order to combat the social evil most successfully, the line of attack must be directed from many different angles. It recognized that to limit the consideration of the problem to direct attacks upon prostitution and venereal diseases, as did the earlier organizations, would prove wholly inadequate. It thus evolved what later during the war came to be known as the American plan, in contradistinction to the methods used by the countries of Europe. This plan is a fourfold one, consisting of measures dealing with: 1, Recreational measures; 2, law enforcement measures; 3, medical measures, and 4, educational measures.

The interests of medicine are intimately associated with all these phases, least possibly with the fourth—recreation. "Prostitution and its main stronghold, the red light district, have made it their business to make vice alluring, to stage it so attractively as to overshadow their disease breeding and spreading aspects. Excess energy must and will find an outlet, but most men will devote it to decent recreation when such is provided. This fact was conclusively proved in the Army, and the conclusion holds good for our civilian communities. Virtue may be its own reward, but in many cases attractive vice will win out over a virtue which fails to be either alluring or interesting.

"Medical investigation proves that hard labor in itself does not inspire the necessary emotion for building up a reserve physical energy. There is a mental as well as a physical side to body building, which can be adequately stimulated only by genuine and wholesome play. The spirit of competition may show itself as fair or foul, helpful or harmful. The right kind of recreation will produce a spirit of fair play and sportsmanship even among savages" (1).

The legal measures deal essentially with the suppression of prostitution and with the control of the individual who is in an infectious stage so that he may not communicate his disease to others. Thus, those interested advocate "A law recognizing venereal diseases as being infectious, communicable, and dangerous to the public health. This recognition means that cases must be reported to the public health authorities just as much as cases of small-pox or yellow fever are reported, save that provi-

sion is made to protect the diseased person from loss of reputation by exposure. There is such a law on the statute book of the State of New York today.

The legislature of the State of New York has passed, and the Governor has signed, a bill which places New York among the states which have wholeheartedly adopted the American plan for controlling venereal diseases. The law as amended provides that whenever the board of health or health officer of a health district has reasonable grounds for believing that any person within their jurisdiction is infected with any infectious venereal disease and is likely to be the source of infection to any other person, the health authorities shall cause a medical examination to be made of such a person to learn whether he or she is infected with a disease of this type. Every suspected person is required to submit to this medical examination and to permit specimens of blood or bodily discharges to be taken for necessary laboratory tests. The person to be examined may secure his own physician, but in any case the physician must be one who in the opinion of the health authorities is qualified for this sort of work.

Under this law, every person arrested for vagrancy, for violating the tenement house law or for frequenting disorderly houses, or houses of prostitution must be reported within twenty-four hours after arrest to the board of health, and held for examination as to whether or not they are infected with venereal disease. It is not necessary for the health officer to follow up such court cases, but it is incumbent upon the court or magistrate before whom the person arrested are arraigned to notify the health authorities that they are under detention.

Persons who are undergoing examination either as suspected cases or through being arrested on charges specified, may be detained until the results are determined. No person convicted of any of these offenses shall be released from the jurisdiction of the court until the convicted person has been examined in accordance with this law. This means that it will often be necessary to hold under restraint men and women who are arrested or are suspected of having this form of disease for a matter of one, two, or three days, as it probably will take that long to make the laboratory tests to tell whether or not the infections are present.

In New York city today, a woman caught soliciting is remanded to jail where she undergoes a medical examination. This consists in a general examination for the detection of venereal diseases, smear taken from urethra, cervix, and the orifices of the gland of Bartholin, and a Wassermann test. If she is found to be infected she is forced to stay under medical treatment until she is rendered noninfectious. It has been advocated and in some places the necessary laws have been passed that the male partner in the transaction be dealt with in similar fashion; that he too be forced to stay under treatment until the acute infectious stage is passed.

Thirteen states have already passed laws aimed at protecting the innocent member of the partnership entered upon on the signing of the marriage

contract. That, in New York state, reads: "Each of the contracting parties must sign a verified statement or affidavit before the issuer . . . containing the following declaration: I have not to my knowledge been infected with any venereal disease, or if I have been within five years, I have had a laboratory test within that period which shows that I am now free from infection from any such disease." This law is not enforced. The wife who may be invalidated for life because of a gonorrheal or syphilitic infection secured from the man to whom she has entrusted herself and whom she has promised to love, honor, and obey, cannot secure any release from such obligations, though at the time of marriage he violated the above mentioned law. With the granting of the suffrage to women, and the steadily growing knowledge on this subject, it is not too farfetched, I think, to prophesy that such laws will become more common, be more rigorously enforced, and their infractions more severely penalized.

The problem of prostitution is one upon which the attention of men has been focused throughout the ages. Must it exist, and if so, in what most advantageous form? The question of the existence of prostitution must depend upon the medical interpretation as to the relation between continence and physical and mental health. Is it necessary that a young man should have sexual relations during the period of time intervening between his physical and economic potentialities for marriage? If it is, then we, as medical men whose avowed purpose is to act as guardians of man's physical health, should insist that the institution of prostitution be permitted to exist. But it has been definitely shown that continence is compatible with perfect physical and mental vigor. We shall consider this matter in greater detail in discussing the medical aspects of the social hygiene movement.

Prostitution, then, has no basis of a law of physical necessity justifying its existence. So practically, our attention must be turned to its eradication, for in that step lies the only solution of the problem of prostitution.

It has been shown definitely that prostitution cannot be regulated. Segregation is a joke. Thus it has been shown, for example, that seventy per cent. of all prostitutes in San Francisco live outside the segregated districts, and this holds true for eighty per cent. of the prostitutes in Dallas, Texas (2), and ninety-nine per cent. of all the prostitutes in Paris, France (3). Nor can all prostitutes be registered. Flexner, in his study of prostitution in Europe, states that there are fifty thousand to sixty thousand prostitutes in Paris, only six thousand of whom are registered. There are twenty to thirty thousand in Berlin, and only 3,300 are registered.

Medical inspection of prostitutes, too, is a complete failure. In the first place, only a small proportion of these women are examined, and these by douching and other measures can readily cover up signs of infection. Moreover, it is difficult to detect the presence of venereal disease in chronic cases. Then, too, the possibilities for infection occurring between medical inspections are very numerous. Medical inspection cannot reach the clandes-

tine prostitute—the servant girl, the shop girl, the errant widow, *et al.*

In this connection, Doctor Flexner writes: "What are the facts? Medical inspection of prostitutes has been practised on the continent, off and on, for perhaps a century. The largest venereal clinics in the world are found in regulated cities—in Paris, in Berlin, and in Vienna. Students of medicine who desire to find a wealth of venereal disease have for years repaired to cities in which for many years prostitutes have been medically inspected in order that venereal disease might be diminished.

It would appear, therefore, that medical inspection has not been potent enough to affect the total volume of venereal disease. Such statistics as are available amply confirm this statement."

The prostitute is the venereal disease carrier *par excellence*. Practically all prostitutes are at some time or other infectious. The average of four particularly reliable investigations in the United States shows that ninety-six per cent. are venereally diseased (4). Vedder (5) states that ninety per cent. of all sexually acquired syphilitic infections in men are derived from prostitutes, either professional or amateur. Bulkley (6) states that eighty-five per cent. of married women who have syphilis have contracted it from their husbands. So, when we stop to consider that nearly twenty per cent. of all routine hospital patients give positive Wassermann tests we can gain some idea of what enormous amount of specific disease can be traced to the door of the prostitute. The percentage (nineteen and six-tenths to be exact) of syphilitics among routine hospital patients is gained from a study of 18,187 cases in the Post-Graduate Hospital of New York City, Bellevue Hospital, University of Illinois Medical School, Michael Reese Hospital of Chicago, Johns Hopkins, Boston City Hospital, eleven hospitals in Philadelphia, Peter Bent Brigham Hospital, and St. Luke's Hospital, San Francisco.

Does abolition of legalized prostitution decrease its practice? The enormous amount of work done during the war gives emphatic answer in the affirmative.

Doctor Exner (7) states: "It has been shown that the practice of prostitution is in direct ratio to its accessibility. Large numbers of men are drawn to the segregated vice districts from curiosity, who will not seek prostitution when it is inconspicuous or difficult of access. I have shown that by far the lowest proportion of illicit indulgence was found in the two camps where prostitution was the least accessible."

While we do think that law enforcement measures will prove efficacious in reducing the incidence of venereal disease, it is obvious that they by themselves will not discourage the wide practice of illicit intercourse. We can but hope to reach a universal state of continence outside of the marriage relationship through the process of education. That educational process should be begun in early youth.

In a study of 948 college men, Doctor Exner found that the average age at which the first permanent sex impressions were received was nine and six tenths years. In the great majority of cases

this information was derived from bad sources, usually from boy associates, so that a morbid sensual interpretation of sex was gained with the resultant formation of bad habits. Of those few who received their information from good sources—parents, relatives, teachers, and lecturers—the great majority said that the resulting effect was good.

Doctor Exner states: "It needs further to be noted that in most of these cases of information by parents, the instruction is very limited and crude, being more in the nature of warning than of intelligent instruction. Yet, largely because of the spirit and intent, it had a helpful effect and in many cases it sufficed to safeguard the life against bad sex habits.

"This fact should serve to dispel the very widespread and morbid fear on the part of many parents to approach the subject of sex with their children. The very general fear of doing more harm than good is largely groundless. Many men express much bitterness against their parents for having failed them in this respect.

"We know that it is a law of the mind that first impressions tend to be more lasting. They are most difficult to eradicate. It is also to be borne in mind that the sex instinct exerts a more profound influence upon human life than any other instinct and that it is more easily misdirected. The sex instinct furnished the greatest undercurrents of life, especially during that life shaping, character determining period—adolescence. It gives character and direction to life more than any other human instinct. It is, therefore, of the utmost importance that the earliest sex impressions shall be of a wholesome character and shall proceed from responsible sources" (8).

The important point is to convey this information early enough, even before the age of puberty. This information should be imparted as soon as curiosity in the matters of sex is first displayed, which generally occurs at the ages of five, six or seven.

These remarks should be prefaced by short talks on the anatomy and physiology of the body, couched in interesting fairy story terms. Thus, the three or four year old entering on the fairy story telling age, will maintain a great deal of interest in the story about the blue and red tunnels through which flow beautiful rivers in which float little red and white boats laden with precious freight. How the waves in this river are made, and how they may be felt—just by placing your finger on the wrist, and other similar illustrations. They may be told about the flowers and lower forms of animal life, so that when the question is asked, "Where did baby come from?" the parent may answer truthfully and wisely in some such way as this, "Babies grow inside of their mothers' bodies, just as little birds in a nest, or seeds in a flower. The seeds when they are ripe come out of the flower, the birds hatch from the eggs, and when their wings grow they leave the nest, and babies after they are big enough come out from the mother's body and we say they are born." The question must be answered truthfully that the child's confidence may not be shattered on later discovering that the explanation was a lie and therefore

used to cover something shameful. Everything need not be told at once, but the story of the origin of life enfolded in accord with the growing intelligence of the child.

At puberty and later the boy should be told about nocturnal emissions and about venereal diseases. He should be warned, too, against the practice of masturbation. Parents and young people who will soon become the parents of the future generation, should be informed concerning these matters and their responsibility of imparting this information to others. The appeal for clean living should be made on the basis of ethical, religious, social, and moral considerations, rather than on the basis of the possibilities of contracting terrible diseases, though this possibility should be spoken of, for the fear element undoubtedly acts as a deterrent upon the actions of some.

The confirmed masturbator should be aided not only by advice along general hygienic lines and that endeavoring to strengthen the self control, but also by instillations, prostatic massage and applications to the colliculus, for there does exist a distinct pathological condition which stimulates the masturbator's desire and forms a vicious cycle. As Hühner says (9), "When masturbation has been firmly established, you can no more talk your patient out of masturbating that you can talk a child suffering from scabies out of scratching. The latter is caused by an irritation in the skin and the former by an irritation in the prostatic urethra."

Parents and other potential educators of the young have hesitated to impart sex knowledge to the young because they feared to arouse erotic fancy in those clean, virgin minds. It is not up to them to decide as to whether that knowledge shall or shall not be conveyed. The decision is always made, and in the affirmative. It is only theirs to choose by whom the information shall be given. Sooner or later, in the great majority of cases sooner than later, they secure information concerning matters of sex from sources where that knowledge is imparted in most sensualizing fashion.

"From these sources, the majority of adolescents become indoctrinated with certain erroneous ideas of the sex function and sex relationship which are most pernicious in their influence upon character and conduct: 1, That the purpose of the sex function is sensual pleasure; 2, that one has a natural right to indulge his sensual impulses as he pleases; 3, that such indulgence is a physical necessity, essential to the preservation of virility; 4, that chastity is not possible under the conditions in which the majority of young men live; 5, that this need is recognized in the setting apart of a certain class of women as instruments of sensual pleasure" (10).

Sex knowledge should preferably be conveyed by the parents, but if they, through ignorance or disinclination, neglect this duty, the void should be filled as well as possible by other educators, teachers, physical directors, and physicians. In order to teach others, however, these educators must have a sufficient knowledge of the subject themselves. In this field of education, the physician must play an exceedingly important rôle. Who is to estimate the great value to the young man of remarks by one

whose authority he respects. The mere statements spoken in sincere, earnest fashion by the doctor, that continence is compatible with mental and physical vigor and virility will do a great deal of good in giving, as it does, official medical sanction to a doctrine which every young man believes innately is the correct one.

It is a sad commentary upon our educational system that an individual may go through its public and high schools and even through the so-called institutions of higher learning, the colleges, and secure very little, if any, information concerning his own body. This information on a subject which is vital to him and of pressing importance every hour of the day is neglected in favor of years of arduous study on some dead language, algebra or calculus, or of some other subject equally difficult and equally useless. Courses dealing with elementary anatomy and physiology should be given in every high school and college. As part of such a general physical health course, a discussion of the generative organs will have its proper place, so that the danger of arousing erotic fancy by undue emphasis will be minimized.

We must also recognize that character is a unit, and the virtue of chastity cannot be taught alone. Virtues cannot be taught singly. Doctor Cabot said, "There is not a discipline to produce justice, another for truthfulness, another for courage, and another for chastity. You cannot teach one virtue alone or especially. If you teach any, you teach all. Every occupation and every study, every game and every influence, should be molded to develop character as a whole, to encourage the growth of moral integrity and cultivate the psychological centre whence all virtues radiate. If the largest results are to be accomplished, the sex education movement must be part of a general movement for that moral and spiritual education which ought to be, but is not now an integral part of the educational scheme of all schools and colleges."

If we are to teach that continence is compatible with physical and mental vigor and virility, we should be medically certain of the correctness of such statements. It is still the opinion of many members of our profession that continence does have an injurious effect on health and sexual vigor. What is the opinion of those who are in the best position to know?

Doctor Exner secured the endorsement of three hundred and sixty of the foremost medical authorities of the United States to this statement: "In view of the individual and social dangers which spring from the widespread belief that continence may be detrimental to health, and of the fact that municipal toleration of prostitution is sometimes defended on the ground that sexual indulgence is necessary, we, the undersigned, members of the medical profession, testify to our belief that continence has not been shown to be detrimental to health or virility; that there is no evidence of its being inconsistent with the highest physical, mental, and moral efficiency, and that it offers the only sure reliance for sexual health outside of marriage."

"The large number and the high standing of the physicians endorsing this declaration should serve

utterly to dispel these misconceptions. We give here only the names of the first ten physicians who signed this statement. They are representatives of a number of pages of names of equal standing:

Abraham Jacobi, William M. Polk, Walter B. Cannon, Theodore C. Janeway, William S. Thayer, Homer F. Swift, J. M. T. Finney, William H. Howell and John Howland.

Dr. Prince A. Morrow says: "The experience of specialists shows that it is not the strongly sexed, and most virile men who are most given to licentiousness, but those whose sexual organs have been rendered weak and irritable by unnatural exercise, in whom the habit of sensual indulgence has been set up and in whom self control has not been developed by exercise, or in whom the will power has been weakened. These sexual weaklings yield to sensual impulses which the normally strong feel but repress."

What is the view of the urologist? Dr. E. L. Keyes says, speaking of the single standard: "And why should not the same standard be held up to the boy? Why should he not be helped to form character by resistance and to cultivate manhood by honest purity of mind and body? For it is the imagination that does the mischief. Except in case of disease or strong inherited tendency, the sexual appetite is not insuperable.

Many honest citizens reach manhood without ever having practised sexual intercourse and are none the worse for it. Most of these have had nocturnal emissions, and very many, it must be admitted, have practised selfabuse more or less; but the braver and purer minded among them are not injured by these occasional lapses from integrity, and if their minds are kept reasonably clean by manly exercises and outdoor sports, they are not in the least degree menaced by impotency. On the contrary, impotence, nervous or real, is vastly more often the result of sexual excess than of sexual continence, as the case books of any practitioner interested in genitourinary work will attest" (12).

William Acton (13) says: "One argument in favor of incontinence deserves special notice, as it purports to be founded on physiology. I have been consulted by persons who feared, or professed to fear, that if the organs were not regularly exercised they would become atrophied, or that in some way impotence might be the result of chastity. This is the assigned reason for committing fornication. There exists no greater error than this or one more opposed to physiological truth. In the first place, I may state that I have, after many years' experience, never seen a single instance of atrophy of the generative organs from this cause. . . . No continent man need be deterred by this apocryphal fear of atrophy of the testes from living a chaste life."

Beale (14), professor at King's College, London, says: "And I would remark here that, notwithstanding very strong assertions to the contrary, and by authorities that profess to have thoroughly studied the question, no sufficiently valid objections have been established upon reasonable grounds, or upon facts of physiology and health, to living, nay, to passing life in a state of celibacy." And again, in the chapter called Question of Physiological Ne-

cessity, he says: "The argument that if marriage cannot for various reasons be carried out, it is nevertheless necessary, upon physiological grounds, that a substitute of some kind should be found, is altogether erroneous and without foundation. It cannot be too distinctly stated that the strictest temperance and purity is as much in accordance with physiological as moral law, and that the yielding to desire, appetite, and passion is no more to be justified upon physiological or physical than upon moral or religious grounds."

Sir James Paget, the eminent English surgeon, says: "Many of your patients will ask you about sexual intercourse, and some will expect you to prescribe fornication . . . Chastity does no harm to mind or body; its discipline is excellent; marriage can be safely waited for."

What is the opinion of the neurologist? Professor Gowers (15) says: "With all the force that any knowledge can give, and with any authority I may have, I assert, as the result of long observation and consideration of facts of every kind, that no man ever yet was in the slightest degree or way the better for incontinence; and I am sure, further, that no man was ever yet anything but better for perfect continence. My warning is: Let us beware lest we give even a silent sanction to that, against which I am sure we should resolutely set our faces and raise our voice."

What shall be done with the venereal disease carrier? This presents a formidable problem. Ideally, it could be met by treating all patients until the infectious stage is passed, and preventing them from contaminating others, either through sexual or extrasexual channels while in that stage. Under present everyday conditions, it is impossible religiously to apply this solution of the problem. We can, however, bend all our energies to approach it.

Many of the men who have been in the Army declare with much enthusiasm that the Army experience had at least one good effect upon the physical wellbeing of the men, in that it showed them the necessity for taking care of themselves, of utilizing the prophylactic measures after exposure to venereal disease infection. Their attitude is well presented by Sir Thomas Anderson Stuart, M. D., professor of physiology and dean of the faculty of medicine in the University of Sydney, who, speaking of the expeditionary forces in Egypt, says: "What is called a prophylactic or preventive tent is established at the entrance of each camp. Certain measures are there taken as men who have exposed themselves to infection return to their quarters, with the result that of a certain series of 2,000 cases reported upon, in only three the diseases developed, while in another series in the first month after the system had been established, of 432 men who were attended to in the tent, in not one did the disease develop, while of thirty-five men in whom the disease had developed, not one had visited the tent. These results show how sinful it is on the part of authority to neglect such cases, because the results have shown that the diseases are entirely amenable to preventive treatment. When we review these magnificent results, there is every reason to expect that if these measures were only applied as

completely in the civil community as in the military, the frequency of these diseases would be enormously diminished, and with continued strenuous application and effort, might be practically wiped out."

In considering this matter, we should follow the same policy that we adopt in considering our own personal affairs, not to be attracted by that which possesses advantages at the moment, but to be influenced by that which promises to be of the greatest value in the future. There is little doubt that prophylactic treatment properly applied and sufficiently early is of value in the prevention of these diseases. There is just as little doubt too that the knowledge that such treatment can be secured, increases the number of exposures, with a corresponding increase in the number of opportunities for infection. Moreover, if we are to decry the practice of promiscuous intercourse on the ground of social, moral, and physical grounds, and at the same time tacitly sanction that practice by the establishment of prophylactic clinics among the civilian population, there is no doubt that the individual toward whom our educational efforts are directed, will be swayed more by our actions than by our words.

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Influence of Influenza on Psychoses.—H. G. Hubbell (*State Hospital Quarterly*, February, 1920) states that the recent influenza epidemic which affected 4,010 inmates has given observers a wonderful opportunity to note the effects of an intercurrent febrile attack upon the subsequent course of many psychoses. In a study of three cases which were diagnosed as dementia praecox, it was admitted that all showed many symptoms which were associated with a fair prognosis for improvement or recovery, and of course might have had the same outcome without the influenza. Nevertheless when the abruptness and rapidity of the improvement is considered the conclusion is reached that recovery was hastened and probably brought about entirely by the attack of influenza.

IMPORTANCE OF FUNDUS EXAMINATIONS AS CLINICAL EVIDENCE OF GENERAL DISEASE.

By SAMUEL MORSE, M. D.,
New York,

Chief of Clinic, Eye Department, Mount Sinai Dispensary; Instructor in Eye Department, Post-Graduate Medical School.

It has been said somewhere that the eye is the window of the soul, but I would venture to add that it is the window of the body. As a rule, and with very little exception, fundus diseases are evidences of general disturbances or disease. This most important examination of the eye fundus should be called into use as a routine in every thorough, complete examination taken for the purpose of diagnosis. It should be made under proper conditions and by the proper person, namely, an ophthalmologist versed in interpreting what is seen, and one who sees fundi as a routine in his practice, hospital or clinical connections.

Not many years ago, general practitioners made their own urinary and other clinical examinations. Today they are having these clinical tests made in laboratories and by specialists, with better results and satisfaction, and from an impartial point of view. There are many physicians, such as neurologists, pediatricists, and others, who make their own fundus examinations. They are satisfied with conditions as they find them, but would it not be much better to get this clinical evidence from an impartial experienced source, either for corroboration or diagnosis?

A normal fundus has its landmarks with many variations which must be seen repeatedly to be remembered. The optic nerve is round or oval in shape, with or without a central excavation, may vary in color from light pink to a reddish hue, but the color whatever it is, is uniform throughout the disc. The color depends on the size of the disc, on the color of the rest of the fundus, upon the source of light used for examination, and whether the disc has a physiological excavation in its centre, which is white. Its margins are always sharply defined, and may have an extra whitish ring around it, known as a scleral ring, and an additional pigmented ring. The blood vessels usually arise as a central vein and artery from the centre of the disc, and both branch off into a superior and inferior vessel into the upper and lower parts of the fundus, respectively, and a little above and below the disc they then again branch out into two lateral divisions, known as nasal and temporal branches. The arteries are small and bright red, wavy, with whitish streaks which are light reflexes. The veins are slightly larger and bluish red, and may have pulsations. Both the arteries and veins while normal are wavy in character, and any change in their color, thickness or direction is pathological, and indicates some disease of the fundus. The retina is normally seen as a uniform stippled reddish background for the papilla, vessels and other structures, or it may be tessellated or albinotic (very pale, almost orange red). Lastly we have the macula situated about two papillary breadth diameters to the temporal side of the disc. It is

an area of the fundus darker than the rest of it with a central bright spot. All blood vessels of the retina seem to emanate from the disc and stop at the region of the macula because it receives its blood supply from the choroid.

In looking at the fundus there are many conditions which may resemble one another sufficiently to be mistaken by one not thoroughly versed in these examinations; but one who has mastered and become thoroughly acquainted with different abnormalities not only readily distinguishes these minor differences but has other methods of deciding the diagnosis with certainty. For instance, given a case of exaggerated physiological cupping of the optic nerve seen quite often, which may be easily mistaken for glaucoma, especially if there is high refractive error present. The fundus may be blurred from the latter cause, or the cornea may have opacities or there may be some other complication not permitting one to decide if the cupping is physiological or not. Here experience teaches the reading of the depth of the cupping by the difference in the refractive index measured by the ophthalmoscope between the retina, if seen at any point, and the bottom of the cup, if seen at any point. Namely, that a physiological cup would not measure more than two diopters difference, while a glaucomatous cup would measure far above this.

We also have the dropping of the blood vessels into the cup with their disappearance, and paralytic displacement, which is an optical illusion and may be elicited by moving the ophthalmoscope slightly. One will see that the vessels nearer to the eye of the examiner, namely those on the retina, will move faster than those seen in the depth of the cup.

Then again an external examination of the eye, or rather by indirect illumination, we have in glaucoma the shallow anterior chamber and the tension on the ball, or the tonometric measurement of tension to aid us.

Other difficulties that may arise for the novice or partly experienced are as follows: 1. Optic neuritis (papillitis) and choked disc (papilledema); 2. retinitis pigmentosa and choroiditis; 3. tumors of choroid and detachment of retina; 4. neuroretinitis, and embolism of the retinal artery; 5. optic neuritis and pseudoneuritis; 6. atypical albuminuric and luetic retinitis; and 7. arteriosclerosis of the retinal vessels and emboli of the smaller vessels.

These differences are not difficult to recognize on account of certain changes or combination of changes which are present in one and may not be present in the other.

Assuming that we have at our command the routine services in all medical cases and in all surgical cases, particularly about the head, I shall endeavor to show the importance and almost certain help that can be derived from this source. The fundus conditions from which one can derive almost positive conclusions in regard to medical and surgical diseases are as follows:

1. Albuminuric retinitis, the characteristic form of retinitis, usually bilateral, which is recognized from the other forms of retinitis by its chalky

white, streaky or small globular deposits seen in the retina—very often in stellate shaped streaks near the macula, is absolutely indicative of some form of nephritis. The difficulties here are the atypical forms of chalky white deposits, not necessarily streaky, seen in either part of the fundus which can be confusing to one who has not seen a great many of these cases. These may be round white spots along the course of the upper temporal vessels, and slight hemorrhages.

2. Syphilitic retinitis, choroiditis, optic neuritis, or any combination of the three, is readily diagnostic of syphilis by its blurring of the optic disc margins, serous exudations in the retina, characteristically of a light straw yellow color with patches of streaky hemorrhages in any part of the retina, usually along the course of the blood vessels. In more advanced cases, added to any or all of these findings, there will be white patches black pigment (choroidal) representing atrophy and degeneration of the tissues involved. The blood vessels themselves are sometimes depleted of blood, and appear as white threads in many places. This condition will lead one to a diagnosis of syphilis, and suggestion of a Wassermann test as confirmatory evidence. In these cases the patient's sight is usually much impaired or he may even be totally blind, but of all serious fundus conditions, and to my mind fundus diseases are all of a serious nature with regard to sight and general health, this form is one of the most amenable to treatment with good prognosis. The treatment, of course, as in albuminuric retinitis, at once suggests itself to any capable practitioner, although prognosis in albuminuric retinitis is much worse, because ninety per cent. of the patients with chronic nephritis showing albuminuric retinitis, die within two years after its onset. This is a very important medico-legal question in regard to certain forms of albuminuric retinitis. Since albuminuric retinitis may be found in pregnancy, it is absolutely advisable to have a therapeutic abortion done in such case. The prognosis then is very favorable.

3. Diabetic retinitis may simulate albuminuric retinitis with the exception of the stellate chalky deposits. There are hemorrhagic spots found scattered all over the fundus, not necessarily along the course of the blood vessels as in syphilitic retinitis, and there is usually some other ocular disease complication, such as iritis, and a urinary examination would clear this up. The prognosis in diabetic retinitis is just as bad as in albuminuric retinitis. The albuminuric retinitis can be found long before there is any albumin found in the urine, and repeated urinary examinations would be necessary, but when diabetic retinitis is found there is usually grave glycosuria present.

4. Retinitis septica may be found in typhoid fever, miliary tuberculosis, tuberculous meningitis, and sepsis, and they can be diagnosed differentially by the ophthalmoscope: 1, In sepsis there are found medium sized oval or round white spots and similar hemorrhages near the papilla, (they may be very extensive around the nerve head and obscure it); 2, in typhoid fever these are never found; 3, in tuberculous meningitis, the infection

travels along the nerve sheath, therefore we find an optic neuritis only; and 4, in miliary tuberculosis we find the choroid involved (being a systemic infection) and this is evidenced by yellow or yellowish-grey spots disseminated over the retina sparsely. We are then aided by the tuberculin and Widal tests.

The optic nerve diseases, with the exception of optic neuritis, almost always indicate intracranial or neurological diseases. We have optic neuritis, optic atrophy, partial optic atrophy, edema of the optic nerve or papilledema, retrobulbar neuritis, and inflammation of the optic nerve in back of the globe near the optic chiasm. Optic neuritis is an inflammation of the optic nerve and manifests itself by blurring and redness of the margins of the disc (exudation and peripapillary edema). It may be combined with retinitis and called neuroretinitis, as described in syphilitic neuroretinitis. This always suggests a Wassermann test and urinary examination, and is usually bilateral. These cases, if excluded, will then point to the less common causes, such as otitic origin, accessory sinus disease, inflammation of the orbits, usually unilateral.

Tuberculous optic neuritis is diagnosed by exclusion of all other conditions mentioned above, and the finding of the tubercles in the retina, the tuberculin test, and the presence of another tuberculous lesion in another part of the body. Focal infections of the teeth and tonsils should also be investigated and excluded as a cause.

Toxic and axial neuritis or retrobulbar neuritis is due to methyl alcohol poisoning or to any other alcoholic beverage used in excess or in combination with nicotine. It is recognized early by a subjective symptom of poor central vision (perimetrically speaking), a central color scotoma, that is, in the centre of the field of vision. The patient is not able to see red or blue, but in the periphery it is recognized. In these patients there may be no evidence of any lesion in the fundus until later when we have a temporal pallor of the optic nerve, indicating atrophy, but it should be diagnosed very easily by the above mentioned symptom. The same conditions which produce optic neuritis may produce axial optic neuritis, such as accessory sinus disease, lead poisoning and diabetes.

Primary optic atrophy is indicated by a pallor of the papilla or a whitening due to cicatrization of the nerve fibres in the disc, due to inflammation and by compression of the minute blood vessels. This whiteness or pallor varies in shade. It is found in tabes, general paralysis and syphilis of parts of the brain centre. It is usually bilateral, and has other symptoms besides failing vision or blindness, namely oculomuscular paresis, and reflex immobility of the pupils. In tabes this immobility is only evidenced by loss of reaction to light known as Argyll Robertson pupil. In general paralysis and syphilis, loss of reaction to both light and accommodation are present. Differentiating between tabes and syphilis, the former is more usually bilateral and may give a negative Wassermann test. Simple or primary atrophy may occur in vascular and nutritional disturbances, as emboli of arteries,

and in glaucoma. The latter does not necessarily indicate any general disease.

Secondary atrophy is recognized by pallor and blurring of the disc, and some of the conditions which cause the atrophy, such as neuritis, axial neuritis, papilledema or choked disc, may still be partly present with the pallor. Neuritis in relation to disease has already been described above. Partial or temporal atrophy may result from retrobulbar or axial neuritis (methyl alcohol poisoning), chronic alcoholism, the excessive use of tobacco, multiple sclerosis, autointoxication, and diabetes.

Choked disc or edema of the optic nerve, is a swelling of the optic nerve due to intracranial pressure interfering with the circulation of the blood vessels entering the eye, particularly the retinal arteries and veins. The veins become dilated and full, lose their pulsation, due to a partial or total cutting off of the circulation. The arteries become contracted and anemic and sometimes thread-like. The papilla as a result of this engorgement increases in size until there is blood stagnation of the circulation of the retina. This swelling of the optic nerve is recognized as such by measurement with the ophthalmoscope, because it is raised far above the rest of the surface of the retina, to an extent of three diopters or more. This condition is then so serious that something radical must be done, such as tapping of the spinal fluid (lumbar puncture or trephining of the cranium.)

Choked disc usually indicates the following: Diseases of the orbit on the side where found, if unilateral, such as tumor, abscess, gumma, and rarely cysticercus. In exceptional cases a tumor of the middle cranial fossa may push forward and present a unilateral choked disc, and later cause the formation of a choked disc on the opposite side, due to a general intracranial increase of tension. When the choked disc is bilateral, the causes usually are in the brain itself, as gummata, tubercle and tumors. Ninety per cent. of the brain tumors produce choked disc, the other ten per cent. being located in the frontal region of the brain and hypophysis. Choked disc is also found in serous meningitis, abscess of the brain of otitic origin, and sinus thrombosis.

Errors in diagnosis are possible between choked disc, albuminuric retinitic engorgement, and arteriosclerotic changes, but certain features found in each individual case examined, will decide for one experienced. Finally aid by urinary examination, Wassermann test, and blood pressure reading may be necessary.

There is a disease which is sometimes suspected by pediatricists, in certain children, with a weakness of the muscles of the neck so as to allow the head to fall backwards when the child is raised. This disease is amaurotic family idiocy, found only in very young children of Hebrew parentage. The diagnosis is made decisively by finding in the fundus of the cherry spot at the macula, and sometimes an optic atrophy with a very pale fundus. The child is blind and the prognosis for life is bad. Once seen this picture can never be forgotten.

Vascular diseases in the retina are an evidence

of grave general disease. Nowhere in the body can the blood vessels be seen so clearly and studied so well as in the retina, and abnormal findings are therefore very important as an aid to the diagnosis of cardiovascular diseases. As stated in the description of the normal fundus, any change in the calibre, course or color, is pathological. Changes in the calibre are contractions, dilatations, unevenness, and an inverse disproportion between the arteries and veins. Normally the veins are slightly larger than the arteries. Changes in the color, course (wavy, undulating or tortuous), or arterial light reflex must be noted. The pulsation, which is normal in the veins near the centre of the disc, is pathological if found anywhere in the arteries. It is usually indicative of high blood pressure. Very pale vessels are suggestive of anemia, chlorosis, and leucocythemia. Very dark vessels are indicative of venous stasis or thrombosis.

From this description it can be seen how we can study the vascular system of the eye and body *in vitro* even to a point enviable by the microscopist. Contractions of the arteries and veins in the retina are sometimes marked, and are found more frequently in syphilis than in arteriosclerosis, nephritis, and diabetes, and there are present other evidences to differentiate. The highest degree of contraction, almost to a point of obliteration, is found in retinitis pigmentosa, but its description is not within the province of this paper. Tortuosity also indicates arteriosclerosis. Broken blood vessels, when seen with emboli or thrombi, mean an absence of blood in that part of the vessel.

Embolism of the retinal artery, either complete or partial, suggests arteriosclerosis, endocarditis with or without nephritis, or syphilis. The diagnosis is made by finding the fundus very pale and sometimes cloudy, with pale and almost blanched arteries, and a cherry red spot at the macula. A thrombus of the retinal vein is differentiated by the absence of the cherry red spot, and the presence of hemorrhages and dark tortuous thickened veins. Symptomatically blindness is sudden in onset, in embolus and thrombus.

In fifty per cent. of the cases of hemorrhages and emboli cerebral apoplexy can be expected in a very short time. The vascular changes other than those indicating arteriosclerosis, such as syphilitic, nephritic, or diabetic, have other changes present as described under these diseases. Hemorrhages in the retina, except those caused by local conditions as glaucoma or myopia, are always indicative of grave general disease. Finally, I would say that this is only descriptive in a general way, to be of aid, in other fields of medicine, than ophthalmology, as for instance, neurology, pediatric, rhinology, venereal diseases, and internal medicine.

17 EAST THIRTY-EIGHTH STREET.

*Therapeutic Measures in Influenza.—G. E. Beaumont (*Practitioner*, April, 1920) says that none of the specific methods tried has proved satisfactory in every case. In the present state of our knowledge, symptomatic treatment alone is available.

THE TUBERCULOSIS COMPLEMENT DEVIATION TEST.

Its Present Status.

By B. STIVELMAN, M. D.,
Bedford Hills, N. Y.

Medical Superintendent, Montefiore Home Country Sanatorium.

When we consider that phase of phthisiology which pertains to the differentiation between tuberculous disease and tuberculous infection, we realize that our older methods do not possess the accuracy that the solution of a problem of such magnitude deserves. We also realize that a great advance in phthisiology would be made by the discovery of a test which would enable us to reach a diagnosis based on sound scientific principles. With these points in view, many observers have in recent years endeavored to ascertain the diagnostic value of the tuberculosis complement fixation test, but unfortunately the results thus far obtained have been conflicting, and many unrestrained statements have been promulgated, much to the confusion of those who seek diagnostic assistance.

DISPARITY IN RESULTS.

It has been stated that the disparity in the results obtained is due to the utilization of a variety of antigens, but this assertion will not stand critical investigation. Corper and Sweany (1), in a comparison of the autolysate antigen and Miller's bacillary antigen, have been unable to find a marked difference in the efficiency of either antigen. Lange (2) utilizing Miller's bacillary suspension and the sodium hydroxide, methyl alcohol extracts, and the potato broth culture filtrate of Petroff, has found but little difference in the efficiency of any of the antigens. More recently Young and Givler (3) using Corper's autolysate and Petroff's methyl alcohol extract and Wilson's (4) bacillary antigen so well spoken of by Von Wedel (5), found that the three antigens did not differ greatly in the percentage of positive findings in known tuberculous sera. It is therefore seen that in the few comparative studies made, no marked difference in the efficiency of any antigen has been definitely established. The discrepancies in the findings of the various workers must therefore be laid to causes other than the utilization of a variety of antigens, namely, extravagant claim due to diagnostic zeal on the part of a few observers, and ill advised discrimination between anatomical and clinical tuberculosis on the part of others.

The extraordinary claims for some antigens have been nullified by the fact that perfect results with such antigens have been obtained only by their proponents, thus one hundred per cent. efficiency with the various bacillary suspensions (6) and the high efficiency of Besredka's (7) antigen, delipoidal antigens (8), and the ether alcohol bacillary extracts (9), have not been confirmed by most investigators in the field. On the other hand, the lack of standardization in the differentiation between active and inactive tuberculosis and the unavoidable personal equation which enters into such determination undoubtedly invalidate many of the carefully compiled statistical data propounding the efficiency of this test. Craig (10) reports sixty-six per cent. of inactive cases reacting positively. Bronfenbren-

ner (11) obtained positive fixation in fifty-five per cent. of inactive cases. Fidler (12) in a study of 570 cases concludes that clinical activity cannot be diagnosed by means of this test. Elsewhere (13) I have shown that active cases give no greater percentage of positive reactions than inactive. Corper insists that it is impossible by means of this test to differentiate between active and inactive tuberculosis.

Inman (14) obtained sixty per cent. positive results in individuals who presented no clinical tuberculosis and twenty-four per cent. positive results in patients who presented no suspicion whatever as suffering from tuberculosis. Debains and Jupille (15) obtained seventeen per cent. of positive reactions in patients suffering from diseases other than pulmonary tuberculosis. Moon (16) obtained twenty-six per cent. of positive fixations in individuals suffering from nontuberculous diseases, and twelve per cent. of positive reactions in young healthy students. Woods, Bushnell and Maddox (17) obtained sixteen per cent. of positive results in absolutely normal individuals. Much (18) using partial antigens, got positive fixations in seventy-seven per cent. of healthy individuals. Stoll and Neuman (19) report ten per cent. positive reactions in nontuberculous patients.

Young and Givler (20), using three different antigens, obtained positive fixations in eleven per cent. of nontuberculous cases and about fifty per cent. positive reactions in questionable and incipient tuberculosis without any symptoms or râles whatever. Brown and Petroff (21) obtained positive fixations in sixty-one per cent. of tuberculous cases in which activity was not present. Lange obtained negative fixations in 48.5 per cent. of 173 active tuberculous cases and in 13.6 per cent. positive reaction in nontuberculous sera. Pritchard and Roderick (22) report forty-four per cent. negative reactions in patients suffering from pulmonary tuberculosis, sixteen per cent. positive reactions in nontuberculous individuals and fifty per cent. negative reactions in active incipient tuberculosis.

In our series of 700 cases (23) Miller's antigen and a similar antigen prepared by the Health Department of the City of New York were used exclusively. The efficiency of both antigens was identical. Out of a total of 108 nontuberculous patients the sera gave a positive reaction in twenty-six or twenty-four per cent. Out of 592 definitely tuberculous individuals 310 or 52.4 per cent. gave a positive reaction. Of the 294 active cases 178 or 60.5 per cent. gave a positive reaction, and out of 298 inactive cases, 132 or 44.3 per cent. reacted positively.

In the light of present day conception of the tuberculosis problem no further proof is necessary to show that about ninety per cent. of all civilized individuals have been infected with the tubercle bacillus, and that by far the greater majority have thus been adequately immunized against tuberculous disease. It is also an undisputed fact that in the Von Pirquet reaction and its various modifications, we have most efficient means of determining the presence of tuberculous infection. On the other hand, no reliable biological or serological test has

been elaborated for the diagnosis of tuberculous diseases, and it is deplorable indeed to subscribe to the statement that "the tuberculous complement fixation test in its present stage cannot serve the physician as a foundation for his diagnosis" (24), and when the diagnosis has been made the test throws no light on the activity of the process.

These inferences are unavoidable when the results of most dependable observers are carefully scrutinized. These results show: 1. That positive fixation reactions are obtained only in fifty-five to seventy per cent. of tuberculous individuals. 2. That twelve to twenty-four per cent. of healthy nontuberculous individuals give a positive reaction. 3. That the percentage of positive reactions is not much greater in those who suffer from an active tuberculous lesion than in those whose disease is inactive.

The tuberculous complement deviation test must be accurate almost to the point of infallibility before it can be advanced over the older methods of diagnosis of this most insidious and prevalent malady. The fact that over thirty per cent. of tuberculous individuals give a negative reaction and twelve to twenty-four per cent. of healthy nontuberculous individuals react positively, rocks the very foundation on which the claims for this test are based. When a test supposedly dependent upon specific antibodies which are demonstrable by complement deviation, gives no higher percentage of positive results in sthenic active cases than in inactive cases, the scientific data in the case are open to severe criticism.

It is surprising indeed, therefore, to note excellent observers (25) in spite of obtaining sixty-two per cent. positive reactions in incipient inactive cases, express the belief "that a positive reaction indicates the presence of an active tuberculous focus, and as long as the reaction is positive, the patient is not cured." Nor can we accept the view of other observers (26) who attempt to explain positive reactions in healthy adults as being due to "hilus and peribronchial tuberculosis and is an indication of activity of deep seated focus, although the subject if advancing in the direction of a more complete immunization, may never furnish the ordinary clinical evidence of active tuberculosis." The infrequency of a positive reaction in children (27) in whom this immunizing process must necessarily be of great frequency, does not support this conjecture.

Are we not justified, therefore, in accepting Leschke's (28) opinion to the effect "that the diagnostic hopes placed upon the demonstration of complement antibodies have not been fulfilled, and could not be fulfilled because the antibodies point only to a previous contact with tuberculosis and not to tuberculous diseases? The frequent occurrence of specific complement binding antibodies in those clinically free from tuberculosis in agreement with the tuberculosis hypersensitiveness in healthy adults serves to support the view that a high percentage of all adults have come into contact at some time with the virus of tuberculosis and have therefore attained a more or less perfect immunity to tuberculous infection."

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Germicidal Value of Potassium Mercuric Iodide.—Douglas Macfarlan (*American Journal of the Medical Sciences*, April, 1920) submits experiments which go to show that potassium mercuric iodide is a powerful germicide which exhibits marked bactericidal efficiency in high dilutions. Organic matter diminishes its potency to a relatively slight degree. These facts, taken in consideration with its great solubility, its freedom from irritant action, and its comparatively low toxicity in the solutions efficacious for germicidal purposes, would seem to recommend this double salt of the iodides of potassium and mercury as the most desirable of the inorganic germicides.

LONDON LETTER.

New Medical Standard for Aviators—Control of Patent Medicines.

LONDON, May 8, 1930.

There has been issued recently from the British Air Ministry for official use the schedule of the medical examination of civilian air pilots, navigators, and engineers. The document is published under the authority of the air council for the information of those in Great Britain, or in the Dominion or the Colonies, who are now about to put into practice the principles laid down in the International Air Convention. In accordance with the regulations for air navigation agreed upon at this convention in 1919, every candidate, before obtaining a license as a pilot, navigator, or engineer of aircraft engaged in public transport must present himself for examination by specially qualified medical men appointed by the several contracting States. It should be noticed that the medical examination is for the object of discovering qualities of mental and physical fitness and are conducted as much for the purpose of maintaining future efficiency as for the selection of those possessing the necessary qualities at the present time. By general examination of the candidate for an aviator's license, who must not be younger than nineteen, it is ascertained whether he is of good heredity as regards nervous stability, and is free from any injury, abnormality, or disease which may impair his efficiency. No previous operation, anatomical conformation, or affection of heart, lungs, kidneys, or nervous system must either jeopardize his handling of aircraft or diminish his capacity for withstanding the effects of high or prolonged flights. The eyes, ears, nose, and throat are especially examined in order to judge whether the degrees of visual and auditory acuity and of nasal entry are compatible with the safe performance of the duties. The methods of examination and re-examinations, in order to test the qualities of the candidate with the object of substantiating permanent fitness, are at present left with each contracting State, who may raise the standards as they think fit, but may not lower them.

Of course, during the war, both in Great Britain and in the other countries engaged in the conflict, the physical and temperamental qualities of would be aviators were carefully studied by many medical officers, with the result that certain standards were evolved, discussed, modified, and as far as possible, perfected. It may be stated that on the whole they have been found to meet the situation. British methods of examination are thorough, as exemplified by the instructions for the examination of candidates issued to medical officers of the Royal Air Force, although some of the reaction time tests, motion study, and muscle tone tests, elaborated and emphasized by other nations, are not regarded as trustworthy to any great extent.

The British candidate, after replying to questions with regard to wounds, operations, and diseases, is examined for definite disqualification with respect to them. Some conditions, such as, for instance, perforating wounds of the lung, amputations of the hand, arm, and leg above the knee, and operations producing limitations of movement or loss of muscular control, definitely disqualify the candidate.

His manner of life and personal habits are made the subjects of inquiry and there is a consensus of opinion in favor of the candidate who either eschews tobacco and alcohol, or whose use of the same is strictly moderate, who sleeps well, and has some proficiency in sports and familiarity with outdoor occupations. Candidates who have had venereal disease are deferred for expert examination and opinion. Finally, the character of the aerial work to be done comes in for scrutiny. The general examinations are thorough, while the special examinations of the cardiovascular, nervous, and respiratory systems are meticulously elaborate, as are also the examinations of the nose, eye and ear.

* * *

The Minister of Health has appointed a committee to consider and advise on the legislative and administrative measures to be taken for the effective control of the quality and authenticity of such therapeutic substances offered for sale to the public as cannot be tested adequately by direct chemical means. Sir Mackenzie Chalmers is chairman of the committee. The principal recommendations of the committee were as follows:

That the administration of the law governing the advertisement and sale of patent and secret medicines be combined under one department of the State, the Ministry of Health when created, and until then the Local Government Board; that the manufacturers, proprietors, and importers of such medicines be registered; that an exact and complete analysis of every remedy, including medicated wines, with a full statement of the claims made for them be furnished to the department; that a special court or commission be constituted with power to permit or prohibit in the public interest, or on the ground of noncompliance with the law, the sale and advertisement of any remedy, and that the commission be a judicial authority, such as a metropolitan police magistrate sitting with two assessors, one appointed by the department and the other by some such body as the London Chamber of Commerce; that the advertisement and sale, except the sale by a doctor's order, of medicine purporting to cure the following diseases be prohibited: cancer, consumption, lupus, deafness, diabetes, paralysis, fits, epilepsy, locomotor ataxia, Bright's disease, rupture without operation or appliance; that all advertisements of remedies for venereal diseases and advertisements likely to suggest that a medicine is an abortifacient be prohibited; that it is a breach of the law to use fictitious testimonials or to promise to return money paid if a cure is not effected.

The law with respect to patent and proprietary medicines in Great Britain is more lax by far than in America and probably more so than in any country of the civilized world. Captain Elliott, a medical representative in the British Parliament, protested the other day in the House of Commons against the attempts which are being made at the present time to divide up health administration in the country. According to the medical correspondent of the *Times* we are proceeding too far and too rapidly in this direction.

(To be continued.)

Editorial Notes and Comments

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THE VENEREAL PERIL.

Venereal disease has increased greatly during the past six years. It would have been a cause for great wonder if it had not increased. There is no intention, nor is there any occasion for discussing the reasons for this increase. They are too obvious. It is also apparent that the increase has been much greater in Europe than in the United States. The augmentation of cases of venereal infection in Canada is almost incredible on the face of it; it is likely that there are a great many more cases of syphilis and gonorrhea in this country than are generally known. It is, therefore, no exaggeration to state that the venereal problem is the outstanding problem of the day, and that its solution would confer an inestimable boon upon mankind.

There has been no method devised for the prevention of venereal infection carried into general practice which has checked its spread to an appreciable extent. On the other hand, it has been asserted that such a method has been devised, and it is further asserted that when employed properly it has effectually stayed the spread of infection. Prompt prophylactic treatment has demonstrated its efficiency. This experience has been almost wholly learned in the war. Observing workers in this field have stated that early prophylactic treatment carried out in an efficient manner is capable of stopping the dissemination of venereal disease. The question is now being asked why, if the method has shown itself so sure a preventive in the army,

it should not be applied to civil life? Sir Arbuthnot Lane and several other well known British surgeons and physicians have formed a society for the purpose both of educating the public as to the value of early prophylaxis and of affording facilities for putting it into use.

A short time ago fifty members of the British Parliament attended a meeting of the House of Commons to listen to an address of a deputation representing the Society for the Prevention of Venereal Disease. After hearing what the deputation had to say, these members resolved unanimously to form themselves into a parliamentary committee with the object of endeavoring to obtain the support of the Ministry of Health for the society's work, and to obtain the repeal of the clause in the Venereal Disease Act, 1917, which forbids a chemist to recommend to the public or expose for sale approved disinfectants for the prevention of venereal disease. Moreover, Dr. A. Mearns Fraser, medical officer for the Borough of Portsmouth, a large city and a large naval port, a few months ago presented to the Health Department of Portsmouth a special report on ways and means for the prevention of venereal disease. The gist of this report is the recommendation to the borough local authority to take the necessary steps to spread a knowledge of the means of self-disinfection. The Portsmouth Health and Housing Committee has approved and adopted Dr. Fraser's report and the Portsmouth City Council has confirmed this decision, and thus the principle of popularizing the methods of venereal infection among the male population is now the official policy of the municipality of Portsmouth.

The movement in support of early prophylactic treatment is making headway in Great Britain. Naturally, the education of people and the carrying into effect of the precepts of early self-disinfection are hedged with difficulties, but there seems no valid reason why they should not be attended with success. It is a truth which cannot and must not be winked at that not only is the venereal situation most serious, but it is one of international importance. No doubt there are many obstacles in the way of bringing early prophylaxis into universal use. At the same time, if they will stem the tide of venereal infection, they will well serve their purpose. In any event, they are worthy of earnest consideration in America as elsewhere. The antivenereal campaign now being conducted in Pennsylvania under the auspices of Dr. Edward

Martin, the commissioner of health of that state, and the establishment of sixteen prophylactic stations, will be watched with the keenest interest throughout the country. In this connection it is instructive to note that clergymen are beginning to appreciate the fact that the methods are by no means essentially immoral or tending to immorality. In Portsmouth the resolution in favor of prophylactic treatment was proposed by a rural dean, seconded by a bishop, and supported by a president of the Free Church Council. One stipulation was made at the time of the municipal action in support of hygiene, that there should be likewise a voluntary campaign to promote chastity. This is, perhaps, as it should be. The encouraging feature is that the opponents of early prophylaxis are commencing to understand that the methods are not in direct contradiction to the teachings of Christianity and morality.

THE BORDET-WASSERMANN REACTION IN SCARLET FEVER AND MEASLES.

It has been said that the Bordet-Wassermann reaction may give a positive reaction during the evolution of scarlet fever, but the researches on this question have not been extensive and their results have been discordant. Therefore, of late this subject has again been examined and has given the following results: Laederich and Bory used the test in twenty cases of scarlet fever in various phases of the disease with antigens of different sensibility. Of these twenty cases observed from the first to the fourth day of the eruption a strongly positive reaction was obtained in sixteen cases, an almost totally positive reaction in three cases, and only one doubtful reaction. Desmoulière's cholesterinated antigen was used. From the tenth to the fifteenth day the reaction became attenuated or even disappeared, and from the sixteenth day it was invariably negative.

With the other usual antigens—rabbit or sheep's heart—carefully verified and classed, the same patients in the same conditions gave almost totally negative results except in two cases where a doubtful reaction was obtained, and a positive reaction was obtained in one other case. Consequently, with a sensitive antigen the Wassermann reaction is constantly positive during the first days of the disease, and then progressively decreases with rapidity. The intensity of the scarlet fever in no way influences the reaction, only the nature of the antigens make the results variable.

These same observers examined four cases of smallpox. The results in three patients should not be considered, because the patients appeared to be

tainted with syphilis; but the fourth, a nonsyphilitic patient with a discrete smallpox, gave the following results: On the fifth day, while in full suppuration, a positive reaction was obtained with Desmoulière's antigen and negative with the others. On the thirty-first day of the disease the reaction was almost totally negative to all of the different antigens. As to measles, of the thirteen cases examined, the reaction was positive in ten, twice doubtful, and once negative to Desmoulière's antigen. It was almost always negative to all the other antigens, except in one patient who presented a congenital ichthyosis. In the majority of the patients the reaction was fleeting, with the exception of two, in whom it was still positive the sixteenth and nineteenth day, so that it is possible that in these two a latent syphilis may have existed.

Measles and smallpox, like scarlet fever, therefore, determine a humoral disturbance as does syphilis, but less intense and only temporary. Whether or not the Bordet-Wassermann reaction can be utilized for the differential diagnosis between scarlet fever and measles and the scarlatiniform and morbilliform eruptions is not a settled question, because in the only case studied in this respect a doubtful result was obtained on the second day with Desmoulière's antigen. This single experiment proved nothing, and more research work in this direction must be forthcoming in order to arrive at some definite conclusion in this respect.

CARDIAC EPILEPSY.

Oddo and Mattei, of Marseilles, have recently called attention to cardiac epilepsy, which is an affection characterized by epileptic manifestations subordinate to cardiac disturbances which govern the epileptic phenomena encountered by circulatory disturbances, reflex influence, and above all toxic influences. The cardiac lesions governing these accidents are many—mitral or aortic lesions and myocarditis—while the patient's antecedents are in most of the known instances practically indifferent in relation to the phenomena. Cardiac epilepsy occurs in elderly people and is infrequent before the age of thirty. Some observers have insisted on the importance of heredity and alcoholic heredity in particular. The pathology of cardiac epilepsy is not perfectly clear and many and varied are the pathogenetic hypotheses. The mechanism of the production of the accidents is not elucidated but it would seem as if the process were one of convulsive phenomena appearing, during periods of asystolia, although they only arise in certain cardiac subjects prepared, so to speak, for epileptic accidents by lesions of the cortex, the coexistence of a toxic renal factor, and a

neuropathic factor. In other words, as Parisot has pointed out, a cardiopathy may bring about an epileptic attack but it cannot engender epilepsy.

Besides the type of epilepsy dependent upon arterial cardiopathies the paroxysms due to valvular cardiopathies must be distinguished. These arise in young subjects, the attacks are larvate, consist of attacks of anger, mental obtundation and partial epileptic seizures located in one leg, for example. Oddo and Mattei insist on the diagnosis of these attacks and distinguish them particularly from hysterical manifestations, the convulsive accidents of uremia—related to renal disturbances and a high proportion of urea in the blood—the convulsive accidents of lead poisoning, convulsive paroxysms of apoplexies, those of general paresis, syphilitic epilepsy, epileptiform of syncopal attacks, with a considerable and permanent lowering of the pulse rate, which constitutes the Stokes Adams syndrome.

The prognosis is less favorable in elderly subjects than in those of lesser years and it is invariably related to the variations of cardiac equilibrium, to the value of the myocardium and the condition of the renal functions. Repetition of the crises increases the asystolia which is the fundamental cause of the affection. The treatment of cardiac epilepsy is that of cardiac disease far more than that of epilepsy. Rest in bed, a milk diet, and a drastic purge are in order; in mitral cases digitalis, in aortic nitroglycerine and potassium iodide. When the cardiac equilibrium has been restored dechloridation and bromides are indicated. In syphilitics intravenous injections of mercuric cyanide, in doses of two centigrams every second day, are to be given in place of the bromides.

CLASS VARIATION IN FERTILITY.

In this country, as in others, fertility increases downward through the social scale; there are proportionately more children in the slums than on the boulevards. The assumption has been, however, that this is the normal state of affairs—that poverty, which is due to shiftlessness, is naturally coincident with too large families, also due to shiftlessness. Now comes words from England that the lessened fertility of the more fortunate classes, in that country at least, is a fairly new development. At a meeting of the Royal Statistical Society on April 20th, Dr. T. H. C. Stevenson, C. B. E., read a paper based on the information obtained in the last census as to the duration of marriages and the number of children born and surviving. He found not only that the results of the investigation confirmed previously published statistics on the variation of fertility with economic position, but also that "this difference is of comparatively recent origin—in other words, that the defective fertility of the classes which are presumably the most successful and efficient is a new fact, the consequences of which are not yet

apparent and will have to be faced. Comparatively little class variation in fertility is observable in marriages contracted before 1861. Marriages of more recent date have been subject to the influences, whatever they may be, which have led to the fall in the birth rate from 1877 onward. Their fertility has rapidly declined, and at the same time the class variation has greatly increased, which suggests that artificial restraint of fertility is the main cause of its decline. This is confirmed by several other facts. The decline began in the higher social strata and spread gradually downward. . . . It is to be noted that the comparatively low mortality in these, the less fertile classes, goes a very little way toward compensating for their low fertility. . . . The lowest fertility rates of all are those of the professional classes."

In commenting upon this study, the *Lancet* finds a gleam of hope in the consideration that "social selection is not infallible and that the fittest may not be the best. . . . Within the circle of middle and upper class occupations there is not a perfect correlation between the social or economic prestige of a profession and the average intellectual endowments of its members." Yet our contemporary editorialist finds the outlook gloomy enough. "If any criterion of success—the imperfect one of worldly prosperity, which we now employ, or some better one yet to be devised—is in practice always correlated with relative sterility, ultimate national decadence would seem to be assured."

News Items.

University of Lyons.—Dr. Latarjet has been appointed professor of anatomy in the University of Lyons to succeed Dr. Testut, who has retired.

Belgian Population.—It is stated in the *Moniteur Belge* that the population of Belgium on December 31, 1918, was 7,555,576.

New Tuberculosis Hospital.—Plans are under way for the establishment of a tuberculosis hospital to cost \$1,500,000 at Gabriels, N. Y., by the Knights of Columbus.

Mary Putnam Jacobi Fellowship.—The Mary Putnam Jacobi Fellowship for 1920-21 has been awarded to Dr. Sophie Getzowa, University of Berne, Switzerland.

Correction.—On April 24th we announced the death of Dr. Julius Jerome Goldstein, of New York. Doctor Goldstein has since written us to say that, like Mark Twain, he thinks the report greatly exaggerated.

United States Hospitals.—The construction of five U. S. Hospitals, to cost \$10,000,000, for use by veterans of the war, is authorized in a bill that has been reported unanimously by the building committee of the House of Representatives.

Vital Statistics.—New York State's death rate for March was 14.9, one of the lowest winter rates on record, according to the Monthly Vital Statistics Review of the State Department of Health. The infant mortality rate, which rose to 128 during the influenza epidemic in February, fell to 95 in March.

Personal.—Dr. Stanley H. Osborn, of Cambridge, Mass., has been appointed director of the Bureau of Preventable Diseases of the Connecticut State Department of Health.

Honor for Dr. Castellani.—The President of France has conferred the honor of Officer of the Legion of Honor on Professor Aldo Castellani, of the London School of Tropical Medicine, for his work on combined typhoid, paratyphoid and enteric cholera vaccination and other scientific investigations.

New Brooklyn Hospital Opened.—The new Brownsville and East New York Hospital, located at East Ninety-eighth Street and Rockaway Parkway, Brooklyn, was dedicated May 30th and the first patients will be received in a few days. The hospital building cost \$275,000 and its equipment \$50,000.

Campaign for Jewish Hospital in Brooklyn.—A campaign fund is being raised by Jews of Brooklyn for the new United Israel-Zion Hospital, now under construction at Tenth Avenue and Forty-ninth Street, Brooklyn. The new institution, the construction of which will cost \$750,000, will be nonsectarian.

Hospital Bequests.—The will of the late Marcus L. Ward, of Newark, N. J., contains the following bequests to hospitals: \$20,000 each for Babies' Hospital, Home for Crippled Children, Hospital for Women and Children, Newark Eye and Ear Infirmary, Newark Memorial Hospital, St. Barnabas Hospital and St. Michael's Hospital.

Doctor Henderson Seriously Ill.—A press dispatch from Lexington, Ky., states that Dr. E. H. Henderson, superintendent of the asylum for the insane at Marion, Va., is critically ill following a bite in the hand received from an insane patient. Doctor Henderson's hand was amputated in a futile effort to check the spread of the infection.

Civil Service Offerings.—The Civil Service Commission of the State of New York announces examinations on June 19th for the following positions of interest to medical men: Assistant in pathology, State Institute for the Study of Malignant Disease, Buffalo, \$1,800; field agent, State Commission for Mental Defectives, \$1,500; physical chemist, State Department of Health, \$2,100.

American Association of Anesthetists.—At the annual meeting of this association, held April 25th and 26th in New Orleans, the following officers were elected: President, Dr. Joseph E. Lumbard, of New York; vice-presidents, Dr. F. L. Richardson, of Boston, and Dr. Eleanor Seymour, of Los Angeles; secretary, Dr. F. H. McMechan, of Avon Lake, Ohio (reelected).

Louisiana State Medical Association Officers.—The Louisiana State Medical Association, at its annual meeting on April 24th to 26th in New Orleans, elected the following officers: President, Dr. Homer Dupuy, New Orleans; vice-presidents, Dr. Beverley W. Smith, Franklin; Dr. William Harris, New Orleans; Dr. D. O. Willis, Leesville; secretary treasurer, Dr. P. T. Talbot, New Orleans; councilors, Dr. P. J. Gelpi, New Orleans; Dr. George S. Bel, New Orleans; Dr. Francois Gouaux, Lockport; Dr. J. E. Knighton, Shreveport; Dr. T. S. Wright, Monroe.

French Society of Eugenics.—After the interruption caused by the war, the *Société française d'Eugénique* has resumed its work. At a recent meeting Prof. Charles Richet was elected vice-president to succeed the late Prof. Landouzy. The two other vice-presidents are M. Houssay, dean of the Faculty of the Sciences, and Prof. Pinard.

California Medical Meeting.—The California State Medical Society held its annual meeting at Santa Barbara early in May. The following officers were elected: President, Dr. J. C. Yates, of San Diego; president-elect, Dr. John H. Graves, of San Francisco; first vice-president, Dr. William Duffield, of Los Angeles; second vice-president, Dr. Joseph Catton, of San Francisco; secretary, Dr. Saxton Pope, of San Francisco. Next year the meeting will be held at Coronado.

Social Hygiene Conference.—The International Abolitionist Federation will hold a conference at Geneva, Switzerland, September 22d to 24th. This organization has for its object the abolition of prostitution specially regarded as a legal or tolerated institution. The two main subjects to be dealt with at the conference are: Recent experience as to the superiority of voluntary over compulsory methods in combating venereal disease, and administrative action in regard to juvenile prostitution.

Red Cross Awards to Foreign Medical Men.—The American Red Cross National Committee on Awards has made public a list of one hundred citizens of foreign countries who have been awarded medals in recognition of the services which they rendered to the Red Cross during the war. Among the names are those of the following medical men: Dr. Antoine Depage, Dr. Jonlet, Dr. Jacques Roskan, Belgium; Dr. D. Koroshetz, Dr. Nikolitch, Dr. Popovitch, Surgeon Colonel Jordan Staitch, Serbia.

American Society of Tropical Medicine.—At the sixteenth annual meeting of this society, held April 26th and 27th in New Orleans, the following officers were elected: President, Dr. John M. Swan, of Rochester, N. Y.; vice-presidents, Dr. Karl F. Meyer, of San Francisco, and Dr. Victor G. Heiser, of New York; secretary-treasurer, Dr. Sidney K. Simon, of New Orleans (reelected); assistant secretary, Dr. Allen J. Smith, of Philadelphia; councilors, Dr. George Dock, of St. Louis; Dr. C. L. Furbush, of Philadelphia; Dr. J. F. Siler, of Washington, D. C.; Dr. J. H. White, of Philadelphia, and Dr. Charles S. Butler, of Philadelphia.

Tuberculosis Hospital for Public Health Service.—The tuberculosis sanatorium heretofore operated by the army authorities at Fort Bayard, New Mexico, has just been transferred to the U. S. Public Health Service and will soon be available for treating discharged, disabled soldiers. The Fort Bayard Sanatorium will provide the Public Health Service with 1,000 additional beds to care for its tuberculous patients. The present sanatorium at Deming will be held in reserve, specially for winter use. At the Fort Bayard Sanatorium the Public Health Service will treat only ambulatory cases of tuberculosis, in which the prognosis is favorable. Patients will be admitted only after careful observation elsewhere to make sure that their condition is suitable for successful treatment at a high altitude.

Book Reviews

DISEASES OF THE CHEST.

Diseases of the Chest and the Principles of Physical Diagnosis. By GEORGE WILLIAM NORRIS, A.B., M.D., and HENRY R. M. LANDIS, A.B., M.D. With a Chapter on the Electrocardiograph in Heart Disease by EDWARD B. KRUMBHAAR, Ph.D., M.D. Second Edition, Revised. Illustrated. Philadelphia: W. B. Saunders Company, 1920. Pp. vii-844.

Due to the early exhaustion of the first edition, a second enlarged edition of this extremely useful book is presented. The new edition contains descriptions of many conditions which were not included in the first edition. Among these are spirochetal bronchitis, influenza, streptococcus empyema, chronic inflammatory conditions of the lungs of uncertain origin, calcification of the lungs and pneumocardium. In addition many changes and additions have been made to the original text. The question of diagnostic acoustics is given attention. It is to be feared that there is a tendency to neglect this phase of medical work as we grow to rely more and more on the electrocardiogram and x ray findings. True, these are frequently the court of last resort but we must not become lazy and neglect the use of every means at our disposal in the unraveling of the causative factors of disease. Too many errors are made in this field—the most important in medicine. The book is the result of many years of intense study and the compilation of innumerable references. The physician who says: "Of what use are all these refinements when the treatment is all the same?" is an impediment to the progress of medical science. He would do well to work harder, read more, and take advantage of books such as this, where the conscientious work of years is presented for his benefit.

DIET IN HEALTH AND DISEASE

Practical Dietetics. With reference to Diet in Health and Disease. By ALIDA FRANCES PATTEE, Graduate, Department of Household Arts, State Normal School, Framingham, Mass. Illustrated. Thirteenth Edition. Revised. Mt. Vernon: A. F. Pattee, 1920. Pp. vii-543.

"God sent the food, and the Devil sent the cooks," but Alida F. Pattee supplies ammunition to fight any fiendish cooks and those who ignorantly upset the world by disturbing its digestion. *The Compleat Housewife* and books of that kind written two hundred years ago contain recipes which make the lips press together to inhibit the onflowing saliva; they certainly were tempting. But the Heaven-sent cook not only prepares savory dishes, she studies stomachs, proteins, fats, carbohydrates, calories, nor does she speak of a family dish or stomach. How many calories will keep papa in a decent temper? Are the energy requirements of the elder children met? Have they their correct protein calories to the pound? Grandma has gastritis; her food must not exceed 2,863 calories. She discusses food values with the butcher and baker, and the greengrocer meekly listens concerning the action of cellulose. Her leisure is devoted to estimates of food values and disorders of nutrition, both topics being clearly illuminated by the author. Two hundred and twenty-four pages of recipes give her plenty of variety for showing knowledge and wisdom,

these recipes being pronounced good by learned ladies known to the reviewer.

Are there children in the house? Then the nurse can also study the volume and give the children not what they want, but what they need. Is there an invalid and a trained nurse? The latter finds all that can possibly be wanted in the collected dietaries: the choice of food so wide that patients will hesitate about the advantages of getting well and having normal charts. Perhaps there is a chronic invalid, who talks of her diabetes, her gastritis, as though she had a monopoly of disease. Her case is met by charts from eminent doctors and hospitals. There is even a diet for Weary Willies, doddering ancients, and expectant mothers. In fact, anyone having the book must be severely blamed should he depart from this world in any condition save a ripe old age, blessing the sanity of a world which welcomes the thirteenth edition of *Practical Dietetics*.

PSYCHOLOGY OF DREAMS.

The Psychology of Dreams. By WILLIAM S. WALSH, M.D., Fellow of the American Medical Association, Member of the American Medico-Psychological Association, American Genetic Association, etc. New York: Dodd, Mead & Co., 1920. Pp. i-361.

It is unfortunate that at this day a medical man should attempt writing a supposedly scientific book and present such a makeshift piece of work. To-day of all times, when the dream has attained a hitherto unheard of value as a guide to the workings of the unconscious, a book of this character is confusing and misleading. Walsh has endeavored to create something by picking here and there, using many quotations from men like Jung and Freud in an endeavor to convey the idea that he is presenting the gist of their work. By his careless quotations he has misrepresented their findings. Great value is attached to the somatic factor in the dream interpretation. This obsolete hypothesis has long been disproved. Sexual symbolization is toned down to conventional malpresentation.

The exposition of psychoanalysis is incorrect and misleading. It is dismissed as being a fad of the day—expensive, and more complex than many other methods of treating nervous patients. However, he does give good advice when he warns against the embryo psychoanalyst. One could extend this warning to the embryo exponent of dreams and leave the matter there.

MEASURE YOUR MIND.

Measure Your Mind. The Mentimeter and How to Use It. By M. R. TRABUE, Ph.D., and FRANK PARKER STOCKBRIDGE. Illustrated. Garden City, N. Y.: Doubleday, Page & Co., 1920. Pp. iii-349.

The average patient is somewhat flattered but slightly resentful financially because his individuality is so insisted on by his doctor, who, no longer a general practitioner, does not scribble a magic prescription but sends a man away armed with the address of a stomatologist, an orthopedist, a dentist, a röntgenologist, a psychoanalyst, and a few others who will diagnose and ensure rational treatment.

Very slowly, business men and employers generally are realizing that there is something in science after all, a something which means dollars, and they will read and endorse what Trabue and Parker have to say.

There is no guesswork in *Measure Your Mind*, no experimenting after the worker is placed. It is all done beforehand, consequently there is no wearying and expensive rejection of the unfit; even the enthusiastic and conscientious worker may be found inapt, for those who make a pleasing impression often turn out incompetent for certain tasks, yet many employers conceitedly trust their own judgment at a first interview, whereas phrenology, a ready flow of language and willingness really tell nothing of capability. As in the army, let tests precede enlistment. Listen to the authors who, disclaiming absolute infallibility, urge that the mentimeter "is objective, free from the influence of personal bias. . . . It does not change, and the verdict is approximately the same whether made by a relative, friend, stranger or enemy, if the procedure is rigidly followed. The test result is little influenced by the subject's educational advantages. . . . Schooling is not intelligence. It is ten years since Binet gave to the world the first successful intelligence scale. . . . They (the tests) have demonstrated their usefulness in the study of the feeble minded, in the grading of school children, determining the mental responsibility of offenders, and in the selection of employers, also the mental classification of men in the United States Army."

Strengthened by these strong, lively assertions, all may learn and be convinced by reading about the methods, studying the standards, the varying types of employees, the mental tests in the army and industry, the psychological ones in education, the trade tests or tests of skill, and how to use them.

SWINBURNE.

Swinburne As I Knew Him. By COULSON KERNAHAN. New York: John Lane Company, 1920. Pp. vii-108.

A portrayal of some of the more intimate sides of Swinburne's character. These close views of the poet do not always show him to be the person that one would expect from reading his poetry alone. Many untoward traits are revealed and apologies made. It would perhaps be more interesting if this good friend of Swinburne's could give us a clue as to the origin of some of the so-called eccentricities which he describes. It may seem disloyal to dwell upon the less pleasing side of a personality but if we can gain insight into the factors, hereditary and environmental, which cause these infantile traits to persist to the more mature years, we will gain knowledge valuable to ourselves and of social constructive importance. Perhaps we obtain a bit of insight when a comparison of Stevenson and Swinburne reveals the hangover of uncontrolled infantile traits. In the case of Swinburne, arrogance, derogation of the work of others, their shields of wit and humor, succumbing to weaknesses, being swayed by arguments usually employed in the nursery, and many other childish foibles are revealed. These infantile acts are excused on the ground of his overexcitability. It is difficult to believe that these unguided emotions

could have improved his poetry. We are too prone in our homization to excuse manifestations of this type. We find, however, that many literary men have improved their productions after a careful investigation of the emotions which carried them away from their work and led them to dissipate their energies. We find that through sublimation they have been able to find their deeper selves and so better their work and enjoy life in a fuller measure.

The many friends of Swinburne who have been held and swayed by his power as expressed in the verse he has written will welcome an opportunity to become better acquainted with him. The student of psychology may have a guide to correlate the artist and his temperament.

THE PSYCHOLOGY OF SELFDECEPTION.

The Power of a Lie. By JOHAN BOJER, Author of *The Great Hunger*, etc. Translated from the Norwegian by JESSIE MUIR. With an Introduction by HALL CAINE. New York: Moffat, Yard & Co., 1920. Pp. iii-311.

Bojer's bold handling of realities has proved him a true successor of Ibsen. In this book he reveals a still closer relationship to the dramatist. He manifests the same readiness and ability to see the realities below the surface, those of more fundamental character traits and of the mental mechanisms by which external appearances of character are produced and outward events controlled. There is also the same absence of labored explanation, instead a subtle selfrevelation through the characters and their reactions. This is not obvious to the characters themselves any more than it is to the superficial viewpoint of the reader.

The Power of a Lie is a story of the all too ordinary human process of projection of weakness and fault, externally away from the self and rejection of the responsibility for the result of these. It is a revelation of the piling up of defense upon defense until one after another is caught and held in the web of selfdeception which at last quite conceals the truth.

This is not simply the conventional story of evil triumphant written in such extreme form that the moral of the book is impaired. Hall Caine, in the introduction, expresses the bewilderment of one who fails to see the deep psychological irony of the apparent triumph. Beneath this is the more terrible arraignment of the power of a lie upon all our thought and mental activity and of the social misconceptions under which life is mostly lived. In society in the large there has been built up through the ages of man's existence a blindness to personal elements of weakness, a readiness to escape recognition of them and their consequences by shift upon circumstances, upon one's fellowmen, an escape through a faith in God which only aids in distorting the sense of personal values and personal responsibilities. The masses of lies which have been produced by these tendencies have been built so high and so well that they are taken as truths. That which has been going on thus through all time is here represented strikingly in the narrow space of a few months and among the members of a small community. It is compressed into the analysis of a few characters in which these psychic mechanisms are at work.

Knut Norby is a man of hard self-contained jealousy of the power of position and wealth he has won. In a moment of weakness, lured on by a good dinner, he has given his bond to Wangen for a large sum of money. The latter is notoriously a visionary who embarks upon wide schemes of labor improvement which end in wrecking rather than mending the fortunes of the working people and of all others involved. His wife's patrimony is sucked away and in the end her father takes his own life in anger and despair. Wangen has always had moments when he saw himself to blame but he could not take the trouble to lay hold of the knowledge which would have given substance to his schemes. His incapacity and recklessness are increased by alcoholic indulgence, to which he again and again resolves never to give way. Occasionally selfaccusation takes hold of him, but he develops an increasing power, as things grow worse with him, to shield himself behind his good intentions, and at last to shift his sense of blame and failure upon some one else.

Circumstances give him this opportunity, for Norby, apparently the upright and strong man, is not strong enough to acknowledge even to his wife his moment of financial weakness when he became Wangen's surety. He too seizes upon circumstances and allows the statement to pass that Wangen has forged his name. He tries feebly, and then mostly through only phantasied violence, to check the rumor, but soon succumbs to a process of justifying, shifting, distorting, until drawn entirely away from the original personal weakness and an honest acknowledgment of it he becomes convinced himself of quite an opposite state of affairs. A few others know the original fact but they too are swept by one mechanism or another into the accepted opinion. One of these is the son. His conviction that he should speak and clear the innocent is overruled by slow degrees by the father's harshness, his sense of injured innocence, by the return through illness to the experiencing of mother love and care. Finally the belief of all about him, together with the awakening to another woman, breaks down his last belief in the ugly impression of his father's wrongdoing. An old retainer who knew is silenced on his deathbed by the thought of the mercy of God, which removes all his sin and further responsibility regarding earthly affairs. The pastor who furnishes him this absolution does it with a heavy heart, feeling the untruth but not knowing how to extricate himself from such a religion of personal irresponsibility. Knut's daughter, a quiet melancholy girl, whose solace for a lost love is in her religion and her love for her father, passes an agonized night over his possible guilt but is restored to faith in him by assurance through prayer.

The town is mostly with Knut, even the few doubters being finally won over, so that the dinner given in recognition of his sufferings through suspicion and through the machinations of his enemy is the occasion for a beatific sense of selfcongratulation and selfsatisfaction for all. Knut goes still further in kind and generous deeds—as if he would still further assure himself of his righteousness.

Wangen, however, the falsely accused man, as has been seen, passes through the same mental process. His is not the position of the innocent accused. Too much lies at his door. Therefore the injustice serves him equally well as the occasion for projection of all his wrongdoing and failure upon Knut and his other enemies, the members of society. He flees the hard realities concerning himself and convinces himself of his own innocence in high intention rendered evil only through the hindrances and interferences of others. He so nearly succeeds at last in believing in a letter which would have acquitted him that he forges the letter, the final proof against himself. His unselfish wife, the strongest character of the book, even she is drawn into the belief in his selfjustifying lies. For otherwise her life with him would at last be unbearable, her continued devotion to him impossible.

The race has never yet found itself strong enough to face reality unsoftened by some deception, some glow of unreality about it. The tissue of lies becomes, however, so dense that such injustice, such falsely exalted righteousness is everywhere the rule. It has hardly occurred to society to question its lies of this sort. It rather accepts them as the highest truth. For that reason the moral of this book is a vigorous, courageous one. The author's revelation of the power of the lie in one small community in its farreaching and completely falsifying effect turns the searchlight upon the possible power of lies under which we all may be living.

EVERYDAY LIFE.

Miss Lulu Bett. By ZONA GALE, Author of *Friendship Village*, etc. New York: D. Appleton & Co., 1920. Pp. 264.

Nothing surprises or flatters man or woman more than to find in the possession of a superior a duplicate of some person or thing they themselves have. A higher valuation all round is made: a sympathy created. An old woman peeling potatoes, a peasant's wife rocking the cradle, men in a tavern drinking, create a link between Teniers, Van Dyck, and the ordinary gazer who unconsciously enjoys them more because no common detail is omitted. Zona Gale enlists the sympathies of most by depicting the common life of a commonplace family. Mr. Dwight, so good that nothing can be said against him, such a bore that nothing can be said for him, his fluttery little wife who was apparently born in the Valley of Indecision, the Grandma who has tantrums and won't eat during one, and Lulu Bett, the ill dressed, spinster aunt of thirty-four, who does all the work in return for a home and is wistfully content to look into a gray future until she finds herself legally a wife by a Scotch marriage and full soon, legally unmarried by the fact of there being another wife. But her first experience has so changed her that in the end she wins a real husband.

The plan is slight, there is nothing deeply emotional in the story, there is no intentional psychology, but simply a clever portrayal of the common life with all the details which escape those who so live until they see them in picture or story and are filled with pride and pleasure that clever men think them worthy of reproduction.

RACIAL BETTERMENT.

Personal Beauty and Racial Betterment. By KNIGHT DUNLAP, Professor of Experimental Psychology in the Johns Hopkins University. St. Louis: C. V. Mosby Company, 1920. Pp. xv-95.

Professor Dunlap warns the reader that he will treat beauty with the unemotional digits of the psychologist, so a reviewer may reasonably view the work with unemotional eyes. He takes personal beauty as shown in form and figure in health, in goodness expressed in amiable looks, in racial ideas of beauty, in the individual man, the whole conclusion being that it would be a fine thing to eliminate everybody who is ugly in face and figure, health and intellect, and start off afresh.

This last is his great point—racial betterment—and all civilized society should aim at the conservation of beauty. He regrets that humanitarianism, in the way of surgery, pharmacology and prophylaxis, has given the less virile a chance to survive, but reflects that their breeding eventually leads to selfelimination as unfitted to maintain the struggle for life. He deprecates our dismay at statistics given for prostitution, as such rarely have more than one child if any, and, among the rich, due precautions are taken with regard to cleanliness, therefore safer from a procreative view. Woman's attitude toward the fallen sister he attributes to the same feeling that labor unions have to the scabs. The fallen lower the market by obtaining a living without fulfilling the laws of marriage. He predicts that the revolt by woman against the double standard and her entry into the business world will end in the endowment of motherhood by the State.

KEEP WELL PAMPHLETS.

Keep Well Pamphlet. Advice to Indoor Workers on How to Keep in Good Health. New York: Bureau of Public Health Education of the Department of Health.

Keep Well Leaflet No. 10. First Aid to the Industrial Worker. By S. DANA HUBBARD, M.D., Superintendent, Division of Industrial Hygiene. New York: Bureau of Public Health Education of the Department of Health.

Two concise and helpful little pamphlets, the one designed for office and the other for industrial workers, have been issued by the New York City health department. The advice to indoor workers is along general hygienic lines, with emphasis on air and exercise, care of the eyes and teeth, etc. The pamphlet for industrial workers contains general material relative to the need of overhauling the human machine, how to avoid accidents, and some brief and pertinent first aid suggestions. Both of these leaflets are small enough to be slipped into vest pockets and are attractively gotten up.

ENCOURAGEMENT.

Casting Out Fear. By FLORA BIGELOW GUEST. New York: John Lane Company, 1918. Pp. v-90.

This book may be recommended to the patient who is on the verge of trying Christian Science. It is full of heartening encouragement, some of which is scientifically unsound but much of which is excellent common sense in the "I am the captain of my soul" phraseology. Some of the chapters, such as that on Fear of Public Opinion, might be read with profit by a great many people.

New Publications Received

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

THE RESCUE. By JOSEPH CONRAD. Garden City: Doubleday, Page & Co., 1920. Pp. iii-404.

BARBAROUS SOVIET RUSSIA. By ISAAC MCBRIDE. Illustrated. New York: Thomas Seltzer, 1920. Pp. iii-276.

MEMORIAS DO INSTITUTO OSWALDO CRUZ. Tomo XI. Rio de Janeiro Manguinhos, 1919. Pp. v-140.

THE YOUNG PHYSICIAN. By FRANCIS BRETT YOUNG. Author of *Marching on Tanga*, etc. New York: E. P. Dutton & Co., 1920. Pp. vii-520.

THE ADOLESCENT GIRL. By PHYLLIS BLANCHARD, Ph.D. Author of *Psychoanalytic Study of Auguste Comte*. With a Preface by Dr. G. STANLEY HALL. New York: Moffat, Yard & Co., 1920. Pp. v-242.

LES INDICATIONS THÉRAPEUTIQUES DES EAUX DE CAUTERETS. Par le Dr. ARMENGAUD, Membre de la Société d'hydrologie médicale de Paris; Médecin consultant à Cauterets. Paris: A. Maloine & Fils, 1920. Pp. vii-48.

THE PSYCHOLOGY OF MUSICAL TALENT. By CARL EMIL SEASHORE, Professor of Psychology and Dean of the Graduate College in the State University of Iowa. Illustrated. New York: Silver, Burdett & Co. Pp. v-288.

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Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

THE TREATMENT OF PATIENTS WITH SLIGHT CARDIAC FAILURE.

By HAROLD E. B. PARDEE, M. D.,
New York.

Assistant Attending Physician, New York Hospital, Instructor in Medicine, Cornell University Medical School.

(Continued from page 1009)

ACTION.

The action of digitalis upon the heart is twofold: it acts upon the muscle directly, causing a stronger contraction and an increase in its irritability and in its tone; it also affects the heart indirectly by causing an increased activity of the vagus. Through the vagus there is a slight tendency to slow the heart rate when the normal regular rhythm is in force, and a marked increase in the difficulty with which the impulses pass from the auricles to the ventricles along the auriculoventricular bundle. In the presence of auricular fibrillation this results in a marked slowing of the ventricular rate because many of the impulses from the auricles which before passed through the bundle and caused ventricular contractions, are now blocked. In addition to stimulating the vagus centre this drug also stimulates the vomiting centre which lies nearby in the medulla, so we must realize that the vomiting which is produced by large amounts is independent of the gastrointestinal tract and not due to irritation there. This is important to bear in mind and will be mentioned when considering the administration of digitalis.

It is necessary also to mention the effect upon the kidneys, for many cases of chronic heart failure show more or less edema of the lower extremities. Digitalis acts in two ways to increase the flow of urine. The blood flow through the tissues is made more normal by the improvement of the circulation and this results in the kidney itself being in better condition to function, and also in the effusion of lymph into the tissues of the edematous part being diminished. There is also an action upon the kidney itself which leads to a slight increase in the secretion of urine even when the circulation is normal, but this is not marked and is probably a small factor compared with the diuresis which is obtained through improvement of the circulation.

ADMINISTRATION.

The proper method of administering digitalis has been the subject of much thought and study during the last five to eight years and we have arrived now at a point where we are able to lay down a rational course of procedure which will obtain the desired effects upon the heart in a perfectly controlled and understanding way. Recommendations for the size of the dose and the frequency of the dose can be made on a basis of a knowledge of the requirements of the individual which is at least reasonably exact. We know that in order to obtain the optimum effect upon the heart the drug must be given in sufficient

dose to saturate well the tissues of the patient, and that this saturation must be continued for as long as we desire to continue the effect of the drug. We know that nausea and vomiting are an integral part of the action of the drug upon the patient, and that they indicate not something harmful about the preparation or that the patient is especially susceptible or has a weak stomach, but that the digitalis is a good and efficient preparation and that the patient has been given an amount of it which is slightly in excess of the proper therapeutic dose. Vomiting, which appears after a patient has received a total of 120 or 150 minims, or more, of tincture of digitalis in two or three days, is a sign that the patient has had enough of the drug for the time being and that it should be stopped. Vomiting which is present before the patient has received this amount must be ascribed to a condition of the stomach or of the psychic reactions which will lead the patient to vomit anything which tastes as badly as the tincture of digitalis. To such a patient the tincture may be given in capsules, or the powdered leaves may be used, the doses corresponding in the proportion of one grain of the leaves to ten minims of the tincture.

Before the patient has received an amount of the drug which is sufficient to produce the slight degree of poisoning which causes nausea and vomiting, it will be possible for the physician to recognize that this point is being approached, by a peculiar feeling of mental depression and physical weakness of which the patient will complain. This is similar to the preliminary feeling of depression associated with seasickness, and is accompanied by a loss of appetite. This should always be described to the patient so that he will recognize it when it appears and the patient should be told to stop the digitalis at that time. Even when the drug is pushed to the point of the patient's vomiting it is not a serious thing, for if it is promptly stopped the patient will not vomit more than once or twice more at the most and by the end of thirty-six hours he will feel as well as he did before the poisoning.

The amount of digitalis which it is necessary to give to produce this saturation of the patient's tissues is somewhat variable and depends to a certain extent upon the quality of the digitalis leaf. Most digitalis, however, is not far from what might be considered an average strength, and it has been found that a total dose which is equivalent to about two minims of the tincture for each pound of the patient's weight, excluding whatever part of this weight may be due to edema and some of what is due to fat, will be sufficient in the average patient to produce a proper digitalization. Some patients only require about half of this amount and others almost double the quantity, so it is evidently not possible to use this guide in a routine manner. The majority of patients will be found to react with a dose which is not far from this average.

It must be remembered when considering the pa-

tient's dose in relation to this calculated average dose that for every day which elapses while it is being administered there is a certain amount of the drug being destroyed or excreted by the body. We shall find that it requires more than the average total dose, if the drug is so given eight or ten days are necessary to complete the total. In order to take into account this feature of continual disposal of the drug, we must consider that about twenty minims of an average tincture will be disposed of by the body during each day. The problem of each individual patient is, first, and should never be forgotten, has the patient had digitalis recently, so that there may be still some of the drug present in the body; second, what is his total therapeutic dose; and third, how urgent is the necessity to obtain an effect from digitalis.

DOSE FOR INITIAL EFFECT.

With a patient who has recently been taking digitalis, and it may be said parenthetically that strophanthus, squills or convallaria are to be considered as equivalent to digitalis in this respect, we must always start with smaller doses than we would otherwise use unless the drug has not been given for a period of at least two weeks previously. It takes at least this time for all of the drug to be disposed of and if we should start with large doses when the patient was already partly under the influence of the drug there might be unpleasant toxic effects, perhaps even a fatality.

Patients with a lesser degree of heart failure are not emergency cases so that it is not necessary to obtain the digitalis effects as immediately as could be done if there were need. If they receive twenty minims of the tincture every four hours they will reach the full therapeutic effect on the fourth to the sixth day. With this rate of administration the patient will be able to recognize the gradual onset of the loss of appetite, or the depression, or nausea, if these things are described to them so as to place them on the lookout, and the personal supervision of the physician need not be so close as when the drug is given in larger doses. It is well to see the patient on the third, and on the fifth day of the administration of the drug. If he has not reached the saturation point by this time he should be seen every day until the early signs of poisoning make their appearance, for those patients who take more of the drug before reaching their limit are likely to show one of the cardiac irregularities, either sinus arrhythmia or premature beats or dropped beats due to heart block before the nausea appears, and these can only be appreciated by the examination of the physician.

If these precautions are taken it is not necessary for the patient to remain in bed during this course of digitalis, or for him to give up his work. The danger of sudden death which has been so much talked about in connection with digitalis administration is not due to anything but to overadministration of the drug, the administration having been continued after the patient had shown some of the evidences of poisoning which have been described. Most of the cases of sudden death which have come to my attention have been known to have had premature beats for two or three days before death occurred,

so it seems possible that ventricular fibrillation eventually set in.

TO CONTINUE THE EFFECT OF DIGITALIS.

When the patient reaches this point of saturation with digitalis no more should be given until three or four days have passed, during which time the patient will dispose of some of the drug. When administration is resumed, the dose should be twenty minims of the tincture or its equivalent each day for this is the average amount which has been found to be disposed of daily by the body. Although it is an average from which there are rather wide individual variations yet it will serve as a tentative dose to start with and in the majority of patients will not have to be changed. Should we feel, after several days, that the patient is not being benefited by the digitalis, it may be for one of two reasons, either digitalis is unable to benefit this patient, and there are, of course, some in whom this will be found to be true, or the patient may be one who disposes of digitalis more rapidly than twenty minims a day and who by this process has reduced his saturation with the drug below the point at which it is effectual. We are able to decide which of these is the case by determining the amount of digitalis which it is necessary to give him at the rate of twenty minims every four hours, to bring on again the symptoms of early poisoning. If only a small quantity is necessary, then the patient has been continually at a good degree of saturation with the drug, and if he has not done well it is not due to the improper use of digitalis. If a large quantity of the drug is necessary in this second course, an amount which at all approaches the amount which was necessary when he was first digitalized, then it is proven that he has been disposing of the drug more rapidly than we have been giving it, and the daily dose should be increased to more than the twenty minims which we used at first.

(To be continued.)

Exploration of Brain Wounds.—Towne and Goethals (*Annals of Surgery*, May, 1920) state that in an unselected series of twenty-eight cases in a forward hospital, brain wounds were treated with the conception that the problem involved was the absolutely complete removal of contaminated damaged brain, blood clot, hair, cloth, bone and metal so that primary suture might result in clean healing. The method adopted was to suck and irrigate out the brain and clot, and then extract with fine forceps, bone and metallic fragments detected by a gentle palpating finger, provided the cavity was sufficiently large to admit the finger. The size of the hole in the dura was not taken as an index, but was enlarged if necessary. In some cases this finger technic was contraindicated by the small size of the track in brain substance, or by the awkward situation of wounds caused by missiles passing in by way of the deep nasal sinuses; in these instances cleaning was done as well as possible with catheter and forceps. Of the twenty-eight cases eight were considered inoperable and the patients died without intervention in a few hours; twenty patients were operated upon and of these seven died, giving a mortality of thirty-five per cent. More important

than the mortality figure is a study of the cause of death in these seven cases, which shows: One death from empyema with healing brain wound; three unavoidable deaths due to extensive brain injury or arterial hemorrhage; one unavoidable death due to sepsis, in which a deep cavity communicating with a nasal sinus could not be reached for proper cleaning; one death from streptococcus ventriculitis caused by a deep lying minute metallic fragment which could probably not have been extracted even with a magnet, and one septic death from a wound involving cerebrum, lateral ventricle, and cerebellum in a case that should have been given the benefit of more extensive operation with removal of the metal through a counter opening. In short, there was no death from encephalitis when the metal and bone were within reach in a cavity large enough to admit the finger; and only two of the seven deaths could possibly have been avoided by the use of the magnet or by more extensive operative procedures.

A study of the thirteen evacuated cases shows that twelve healed by first intention, and that in the other there developed a septic fungus, which was not fatal, after a prolonged attempt to clean a cavity by the catheter forceps technic. In only one instance did routine postoperative examination show a slight and temporary increase in the signs of brain injury. Several cases are reported in which it seems highly improbable that the foreign bodies could have been removed without finger palpation. Later results in the thirteen evacuated cases for periods of from six to twenty-one months after operation showed that there were no late abscesses, that six patients were working, that major epilepsy developed twice, and that two only could be considered as not distinctly subnormal.

From these facts and from a study of the literature the following conclusions were drawn: 1. Entry of a foreign body into brain tissue causes irreparable damage to a more extensive area than that involved in the actual track of the foreign body, and this cavity is further broadened by hemorrhage; hence the size of the metallic fragment or of the dural aperture is not a true index to the wider area of damage represented by the brain cavity. 2. When such a cavity is not over seven cm. deep and large enough to admit a finger, cleaning with forceps under careful finger control gives absolute insurance against sepsis, and only very rarely causes increased cerebral trauma which is slight and recoverable. 3. Cleaning of such a cavity by Cushing's method of catheter palpation is sometimes not complete and therefore does not always prevent sepsis; it necessitates a prolonged operation; and it is successful only in the hands of those who have had a large experience in its technic. 4. Brain wounds not suitable for finger palpation must be cleaned as well as possible by the catheter method, curettage, or magnet extraction, or a combination of these methods. 5. The tendency of the difficult catheter technic to make this a special field, which requires that the wounded undergo delay if a trained neurological surgeon is not at hand, is not for the best interests of the patient, who is put under increasing risk of encephalitis with every preoperative hour. 6. Brain wounds, and especially those suitable for finger pal-

pation, are easy to clean rapidly and successfully if a few proper instruments are available. Any surgeon fitted to do frontline work can quickly acquire the technic and do these cases in well under an hour; and, with experience in judging which casualties are inoperable, may well succeed in evacuating seventy-five per cent. or more of his cases in which operation had been performed.

Willens's Method of Active Mobilization in Surgical Joints.—E. B. Mumford (*Medical Record*, February 28, 1920) defines this method as immediate, continuous, active mobilization. These terms are to be translated in the most literal sense. By immediate mobilization is meant that the patient shall move the joint as soon as he has recovered from the anesthesia of operation. By continuous mobilization is meant that the joint shall be moved as often as the muscle power of the patient will permit. By active mobilization is meant that all motions shall be made by the muscles which control that particular joint; at no time shall the nurse or the surgeon or the patient use any passive motion.

The advantages are as follows: 1. Adhesions of a serious nature are reduced to a minimum. 2. The most thorough drainage of the joint cavity and the pocket of pus is given through the active mobilization, as at each movement the shape of the cavities is changed and the pus expressed, popliteal space involvement thus being less likely to occur. 3. Atrophy of the muscles is prevented. This is one of the most important phases of the treatment. The tone of the muscles is retained in a way that is not possible through simple massage and hot application. 4. The retrogressive changes which come through disuse in the highly specialized tissues of the joint are eliminated. 5. With the simple dry dressings the pain which comes through drains and irrigations is prevented.

Brachial Plexus Paralysis Following Delorme's Operation.—P. Peugniez (*Bulletin de l'Académie de médecine*, February 3, 1920) reports a case of empyema following influenza in which Delorme's procedure of lung decortication was resorted to after the condition had existed for two months. The left lung was found retracted against the spinal column and covered with a thick fibrous layer. The temperature returned to normal on the fifth day and in six weeks the wound was healed, with the lung in good condition as shown by auscultation and the x rays. On the day after the operation the patient showed a root paralysis of the left brachial plexus of the Duchenne-Erb type. There was anesthesia of the outer surface of the arm, from the acromion to the epitrochlea. Three days later, motor power began to return, and in somewhat over a month was completely restored, together with the sensory functions. The paralysis is ascribed to the fact that during the operation the author had to have the left arm drawn strongly upward against the head in order to be able to deal with the upper ribs beneath the scapula. The resulting rotation of the clavicle about the sternoclavicular joint is believed to have compressed the brachial nerve trunks against the anterior tubercle of the transverse process of the sixth cervical vertebra.

Miscellany from Home and Foreign Journals

A Case of Nonparasitic Hematochyluria.—H. H. Hampton (*Bulletin of the Johns Hopkins Hospital*, January, 1920) reports a case of hematochyluria in a young woman who had never been exposed to infection with filaria. She had been weak, suffering from attacks of syncope, and for ten years had had a mitral stenosis. During her stay in the hospital milky urine was always obtained from the bladder. The urine showed at times red cells and oil droplets. The leak in the lymphatic system was located in the right kidney. The patient was put on various diets to test their effect. Starvation and fat free diets freed the urine of fat, but the albumin and blood cells persisted. Posture influenced to some extent the fat content of the urine, but it did not control it. The best explanation of this condition is considered by Hampton to be mechanical obstruction of the lymphatic system, this usually being located in the thoracic duct or lymphatic trunks.

Thromboangiitis Obliterans.—A. I. Ludlow (*China Medical Journal*, January, 1920) reports the occurrence of this disease in four men between the ages of thirty and forty who pursued widely different occupations. None gave any evidence of syphilis or arteriosclerosis, the diet of all was chiefly vegetarian, all used tobacco, three drank Korean wine, the other drank no alcohol. The disease occurred during the colder months of the year. Treatment used was rest in bed, elevation of the foot, bathing with hot hypertonic saline solution, or alternating hot and cold baths, and amputation of the gangrenous tissue. Although there was no history of syphilis and the Wassermann test was negative, a dose of neosarsminol was given in three of the cases, but no particularly favorable effect was observed as the result. The writer refers to Meyer's suggestion that in this disease there is a disturbance of the carbohydrate metabolism with a consequent tendency to hyperglycemia, which calls for treatment by the supply of abundance of water to the system, through the simultaneous use of duodenal flushings and hypodermoclyses.

Retardative Effect of the Blood of Immune Animals.—Carroll G. Bull and Louis Bartual (*Journal of Experimental Medicine*, March, 1920) failed to find that the whole uncoagulated blood of immune animals is as highly pneumococcal in *vitro* as other investigators have asserted. The experiments described show that the rapidity with which pneumococci multiply in the fresh whole blood of various animals is directly proportional to the susceptibility of these animals to pneumococcus infection. Active and passive immunization of rabbits against pneumococci confers upon their blood the property of retarding the growth of these organisms. Microscopic studies of the cultures in immune blood showed that the pneumococci grow in chains and clumps, the growth being largely in the serum after coagulation has occurred. Phagocytosis of the organisms by polynuclear cells was observed. The retardation of growth depends on two agents: opsonins and leucocytes, and if either fac-

tor is absent, growth readily occurs. After defibrination of immune blood, pneumococci grow because only a few phagocytes are present in such blood, and the organisms will grow in the most potent immune serum after the white cells have been mechanically destroyed. Although it has not been definitely determined that immune blood does not kill a certain number of the pneumococci with which it is inoculated, the authors draw the tentative conclusion that no such killing does take place, as none of the tests became sterile during their experiments.

Cultivation of Tubercle Bacilli from Tissues.—G. H. Wilson (*British Medical Journal*, January 31, 1920) describes a method of isolating and cultivating bacillus tuberculosis from tissues by trituration of the tissue with quartz sand, treating the triturate with antiformin, washing and centrifugating the material and then planting on a modification of the Dorset medium prepared by adding a tryptic digest of horse heart to the contents of eggs, instead of water as in the original medium. Smears showed that the tubercle bacilli were not broken up by the trituration and the fact that cultures were positive in cases where no bacilli were to be found in the smear shows that the antiformin as used does not seriously diminish the vitality of the bacteria. Contaminating organisms were killed by the antiformin, as was indicated by sterile cultures of the final sediment on agar medium. The method for preparing the medium is given in detail.

A New Case of Lipodystrophia Progressiva.—F. P. Weber (*British Journal of Children's Diseases*, April-June, 1919) reports the case of a girl of twelve and one half years who has been progressively losing the subcutaneous fat over her face, neck, upper extremities and trunk. The buttocks and lower extremities are fairly plump. She has no other symptoms except an occasional catarrhal condition of the nose and pharynx. There is no evidence of the thoracic or abdominal organs being involved in any way. The urine is free from albumin and sugar. The wasting began gradually at about seven and one half years after the girl had suffered from measles, whooping cough, and pneumonia in quick succession. It is typical of lipodystrophia progressiva in regard to the distribution of the atrophy, sex, and age of onset.

Dairy Infection with Streptococcus Epidemicus.—J. Howard Brown and Marion L. Orcutt (*Journal of Experimental Medicine*, January, 1920) describe an epidemic whose origin was traced to the milk from a single quarter of the udder of a cow in a dairy of 112 cows. The epidemic was moderately severe and was characterized by a malady variously diagnosed as epidemic adenitis, sore throat, pharyngitis and tonsillitis. Cultures were made from the patients and from the workers on the farm, and in all the streptococcus epidemicus was isolated eighty times from patients, dairy employees and from the cow. All these strains were indistinguishable from one another and a general description of them is given.

Trachoma in Marseilles Before and After the War.—Aubaret (*Bulletin de l'Académie de médecine*, January 20, 1920) notes that trachoma was always prevalent in Marseilles, as in other cities on the Mediterranean. In a hospital eye clinic the ratio of trachoma among the total number of eye cases was constantly about 9.66 per cent. Since the war, however this percentage has risen to fifteen. The increase might be ascribed to the coming and going of colonial and African troops, but the ratio of trachoma cases in the clinic in a military hospital was found to be but 8.29 per cent. The disease is more likely to have been disseminated by laborers imported from all parts of the world. The mean percentage of trachoma cases in eye services in other large cities of France before the war was 0.5 to one per cent.

Tuberculosis of the Appendix.—Margaret Warwick (*Annals of Surgery*, February, 1920) declares that tuberculous appendicitis is a definite entity which, though rare, should be considered in both diagnosis and prognosis and surely justifies routine sectioning and careful examination of all appendices removed at operation. Demonstration of the lesion may save many lives either by removal of the primary focus or by making a diagnosis so early that immediate treatment may bring about arrest or cure of the general conditions. She concludes as follows:

1. The disease may be primary or secondary.
2. Infection occurs directly from the intestinal contents or by the hematogenous or lymphatic route.
3. It may produce either the ulcerative, hyperplastic, or military type.
4. It can frequently be diagnosed only by microscopic examination.
5. The symptoms resemble very closely those of suppurative appendicitis.

Hypochlorhydria and Air Swallowing.—W. Russell (*British Medical Journal*, December 13, 1919) finds that hypochlorhydria is less common than hyperchlorhydria but thinks that the treatment is so satisfactory that the condition should be recognized and relief given. The symptoms arise from a retention of food in the stomach and a delay of the gastric digestion. A feeling of heaviness is noticed or a "load" in the stomach is felt usually soon after eating and this is often followed by distention with eructation of gas which does not taste acid. The appetite is impaired, tongue furred, and the bowels become irregular. Vomiting occurs in severe cases. There is not, however, so much general weakening, mental and physical, as in the cases of hyperchlorhydria. An indefinite history of gastric involvement is so characteristic of the condition that an indefinite rambling history often leads the writer to a provisional diagnosis of hypochlorhydria. Several case reports are given with the excellent results of treatment with diet and hydrochloric acid. Finally, the author discusses the association of air swallowing with changes in the acidity of the gastric secretion. It is more common in the hypochlorhydria than in the cases of hypersecretion. Two cases with obscure gastric symptoms were diagnosed and relief was obtained by correcting the hypacidity.

Physical Signs of Foreign Bodies in the Bronchi.—Thomas McCrae (*American Journal of the Medical Sciences*, March, 1920) states that cases of foreign body in the bronchus are not mere curiosities, but are more common than we have supposed. There may be no disturbance at the time of entrance of a foreign body, and no suggestion in the history of such a happening. Certain signs are of value, especially decreased expansion on the affected side, the presence of very fine râles, and the "asthmatic wheeze." Some foreign bodies, such as a peanut, set up a very acute general process which is fairly distinctive; other structures, such as metallic objects, cause permanent changes, usually in a lower lobe. The chief errors in diagnosis are to mistake the signs for those of pneumonia in the early stages and in the acute cases, and for tuberculosis after the body has been present some time.

Tuberculosis of the Urinary System.—J. E. Palmer (*Canadian Medical Association Journal*, March, 1920) says that renal tuberculosis is insidious in its onset and is secondary to a focus elsewhere. The infection is hematogenous in its origin, is carried upward by means of the lymphatics, downward by the urine. The ureter and bladder become diseased by a descending infection. Tubercle bacilli should be found in the urine. The presence and function of the second kidney must be determined. The treatment consists of nephrectomy followed by injections of tuberculin, together with general antituberculous treatment. Recovery of a tuberculous lesion in a kidney is very doubtful; the disease almost invariably progresses till the whole organ has been destroyed.

Nervous Instability and Congenital Hyperthyroidism.—M. Briand and L. Livet (*Presse médicale*, January 3, 1920) refer to a distinctly "hyperemotive" patient, with paroxysms of anxiety, hot flushes, palpitations, respiratory and visceral angor, and nightmares. The boy also presented a slight cyclothymic tendency and an incomplete Graves syndrome. His father had had exophthalmos and his grandfather both goitre and exophthalmos. Attention is directed, on the basis of this case, to the frequent association of exophthalmic goitre with excessive emotionalism. The thyroid syndrome may be exceedingly attenuated and, as in the case reported, revealed only by the anamnesis, but should be always inquired for by the clinician confronted with a hyperemotive case, just as nervousness is sought in cases of exophthalmic goitre.

Prolonged Subfebrile States in Children.—Comby (*Presse médicale*, December 24, 1919) notes that in the frequently encountered instances of slight fever persisting several weeks or months in children, and often described by the parents as growing fever, dentition fever, or worm fever, there may exist a latent tuberculous condition with tracheobronchial adenopathy; the tuberculin intradermal test is, however, often negative, and usually this is not the cause of the fever. Frequently the source of these febriculae is in the nasopharynx, the cause being an adenoiditis or nasopharyngitis. At times they result from chronic appendicitis, and are relieved by operation. Some cases are due to thyroid instability and are amenable to organotherapy.

Proceedings of National and Local Societies

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

*One Hundred and Fourteenth Annual Meeting
Held in New York, March 23 to 25, 1920.*

The President, Dr. CLAUDE C. LYTLE, of Geneva, in the Chair.

SECTION IN SURGERY.

Diagnosis of Right Iliac Fossa Pains and the End Results in Operations for Chronic Appendicitis.—Dr. CLARENCE A. McWILLIAMS, of New York, said that many individuals continued to complain of rightsided pain after the appendix had been removed. At the Presbyterian Hospital, during the years 1916 and 1917, 200 operations for chronic appendicitis had been performed on ward patients, who were afterwards followed up by a strict followup system. Of these seventy-three per cent. were females and twenty-seven per cent. males. Cures were effected in 151 patients, or seventy-five per cent.; twenty-two or eleven per cent. were improved, and in thirteen per cent. there was failure to cure. In this series of cases there was no instance of subsequent hernia in the scar of inguinal hernia. In a series of fifty-eight cases in private practice, in which operation was not performed by any one man, the results were by no means as satisfactory. This indicated that hospital cases were more carefully handled than private cases and that there should be a more careful study of private patients before operation for the purpose of detecting associated or concomitant conditions that might cause the symptoms. It was advisable to abandon the old gridiron incision for an ample right rectus incision or a transverse incision which would permit thorough exploration of the upper abdomen and pelvis.

Dr. C. L. Gibson had reported results at the New York Hospital, where during the past two years they had reduced their bad results from thirty to eleven per cent. This Doctor Gibson attributed to more thorough examination, a wider incision, and the use of five per cent. picric acid instead of iodine, which was very irritating. Many patients were operated upon for appendicitis when the symptoms were caused by other conditions. Patients with splachnoptosis were often operated upon for appendicitis. In 120 cases of nonoperated ptoses, eighty-seven patients complained of rightsided pain, hence in these cases a degree of conservatism should be exercised unless there was a history of previous acute attacks of appendicitis. Cases of this kind were as a rule greatly benefited by abdominal support. Neither Lane's kink nor Jackson's membrane were in themselves of great significance. Many of the symptoms supposed to be due to these conditions were the result of faulty posture and incorrect methods of breathing. Many adhesions in the upper abdomen and in the intestines were due to faulty posture and lack of physical development. Setting up exercises would do more for women than any other one thing. A dilated, prolapsed cecum should be plicated at the time the

appendix was removed. In a number of cases this had been done with benefit. The kidney and ureter might be the cause of symptoms simulating those of appendicitis. In some cases it was almost impossible to differentiate duodenal ulcer from chronic appendicitis. Chronic jejunal obstruction due to adhesions or overlying mesenteric vessels, as well as duodenal obstruction, might also simulate chronic appendicitis. Duodenal obstruction bid fair to be discussed far more in the future than it had been in the past. It was easy of demonstration after a bismuth meal. At the time of operation for chronic appendicitis a careful exploration of the abdomen and pelvis should be made.

Surgical Physiology and Pathology of the Colon from the X Ray Viewpoint.—Dr. JAMES T. CASE, of Battle Creek, Mich., exhibited a number of lantern slides which he said would serve as a discussion of Doctor McWilliam's paper. He first showed slides of the normal colon, describing it and then discussing the question of position versus function. The normal colon had a wide range of motion, particularly the transverse portion. Lane's kink, hepatic, colonic and other varieties of adhesions might be the cause of stasis that would eventually produce appendicitis. A cecal stasis might often be due to obstruction in the distal colon rather than to a Lane's kink or a Jackson's membrane. The colon had three types of movements: 1, the right half showed antiperistaltic movements; 2, the left half had segmental and gross movements, and 3, there were propulsive movements which directed the contents from right to left. The normal transverse colon assumed various positions, being sometimes high and sometimes low in the abdomen. Many slides were shown demonstrating the existence of an antiperistaltic wave. Cases showing this condition were frequently colitis having no surgical lesion. Antiperistaltic movements were frequently responsible for stasis in the cecum.

Respiration played a great part in the physiology of the contents of the colon and undoubtedly helped in moving them forward. Propulsive movements occurred twice as rapidly as antiperistaltic movements. A failure to understand the mechanism of antiperistaltic action might lead one to interpret an x ray plate showing this action as indicating the presence of ulcer or some form of gross pathology. It was important to differentiate between a true Jackson's membrane and a loose membrane which originated from the under surface of the liver and gallbladder and which did not cause colonic stasis. Interfering with such a loose membrane was meddlesome surgery. Adhesions of the pelvic colon were quite common after salpingectomy; in a number of cases he had been able to relieve these with very satisfactory results. Adhesions of the pelvic loop were often the cause of ileocecal pain and afforded one explanation of why appendectomy sometimes failed to relieve rightsided pain. Cases of supposed chronic appendicitis needed careful study, with special attention to the distal colon.

Doctor Case, in closing the discussion, emphasized the point that the x ray was not the only method of studying these cases and that one should never depend upon the x ray alone. They should always be studied from the viewpoint of internal medicine. As to the number of x ray plates, if he were making the examination he would not feel it necessary to make x ray plates at all in some cases, because he could make the diagnosis by means of the fluoroscope, and indeed one might be widely misled by the x ray unless it was checked up by the fluoroscopic examination. The stereopticon was helpful. It was their custom to make a stereopticon examination, as that showed the relation of the colon to the other parts. The amount of the enema was quite constant, being about three pints. It was allowed to flow into the colon by gravity from an elevation of about two feet. Pneumoperitoneum he considered one of the greatest advances of röntgenology today. It was useful in supplementing fluid in ascites; it showed retroperitoneal tumors and pancreatic cysts; it was useful in differentiating the relation of the diaphragm to the liver, kidneys and spleen, but he would hesitate to use it until he had exhausted other methods of diagnosis, though if carefully conducted it was apparently without serious danger to the patient.

Technic of Anorectal Operations under Local Anesthesia and Rectal Instrumentation.—Dr.

SAMUEL G. GANT, of New York, said that it was possible under local anesthesia to perform an appendectomy or a colostomy or to do work on the sigmoid, but he did not employ local anesthesia for operations of that kind unless a patient could not take a general anesthetic. He regularly did all his rectal work under local anesthesia, using one eighth of one per cent. eucaïne. The eucaïne kept indefinitely and was effective. The injections should be given intradermally. Eucaïne was preferable to quinine and urea, which sometimes caused sloughing and induration. In removing thrombotic hemorrhoids he merely turned out the clot and did not put in sutures. If sutures were used, a drain should be employed. After removing thrombotic hemorrhoids, it was a mistake to tell the patient that he would have no further trouble. Local anesthesia was not desirable in operating on deep fistulas, or in any operation in which the surgeon did not know the extent of the operation before he started to operate. In operating for anal polyps, fissures, ulcers, or external or internal hemorrhoids, he always used local anesthesia. It was an advantage to have a large needle and a copious syringe. There was very little hemorrhage in operations performed under eucaïne anesthesia. Cocaine should never be used, and adrenalin was not to be recommended because it first contracted the blood vessels, and when the patients relapsed secondary hemorrhage might follow. A motion picture showed the removal of an enormous adenoma with the patient under local anesthesia; this had necessitated keeping the patient in the hospital over only one night. He never divulsed the sphincter in cases of ulcer or fissure. Under local anesthesia a hemorrhoid operation could be performed in five minutes and a fissure operation in two minutes. In

employing the clamp and cautery method in operating on hemorrhoids, one was likely to have a stricture if too much skin was removed. He had seen five hundred strictures following the Whitehead operation. Doctor Gant also demonstrated his method of operating for the relief of pruritis ani under local anesthesia. He made four buttonhole incisions and by scissors dissection under the skin cut off the nerves around the itching area. Hemorrhage never occurred when this form of local anesthesia was properly employed. He believed that ninety-five per cent. of hemorrhages following operation were due to the ether, which caused vomiting and straining. In operating for pruritis ani he gave morphine about half an hour before the operation and again about fifteen minutes afterward. A picture illustrating the speaker's method of introducing the protoscope and of Gant's valvotomy clamp formed part of the demonstration. Doctor Gant said further that the results of this operation for pruritis ani were not always permanent unless the original cause was removed. He did not get infection with eucaïne anesthesia and he did not use elaborate precautions for sterilization. The necessary preparations took about five minutes. He thought the secret of his success was a large operation and free drainage. In doing the clamp and cautery operation he had had hemorrhages ten times and did not do it any longer. The application of carbolic acid and iodine had no effect on the subcutaneous tissues. As for sacral anesthesia, it took longer and one had to be very careful to insert the needle at just the right point.

(To be continued)

AMERICAN LARYNGOLOGICAL SOCIETY.

Forty-first Annual Meeting Held in Atlantic City, N. J., June 16, 17 and 18, 1919.

The President, Dr. CORNELIUS G. COAKLEY, of New York, in the Chair.

(Concluded from page 880)

An Unusual and Interesting Case of Nasal Syphilis.—Colonel CHARLES W. RICHARDSON, M. C., of Washington, reported a case of a rather unusual type of syphilitic infection of the mucocutaneous border. A woman of fifty, otherwise healthy, presenting nothing of interest in her family or previous history, suffered from catarrh for nearly six months, when a small growth developed, issuing from the left nasal orifice. This manifested itself in June, 1918. When seen by Doctor Richardson in January, 1919, it was quite a large mass protruding from the nose to near the border of the upper lip, nodulated, grayish white in color. There was perforation of septum in cartilaginous portion with necrosis of lower portion of inferior turbinate and scar on soft palate. A diagnosis of syphilitic condylomata was made. A Wassermann test was made immediately, with double positive result. Salvarsan was administered, with the usual rapid result and the disappearance of the growth. Doctor Richardson insisted that these patients should be held under treatment until full cure was obtained.

Delayed Secondary Hemorrhage Complicating Tonsillectomy.—Dr. VIRGINIUS DABNEY, of Washington, said that secondary hemorrhage was comparatively rare, and one occurring ten days after operation was especially so. He presented four cases of secondary hemorrhage delayed beyond twenty-four hours after operation for the removal of the faucial tonsils.

The first case was that of a girl of eighteen, operated upon under local anesthesia, hemorrhage occurring on the second day. Ice placed and held firmly in the fossa checked the bleeding. In the second case, also under local anesthesia, free bleeding occurred during operation, with secondary hemorrhage six hours later. Ten days later, free bleeding occurred while patient was walking in the street. In the third case the patient was operated upon by another surgeon one week previously, and there had been much difficulty in arresting the flow of blood at the time of operation. He remained in the hospital five days, with no bleeding. Two days later he was awakened by a sensation of strangling and his mouth was full of blood. The flow was persistent and profuse, and the throat exceedingly irritable, so that all measures used failed to control the flow for more than a few minutes at a time. The patient was brought to the hospital and anesthetized with great difficulty, as he was vomiting blood freely. A jagged tear in the middle third of the posterior pillar was found, clamped, and the hemorrhage ceased. In the fourth case the operation was done under ether and snare, this being the second operation on the tonsils, and more than usually difficult. Six days after operation there was bleeding, with a clot in the fossa. Removal of clot and packing of soft gauze sponge, which was allowed to remain twenty-four hours, stopped the bleeding. A few moments later bleeding recurred and packing was again required with no free bleeding. No cause could be definitely stated for these delayed hemorrhages. It was assumed that the explanation might lie in the separation of the slough, which if it involved vessels, might cause a hemorrhage on the slightest exertion.

Present Status of Etiology and Treatment of Cancer.—Dr. D. BRYSON DELAVAN, of New York, said that without the knowledge of its causes and basal activities the study of the means for the local relief of cancer were disappointing. But while many able men were engaged in this quest under the best conditions that intelligence and generous outlay could afford, their efforts were largely uncoordinated with each other and, in some cases at least, they were narrow and overtheoretical. Any day some great discovery might relieve us of the present deadly situation. Meanwhile that event might possibly be hastened by the selection of the men best qualified for investigative work, by the elimination of the unproductive and by a better harmony and concert of action among investigators.

Turning back to a consideration of the means of relief now at our command, there were several which related to the general care of the patient and which not seldom escaped the attention of the physician or surgeon in charge. Among those might be mentioned the effect of increased blood pressure

upon the development and stimulation of cell growth, the proper selection of food elements as affecting the blood pressure and the chemistry of the body, the effect of certain drugs or of methods of general treatment upon the disease, and the possible influence of the nervous system.

The general care of the patient, both before and after treatment, must be carefully studied, and more regard than was usually exercised must be paid to the period of convalescence and to that complete recovery from the effects of operation, which could only be attained after much longer periods of time than many surgeons are accustomed to allow.

Injuries of the Nose and Throat, Due to Bullet and Shell Wounds.—Lieutenant Colonel J. M. INGERSOLL, M. C., of Cleveland, said that in January, 1918, the Medical Department of the Army converted a modern fireproof hotel at Cape May, N. J., into a hospital known as the Hospital for Head Surgery. The first patients in the otolaryngological department were received on April 1, 1918. The average number of patients in the department varied between one hundred and one hundred and fifty. The injuries to the nose and accessory sinuses and the surrounding tissues varied greatly, and consisted of all sorts of wounds involving these structures. In many cases the eyes were also involved. Pieces of shrapnel and high explosive shell were found in all portions of the head and neck. Shell fragments were also found in all of the accessory cavities, more frequently in the maxillary sinuses than in any other single place. After removing the foreign bodies plastic operations were done to remedy the defects.

The laryngeal cases in some respects were the most difficult type of cases they had to treat. The laryngeal cartilages and intralaryngeal structures were more or less extensively destroyed, and adhesions formed, causing laryngeal strictures, which necessitated a tracheotomy. Removal of the foreign bodies and all necrotic tissue around the larynx, with free drainage, resulted in recovery eventually. Dilatation of the constrictions finally established intralaryngeal respiration and made possible the removal of the tracheotomy tube.

Otolaryngological Features of the Influenza Epidemic at Camp Hancock.—Major GEORGE FETTEROLF, M. C., of Philadelphia, said that from September to December, 1918, 770 men were brought directly to the hospital in Augusta, Ga., by train, and a real epidemic began in a very stormy fashion. The first complication requiring attention consisted of many cases of violent and persistent epistaxis; other phases developed later. Ear complications were many, and every endeavor was made to attend to these immediately, and for this a twenty-four hour service was instituted for each day. In a very few days the patient population jumped from 1,500 to 4,000. The main difficulty met with in examining and treating the patients was securing adequate illumination, as two thirds of the sick were on porches or in tents. Often the sunlight or diffuse daylight was used. Careful treatment was given all these patients, the ear drum incision when necessary, with not a single mastoid operation performed in October, only four in No-

vember and five in December, in a total of 7,781 cases of influenza.

Epistaxis.—One obtruding condition was found in the nose, and that was profuse and persistent epistaxis. In every case but one the bleeding point was located at the anterior part of the septum, the so-called locus Kiesselbach. In the one exception a spurting artery was observed on the lateral wall of the nose at the anterior end of the inferior turbinated body. The incidence of epistaxis was the greatest in the first influx of cases. These boys were brought in directly from the troop trains after two days or more of travel, with limited bathing facilities, and it was believed that the irritation and excoriation of the nasal mucosa produced by the train dirt was an important causative factor. Epistaxis became much less frequent in the later days of the epidemic, when the cases were developing in soldiers who had been in camp for several days.

Sinusitis.—The incidence of sinusitis was exceedingly low. Exact figures were not at hand nor were they obtainable. When a case of this sort developed, a routine spray of adrenalin chloride one in 7,000 was given every hour, and when the pain was severe the middle meatus was packed for half an hour or more with cotton pledgets saturated in the same solution. All of these patients returned to normal and none required operation.

Tonsils.—There were very few cases of tonsillitis and still fewer of peritonsillar abscess. During the months of October, November, and December, there were but thirteen cases requiring the evacuation of pus.

Larynx.—Laryngitis was present in a number of cases and the manifestations in the larynx were of three different types: 1, Diffuse catarrhal laryngitis, with the usual appearance found in this condition; 2, ulcerative laryngitis, with small, narrow, superficial ulcers running lengthwise of cords, and 3, what might be called asthenic laryngitis.

A section of ulcerated cord from a case of type two was submitted to the pathologist, who reported on the specimen, making a diagnosis of acute inflammation of vocal cords with ulceration.

It was characterized by a normal or slightly reddened mucosa, absence of ulcerative lesions and mainly by a marked weakness of the laryngeal musculature. An attempt at phonation would result in a feeble effort to approximate the vocal cords and an immediate discouraged return of the cords to the respiratory position. A similar condition of the palatal and pharyngeal and probably of the esophageal musculature usually was found to be associated with it. The muscular efficiency of the entire throat was very low, and it was tested out in one patient by having him endeavor to swallow a large mouthful of water. The effort at deglutition was followed immediately by a gush of water from the nose and by cyanosis. It was evident that the muscles of neither the soft palate nor of the larynx had the strength to close off the entrances to the cavities which they guard. In a short while he was able by a few weak coughs to clear the larynx and trachea, but for the moment it looked as if he was in imminent danger of suffocation from the water which he was unable to prevent entering the trachea.

The actual cause of his condition could not be determined. Possibly it was a toxic myositis, possibly just a part of the general asthenia, possibly it was due to a toxemic poisoning of the centres in the medulla, really constituting an acute form of bulbar paralysis.

The members of the otolaryngological staff of the base hospital feel that they were in great good fortune to have been at Camp Hancock during the epidemic. Rarely did a physician or even a collaborating group of physicians have an opportunity of studying synchronously such a large series of cases occurring in persons of approximately identical age and living under uniform clothing, housing, and dietary conditions. Usually observations on a large number of cases must extend over a long term of years, and under such conditions early impressions and conclusions were likely to grow hazy and later ones assume undue prominence and force. While necessarily conditions in this epidemic were such that accurate record of all phases of the influenza was impossible, still it was felt that so careful an estimate had been made where accurate records were not obtainable that conclusions drawn could fairly be considered as being based actually on numerical fact.

Births, Marriages, and Deaths.

Died.

DONNELL.—In Gardiner, Me., on Sunday, May 23rd, Dr. Rufus Edwin Donnell, aged sixty-one years.

GUINAN.—In Lima, N. Y., on Sunday, May 30th, Dr. Joseph Patrick Guinan, aged thirty-eight years.

HUTCHINS.—In Batavia, N. Y., on Friday, May 28th, Dr. Horace S. Hutchins, aged ninety-one years.

KIRKPATRICK.—In Hudson, Mass., on Monday, May 31st, Dr. Walter Kirkpatrick.

MESSER.—In Turners Falls, Mass., on Thursday, May 20th, Dr. Charles Carson Messer, aged sixty-six years.

MILLARD.—In North Adams, Mass., on Monday, May 31st, Dr. Henry James Millard, aged eighty-four years.

MOFFET.—In Philadelphia, Pa., on Sunday, May 30th, Dr. John Moffet, aged fifty years.

O'REILLY.—In Toronto, Ont., on Monday, May 3rd, Dr. Charles O'Reilly, aged seventy-four years.

SPOONER.—In Park Ridge, N. J., on Sunday, May 23rd, Dr. Edward Horace Spooner, aged eighty-one years.

STEWART.—In Fillmore, N. Y., on Sunday, May 16th, Dr. Edith Winifred Stewart, of Hume, N. Y., aged fifty-six years.

STROBEL.—In Philadelphia, Pa., on Wednesday, May 26th, Dr. John Strobel, aged sixty-two years.

SWARTZ.—In Indianapolis, Ind., on Monday, May 17th, Dr. Albert Dell Swartz, aged fifty-four years.

TWEEDLE.—In Weatherly, Pa., on Friday, May 21st, Dr. James B. Tweedle, aged eighty-four years.

ZEDERBAUM.—In Los Angeles, Cal., on Saturday, May 1st, Dr. Adolph Zederbaum, aged seventy-one years.

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Original Communications

RETENTION CRYPTS IN THE INFRATONSILLAR NODULES AS HARBORS OF PATHOGENIC BACTERIA.*

BY THOMAS R. FRENCH, M. D.,
Brooklyn.

It is well within the limits of accurate statement to say that only meagre and incidental attention has been paid to the presence of chronic infectious material in the chains of lymph nodes which are variously known as the infratonsillar or lingual nodules, and the lateral pharyngeal columns. As, however, the tonsilloscope, acting as a sleuth, has, during the past few months, made the illuminating disclosure that when associated with diseased tonsils, those structures are seemingly invariably pathogenic culprits, we gladly avail ourselves of the privilege of reporting the results of a clinical study of such lymphoid developments, in order that our findings may be subjected to a searching review.

Our especial attention was drawn to the infratonsillar nodules in tonsiloscopic studies *in situ* of the inferior lobes of pathological tonsils, including a few which had been permitted to remain after tonsillectomies. Early in those studies the thought dawned upon us that the tonsil lamp was making extraordinarily frequent disclosures of the presence of disease in lymphoid structures which, while they often appeared to be a part of the inferior lobes, must, because of their extent, really lie below the tonsils. After that impression had recurred a number of times in examinations of tissues of a similar character and the reason for it had at last been made clear, we awoke to a realization of the existence of a seeming fact that upon the lateral walls of the laryngopharynx and the base of the tongue, between the tonsils and the level of the epiglottis, a broad field of disordered lymphoid tissue was lying invitingly open for exploitation. What then seemed to be true, has since proved to be so. The tonsilloscope must, therefore, be regarded as the responsible agent in detecting and exposing those germ laden menaces to health, for that little instrument of precision had led us to at least the beginning of a knowledge of common and often very extensive harbors of infectious material which of necessity must be reckoned with.

About all that is said of this tissue in textbooks is that it is a chain of lymph nodes on the lateral

walls of the pharynx which is continuous with the various lymphoid aggregations of the nasopharynx and which in common with all other lymphoid tissue in that region is susceptible of inflammatory hyperplasia. Harrison Allen (1) says of it: "Extending downward in the tonsillar space below the tonsil are scattered a few peashaped bodies which resemble the tonsil. These form the infratonsillar glands."

Jonathan Wright (2), in his masterful descriptive writing on the minute anatomy of the mucous membrane of the pharynx, says of the chains or lines of lymphoid tissue connecting the various tonsils: "In childhood the lateral lymphoid development is infrequent. In adults it develops as the result of inflammation. Waldeyer's ring as applied to the disposition of the lymphoid tissue in the throats of adults, including the faucial, lingual and pharyngeal tonsil, is connected by a line of lymphoid deposits obviously due to pathological activities in their inception."

This partial description undoubtedly refers not alone to the chain of infratonsillar nodules, but also to those lines of small lymph nodes which extend from the fossa of Rosenmüller, along a part of the inner edges of the posterior palatine arches, to the pyriform sinuses, and which in an inflamed or enlarged state are quite often seen in the throats of adults. With those lines or chains this study has no relation. It deals only with the chains of nodules lying on the lateral walls of the pharynx and the base of the tongue directly beneath the faucial tonsils.

Barnes (3), in his classical work on the tonsils, says of the lymphoid nodules of the posterior and lateral walls of the pharynx that: "They often become hypertrophied without causing symptoms. This is especially true in children and adolescence after the removal of the faucial and pharyngeal tonsils." Such hypertrophy he considers nearly or quite normal. He approaches nearer to the state of affairs as we find it when he writes the first sentence of the following: "Occasionally these nodules become the seat of chronic infection with secondary involvement of the cervical glands, the joints, or the heart. More often they cause no trouble or are the distinctive feature of the local condition known as chronic granular pharyngitis."

Soon after the tonsilloscope had made its first disclosure we transferred our study to the operating clinic in the hospital. We were then, quite naturally, in some doubt as to the extent to which a surgical invasion of that region would be justified, for

*Read before the American Laryngological Association, Boston, May 27, 1920.

the indicted tissues lay upon a path that was practically untrudged. The tonsilloscope was, however, insistent and its signs had never failed us—and so we made the venture. In our first operative efforts we must confess to a feeling of considerable trepidation, especially because of the knowledge that an elaborate venous network existed under the mucous membrane in that neighborhood. Not being at all certain that a nodule could be detached from its bed as an entity or that underlying tissues would not have to be removed with it, we approached the tempting masses gradually and for a time hesitatingly. In the first actual removal of nodular tissue, which was from the throat of a girl seven years of age, a section quarter of an inch in length was enucleated with the tonsil, and in that short tonsillar appendage three collections of puslike debris were found. And in conjunction with that revelation we were cheered by what seemed to be another of only slightly less importance, that on the under surface of the appendage there was a smooth limiting membrane which was manifestly a section of a fibrous capsule. The double display was, naturally, quite sufficient to stimulate thought for devising means to secure the removal of the whole of the structure, and when that had been accomplished and entire nodular columns had been enucleated and their contents examined, it was made wholly apparent that here was a hidden but probably common source of infection which no doubt had been responsible for the inception and continuation of physical ills which had long baffled understanding. And it also was made clear that after we have become skilled in removing those masses of disordered tissue within the limits of safety to the patient, we will have no more right to permit such tissues to remain attached to the throat in our tonsil operations, than we now feel we have the right to perform a tonsillectomy or even an incomplete tonsillectomy when the tonsils are seen to be infiltrated with the products of past attacks of acute inflammation.

After we found that entire nodules could be easily and safely peeled out of the throats of children, we submitted many specimens for laboratory examination to Dr. Archibald Murray, professor of pathology in the Long Island College Hospital Medical School. He reported later that they had "well developed fibrous capsules and a few crypts, but did not contain pus." The crypts referred to were those which are commonly grouped at one end of the structure, have large mouths and shallow cavities and can readily be seen by the unaided eye. The shallowness of the crypts and their round, wide open mouths made it seem highly improbable that they could act as retention sacs, and therefore as Dr. Murray was unable to find pus in any of the specimens he examined, we were at a loss to understand the tonsilloscopic sign which proclaimed the presence of numerous collections of necrotic material which was apparently quite as irritating to the tissues as pus. An examination of those specimens in the external tonsilloscope before they were sent to the laboratory, showed what we believed to be superficial abscesses, as each of the closely set collections of foreign material lying near the surface was surrounded by a zone of hyperemia such as is

always seen surrounding abscesses in other lymphoid tissues. Despite the positive pronouncements of the tonsilloscope we did not feel justified in continuing the removal of nodules until a solution of this vexing question could be found. Indeed, we were in some doubt as to whether it might not be possible that the code of the tonsilloscope which had never failed us in the tonsil would fail us when applied to fully developed lymphoid tissue in the laryngopharynx. Our faith, though somewhat shaken, was, happily, not enough so to prevent our making further and extra painstaking direct inquisitorial examinations of the lingual branches in several adult subjects, for the purpose of detecting if possible the secret underlying the conditions which would have meant pus elsewhere but which evidently did not mean pus here.

Those examinations were made with the tonsilloscope and also with a direct illumination of the nodules from a concentrated beam of an arc light, the field of observation meanwhile being magnified with a large warmed lens held in front of the mouth. While the nodules were glowing with the light of the tonsil lamp or were being directly illuminated and magnified in the way just described, numerous small slits and pinpoint spots, flush with the surfaces, were seen upon the tops of the lymphoid bodies. With the aid of a very thin bent probe, or searcher, those slits and spots were shown to be minute openings to crypts of varying sizes, but often relatively very large, and which at once were proved to be veritable traps to the unwary ingesta of secretions gravitating downward from the mouth and throat, for each of them was filled, and some of them were distended with necrotic material, which could easily be culled out with a curette. Had it occurred to us earlier that heretofore overlooked pockets, or crypts, might possibly be found in those bodies, we could have detected them in the small enucleated specimens which had previously been removed from the throats of children—but thought is often a laggard.

The constant presence of pathogenic bacteria in the crypts of the nodules has now, seemingly, been established, and those tissues, therefore, constitute still another field to which we must look for possible sources of systemic infections.

ANATOMY, PATHOLOGY, AND BACTERIOLOGY OF THE NODULES.

The following observations on the anatomy, pathology and bacteriology of the infratonsillar nodules are based upon studies of forty-three enucleated nodules, studies of all the nodules at all ages *in situ* and also upon numerous facts gleaned from curettage of the crypts, as well as from many cultures made from the cryptic contents.

Except in broken chains and in minute form the nodules are not present in a state of health. Their presence in continuous lines or solid columns is an expression of a pathological state. The four tonsils are constant structures. The nodules are constant only in minute form, but the fields, or pathways, over which they may develop, almost as if they were new growths, are definitely mapped out. The extent to which those fields, or pathways, may be occupied by the nodular tissues, depends largely

upon the amount and degree of irritation occasioned by the foreign material deposited within them. When fully developed, which is not until early adult life, the nodules appear as represented in Figs. 1 and 2. We believe that a clearer mental picture of the site and possible extent of those structures will be obtained from a glance at the drawings than could be conveyed by a prolixity of description. If the nodules could be viewed from the back of the neck, their appearance, when fully developed, would suggest a *bas relief* of a rope of lymphoid tissue garlanded around the base of the tongue and hanging over the tonsils as supporting roseites—their free ends depending perpendicularly from the supports. As is also true of the four tonsils, they seem like foreign structures, for they are set upon the submucosa in much the same way that a plaster form is set upon a ceiling. When their hoods of mucous membrane are severed at their points of attachment to the subjacent tissues, they peel off as readily as the skin of a peach from the fruit.

The nodules are of a piece with the tonsils as their underlying capsules are a continuation of the capsules of the tonsils (Fig. 5, d). The mucous membrane covering the nodules is attached to the lower edges of the inferior poles of the tonsils, but the loosely attached ends of the lymphoid bodies extend upward to, and not infrequently slightly overlap the under surfaces of, the posterior lateral halves of the inferior lobes.

It is now apparent that the structures commonly spoken of as infiltrates or recurrent tonsils, which appear in the tonsillar fossæ after the removal of the faucial tonsils with their capsules, are really nothing more than extended and expanded ends of the nodules. They contain crypts and are occasionally, as elsewhere in the nodules, the cause of localized sore throat from minute acute septic processes in one or more of the crypts.

Later and more extended studies following the removal of the nodules of adults may, of course, modify our views, but from our observations thus far it appears that the pharyngeal, or verticle, nodules are to be found fully formed, but varying in length and thickness, in all subjects of any age above six or eight years, who possess tonsils which are to any

degree diseased; that in subjects possessing tonsils which are extensively diseased, in addition to the pharyngeal nodules the lingual nodules become more or less prominent in early youth and increase in size as the years run on; that the bases of the upper sections of the pharyngeal and lingual nodules become fused into a common trunk with a common capsule, so that then it would seem proper to regard the nodular mass as having a trunk from which the pharyngeal and lingual branches are given off. It, therefore, would seem to be a fact that while in late childhood and youth, in association with diseased tonsils, there are always pharyngeal nodules which later may become branches, the lingual nodules are always branches, for they do not exist without trunks made by their junction with the pharyngeal nodules. The lingual branches are apparently developed in youth, and then only in association with extensively diseased tonsils. The only exception to the presence of developed lingual branches in association with extensively diseased tonsils in an adult, was in a college athlete twenty-two years of age. That was a rare exception, for the number in



FIG. 1.—Diagrammatic drawing of the pharynx, with fully developed nodules of adults, as it would appear if laid open and viewed from the back of the neck. AA are the lingual and BB the pharyngeal branches of the infratonsillar nodules. On the side of drawing marked C the upper ends of the branches are seen to be blended into a common trunk. The trunks have common capsules which with the capsules of the branches are continuous with the capsules of the faucial tonsils. The looped lines on the side of drawing marked D show the varied lengths of complete pharyngeal nodules removed from children and youths before the trunks and lingual branches were developed. The dotted lines on the epiglottis indicate the positions of the free ends of the lingual branches on the base of the tongue just above the glossopigilotic fossæ.

which they have been seen to be present in association with extensively diseased tonsils, even at that age, was very large. In adults with tonsils containing detritus only, we find, however, that the pharyngeal nodules are, as a rule, the only nodular developments present.

The nodules vary in size. When fully developed they may measure from a quarter to half an inch

in width and thickness. In children and youths their width and thickness are likely to vary between an eighth and three eighths of an inch. When the pharyngeal nodules alone exist they vary in length in children and youths from a quarter of an inch to an inch and a half. In adults their free ends are usually lost to view in the pharyngoepiglottic fold. The length of the lingual branches usually measures the entire distance between the nodular trunks and the median glossoepiglottic fold, on each side of which their free ends apparently terminate. Occasionally, however, we find them of full width and thickness but ending abruptly, as if cut off, a third or a half of the way down the paths from the faucial tonsils, their stubby ends curling slightly away from the tongue. The same character of development, in an immature state, is sometimes seen in early youth, giving those branches the appearance of developing by projection from the upper ends (Fig. 5, c). In adults the nodular trunk usually represents a total of the combined width of the two branches. It is probably true that if the trunk and its branches were rolled into a single mass it would, in most cases of fully developed nodules of adults, comprise as much lymphoid tissue as is contained in the tonsils to which they are attached. In many adult cases there is a half moon shaped apron of diseased lymphoid tissue stretched from the lateral walls of the pharynx across the base of the tongue, which in bulk appears to be greater than that of both of the faucial tonsils.

A longer experience with the nodules of adults will no doubt reveal many facts which now are only suggested, but the experience we already have had inclines us to the belief that in that stage of life the nodules are, up to a certain limit, usually progressive in size as the tonsils become regressive. Even in young adults the group of nodules will occasionally be seen to be larger, and if subjected to Coolidge's method of measuring tonsils would probably weigh more than their associated atrophied tonsils.

The nodules of children are smooth, roundtopped, elongated eminences of lymphoid tissue which are rather firm to the touch. Later in life the surfaces become irregular until in adult life they are thrown into numerous folds or flat convolutions. The lingual branches when well developed are as soft as adenoid growths and though usually projecting outward like copings, that is, with side walls and rounded tops, the surfaces of the tops looking like tufted cushions, are, in some cases, maizelike in their arrangement, when they suggest a resemblance to a line of irregularly folded tape set on edge. The trunk, which is a hinge of lymphoid tissue spanning the glossopharyngeal groove, is heavily folded into many convolutions. (Fig. 5, e). The interspaces do not often dip deeply into the body of the nodule, but where they do they were likely to form pockets in which cheesy collections are entrapped.

It seems to us quite probable that the size and appearance of enucleated nodules will in themselves be sufficient to indicate the stage of life to which the subjects from whom they were removed belong. That is, whether they belong to late childhood, youth or adult life, but not the stage of adult life, for

fully developed nodules are found in all stages of the lives of adults, including old age.

Our observations lead us to the belief that the lingual tonsil is far less frequently enlarged than the nodules which connect it with the faucial tonsils, and when it is enlarged it is very much less so than the nodules. Indeed, it seems to be a fact that when the lingual tonsil is enlarged and the associated nodules are connected with pus tonsils above, the nodules are likely to be several times larger than the lingual tonsil.

We believe that the free ends of the lingual branches of the nodules are much more often the cause of pressure cough in adults than is the lingual tonsil which is usually credited with it. This has occasionally been interestingly illustrated in the subjects of long standing irritative cough who were almost instantly relieved by the emptying of crypts in the nodular tissues in contact with the epiglottis.

Scattered over the upper surfaces of the nodules there may be anywhere from twenty-five to a hundred and fifty openings to crypts, the crypts themselves varying in width and depth, and we regard it as being well within the limits of safety to assume that a half, or even more than a half, of the number are retention crypts. Some of the crypts are wide mouthed and shallow and are manifestly incapable of retaining foreign material. Many of the mouths are straight or crescent shaped slits with their lips in apposition, (Fig. 5, e) and the crypts into which they open are found to be capable of entrapping much foreign material. Still others have round mouths which are so small that they only can be seen *in situ* with the aid of a magnifying glass, or can be found with a very thin searcher. The slits and small cryptic mouths are usually set flush with the nodular surfaces. Small mouthed crypts are commonly found surmounting the eminences of convolutions and many of them penetrate the entire depth of the structure. (Fig. 5, b). When distended this variety of crypt is capable of retaining a large quantity of debris, for while the bodies of the crypts become distended, like filled silk purses with the strings drawn, the mouths remain constricted. Occasionally, however, in a first examination, the contents of one or more of the crypts can be seen to be protruding from their mouths, when it needs but a gentle touch of the curette to dislodge them from their beds. This fact suggests the probability that various crypts become ripe, as it were, from overdistention, when they evacuate themselves.

We have not yet seen protruding cryptic contents in subjects under thirty-five years of age, but above that age we have seen many. That the material in the crypts is irritating to the surrounding tissues and gives rise to the degree of hyperemia which led us into this investigation, is clearly shown by transillumination of the lingual branches a week or so after one branch has been, in part or wholly, cleared of debris, the other branch remaining untouched. It also has been shown that the degree of prominence of attached nodules is, in a measure at least, dependent upon the number and size of filled crypts which they contain, for in a month or so after many of them have been emptied, the nodular structures appear shrunken and partly collapsed.

Pus is not often found in the nodules. We have opened abscesses in several trunk specimens but have not seen pus elsewhere in those structures. The necrotic tissue is practically all in the crypts, and in many of them it is so tightly locked in by the constricted mouths that it seems almost as if it were sealed in, for in order to rupture such crypts in a fresh specimen it is necessary to apply heavy pressure to the sides of the nodules. The cryptic material may be cheesy or somewhat like candle wax, but that is not the rule, for the rule is that the debris is either puslike in character or of a sufficiently glutinous consistency to take shape in the ring of a curette.

The infective debris in the crypts of the nodules of some adult subjects, probably amounts to, or even exceeds, a quantitative equivalent of the infective debris in extensively diseased tonsils, and the pathogenic organisms isolated from the debris in both localities are practically the same. It is probable that a greater number of culture studies of the material in the crypts of the nodules will reveal the presence of other varieties of pathogenic organisms than those which thus far have been isolated, i. e., the *Streptococcus hemolyticus*, the *Streptococcus viridans* and the *Staphylococcus aureus*. The finding of one or the other, or several of those varieties, in every one of the many cultures, satisfied us, however, that the cryptic material was a competent and probably common source of infection. As the lymphoid nodules described in this paper were believed to be devoid of lymph paths or crypts and also of capsules, objection has been made by Lennox-Browne (4) to their being classed as tonsils. Both of the missing links have been found to be really cryptic, or in hiding, and as we now know that all the elements which characterize the faucial tonsils are, with a somewhat different arrangement and grouping, also present in the nodules, it would seem to be entirely correct to place them in the tonsil class. As they are in truth but offshoots or branches of the faucial tonsils, it may come to be a habit to speak of them as parts of the faucial tonsils instead of separate structures.

DIAGNOSIS.

To obtain a view of the nodules and ascertain the extent of their infective contents, a tongue depressor and a single tonsilloscopic lamp, with the smallest window, are needed. With the conventional tongue depressor much can be accomplished, but the manipulation of the tongue necessary to clear a visual pathway to the part of the cavity of the pharynx containing the nodules is best effected with a special tongue base depressor (Fig. 3), for with it soft and yielding tongues—and most tongues yield enough—can be pressed down, or aside, sufficiently to bring

nearly all of the nodular masses into easy, direct range of vision. As is seen in Fig. 2, by depressing the tongue far back upon its base the lingual branches and the upper parts of the nodular trunks will be directly exposed. The tonsil lamp is then made to slide along behind the ridges of tissue to produce in its passage a luminous display of the pathological conditions in every part of them. Incidentally it may be said that there need be no more hesitation in accepting the verdict of the tonsilloscope when applied to the nodules than when applied to the tonsils, for the lymphoid elements in both are identical. The sketch of transilluminated tonsils and nodules will, perhaps, assist you to a better understanding of what has just been said in regard to transillumination, and also make clearer the remarks on the use of the tonsil lamp which are to follow.

When, however, an un-

yielding tongue or excessive faucial irritability make an extended direct view impossible, then with an ordinary depressor, or the special base depressor, the tongue can be pressed aside far enough to uncover the upper end of a pharyngeal nodule, or a nodular trunk, to permit the end of the tonsil lamp to be slipped behind it to act as a hook with which to draw it forward into the sulcus between the tongue and the lateral wall of the pharynx. In that position, with the glowing window of the lamp pressed firmly against it, the nodule is, so to speak, cornered, and will instantly proclaim its depth of guilt by the depth of its blush. When the nodular crypts contain a considerable amount of debris the picture presented by this



FIG. 2. Direct view of the whole of the lingual and the upper ends of the pharyngeal branches of the infratonsillar nodules, obtained by deep depression of the base of the tongue. As in Fig. 1, their upper, or outer, extremities are seen to be connected with the inferior poles of the faucial tonsils—their lower, or inner, extremities to lie directly in front of the epiglottis. The branches extend backward as well as inward and are, therefore, longer than they appear to be in the sketch. With soft yielding tongues and moderately tolerant fauces this exposure is very easy of accomplishment.

When, however, an un-

method of examination is not unlike that of the setting sun at the end of a canyon. If, however, the fauces are too irritable even to permit the manipulation just described, then the condition in a nodule can, with a fair degree of accuracy, be determined by ascertaining the condition in its associated tonsil, for a situation in which the lamp cannot be quickly slipped behind a tonsil is scarcely conceivable. If the diseased condition of the tonsil is extensive enough to give a uniform, bright rose shade of color in transillumination, it is a fair assumption that in subjects above the age of six or eight years, filled retention crypts, varying in a general way in number and size, according to the age of the subject and the extent of the disease in the tonsil, are present in its annexed nodule. If there is detritus only in a tonsil, we may feel assured that the pharyngeal nodule at any age above six or eight years, is more or less, though not fully, developed, but unless it is explored with the tonsil lamp the extent to which it is studded with collections of cryptic debris cannot be known. Transillumination will show the hyperemia caused by and surrounding the debris in the crypts, but unlike pus, and some forms of debris in a tonsil, the contents of nodular crypts usually transmit light and do not cast a shadow.

The sense of touch, if a touch is permissible, will, of course, enable one to determine the approximate sizes of the nodules. This is especially true of children, in whom the laryngopharynx is very accessible, but in adults the nodular trunks are usually all that we can hope to investigate in that way.

ENUCLEATION OF THE NODULES. PUNCTURE AND CURETTAGE.

The key to the method of enucleating the pharyngeal nodules at any age and the nodular trunks and their pharyngeal branches in adults, lies in a block moulded to fit over the angle and under the lower edge of the jaw in such a way that it will serve as a resisting wall, or outside runway, for an under-

cutting scoop of the arc of the Sluder guillotine. The technic of the method for removing a pharyngeal nodule is quite simple. The block mould (Fig. 4) which, as can be seen in the illustration, has an inward projection at an angle of about twenty degrees, is placed in position by an assistant whose duty it is to fit it snugly under the angle and lower edge of the jaw, and then to hold it

firmly and steadily. The block duty usually falls to the anesthetist. After the block mould is in place the forefinger of the free hand of the operator is introduced into the fauces to press the tonsil outward and downward upon the nodule to be removed. The guillotine, with the flat surface of the shaft in a horizontal position, is then introduced obliquely into the mouth and dipped gently downward over the side of the base of the tongue, close to the end of the forefinger pressing upon the tonsil, until the arc meets with the resistance of the lateral pharyngo-epiglottic fold. The edge of the shaft is then pressed forward deeply into the base of the tongue as near its outer limit as possible. The arc is now pressed outward with moderate firmness in order to sink it into the tissues below the free end of the nodule, and, while maintaining the pressure of the shaft against the tongue, the arc is drawn slowly upward along the block supported wall toward the finger pressing upon the tonsil. Upon reaching the inferior pole, the upward movement of the arc is checked, and at the same instant it is pressed hard against the ramus of the jaw to maintain its hold upon the stretched mucous membrane of the

lateral wall of the pharynx. That membrane is highly elastic and is drawn under the nodule in ridges, like the wake of a moving hull, and put under considerable strain as the lower end of the nodule is doubled under itself by the arc. The finger holding the tonsil is then slipped down to the dislocated nodule overhanging the arc, to manipulate it into the grip of the blade of the guillotine—when



FIG. 5.—(a) Tonsil with pharyngeal nodule from lad seventeen years of age. Two step operation. (b) Tonsil with pharyngeal nodule from girl aged fourteen. Nodule laid open to show shape and size of two bisected crypts. Lateral half of one crypt broken through in preparing specimen. The nodule contains twelve retention crypts. Two step operation. (c) Tonsil with nodular trunk and both branches in an immature state. Removed from a boy aged thirteen. Two step operation. (d) Showing continuity of capsules of tonsil and nodular trunk. Specimen removed from a woman aged twenty-three, in a one step operation, breaking through tissues at points from which the pharyngeal and lingual branches were given off. (e) Nodular trunk from man aged twenty-six, showing openings to many retention crypts.

after a half minute of compression, it is cut off and the guillotine withdrawn.

A pharyngeal nodule is removed after a tonsillectomy—the block mould being in position outside the neck—by a scoop of the arc of the guillotine upward against a resisting finger held in the lower part of the empty tonsillar fossa, where it also may be made to assist in manipulating the dislocated tissues into the grip of the blade.

We have not yet been able to decide upon a safe and efficient method of disposing of the lingual branches in adults. Those branches differ from the pharyngeal branches in several ways, the most important of which is that when they are fully formed their free extremities lie close to the orifice of the larynx. Our distinguished fellow member, Dr. Swain, in one of his helpful and encouraging personal communications to the writer during the progress of this research work, drew attention to the presence of numerous large venous trunks

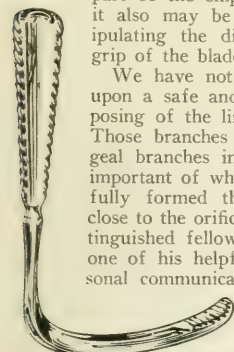


FIG. 3.—The tongue base depressor.

lying close to the surface of the tongue, under a frail basement membrane beneath the lingual tonsil. We were already acquainted with the results of his dissections of the base of the tongue (5) and doubt if we would have been deterred from enucleating the lingual branches because of possible hemorrhage from that elaborate venous network, for the employment of dull compression instruments only for peeling the capsules from the basement membranes would, almost certainly, have been a sufficient safeguard against that danger.

It is, nevertheless, largely because of his important disclosures of the exceedingly rich blood supply to the base of the tongue that we are cautiously approaching radical measures for the removal of lingual branches. We have so often viewed the orifice of the larynx in a condition of edematous swelling that we are free to admit that we stand in some dread of inviting, through a possible septic healing, an obstruction to that constricted, single track airway. Thus far we have emptied the crypts in those branches either by laying them freely open or by curettage, but up to the moment of this writing we have not felt justified in taking further liberties in that somewhat untried out region. While enucleation of the lingual branches with their capsules is most appealing to our ideas of completeness, it is possible that a less thorough removal of them will be quite as effective in obliterating the retention crypts, and also that the resulting wound will be less liable to inflammatory reaction during the healing process. An incision from the free end to the trunk, made midway between the capsule and the upper surface, would, in a fully developed nodule, undercut many crypts and probably convert the remainder into more or less wide mouthed cups which could never again entrap foreign material. A very promising plan of accomplishing the midway severance of those tissues is to shave off their tops

with the guillotine, for with it the alignment is more accurately made, compression can be practised, and, if the lymphoid masses are not drawn through the fenestrum of the instrument, there is no danger of wounding the subjacent tissues or the numerous small varices which in adults often overlap the bases



FIG. 6.—Curved and angular curttes.

of the nodules. After a study of the effects of many more minor operations which we are now performing under local anesthesia, we will be in a better position to judge of the wisdom of subjecting those branches to midway incisions, or shaving, in radical operations. Still, we believe it to be more than likely that the surgical ingenuity of this group of highly endowed laryngologists will anticipate our efforts to find a happy solution of the one remaining problem.

If for the sake of securing the greatest safety to the patient the means of disposing radically of the lingual branches must be left for further consideration, there is no reason why we should not meanwhile enucleate the nodular trunks and their pharyngeal branches. The procedure for such enucleations is carried out in much the same way as that for the removal of the pharyngeal nodules already described, the principal difference being that the arc of the guillotine must, in its upward sweep, be made to break through the lingual branch at its point of attachment to the trunk. To make that possible the trunk must be lifted upward and inward with a curved seizing forceps, as far as it can be made to stretch, and then be held in that position until the arc has doubled the end of the nodule well under the trunk. The seizing forceps is then removed and the forefinger introduced to press the tonsil downward and manipulate the nodular mass over the arc and into the grasp of the blade. A little more prac-

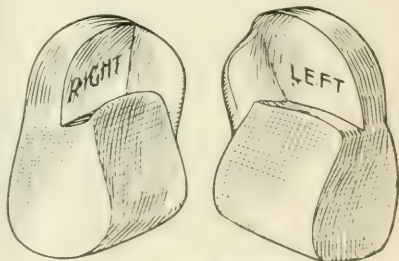


FIG. 8.—The block moulds.

tice will undoubtedly enable us to include the tonsil and remove both structures as one piece, but as yet we have, for the most part, been unwilling to risk the cosmetics of the fauces for the sake of enhancing interest in a specimen. If, however, before sufficient skill has been acquired to perform a one step operation, one desires to obtain a specimen for study of the link between the nodule and the tonsil, he can

readily secure it by carrying the arc well up under the tonsil to include a part of the inferior lobe in the final severance of tissues.

Almost all of the forty-three enucleated nodular structures were from the throats of children and youths, and most of them were either lost or destroyed in the examinations necessary to determine their character. The specimens which were rescued untouched, a few of them having been photographed to illustrate this paper, will, however, convey some idea of their anatomy and variation in size as well as their relation to the faucial tonsils. Complete specimens from adults will, of course, appear much larger than any of those displayed in Fig. 5.

In all the subjects operated upon for the removal of infratonsillar nodules, the somewhat surprising and altogether pleasing fact has been that the blood loss from that source during operations was negligible, apparently adding little or nothing to the drain of the tonsil and adenoid procedure, and also that there has been no postoperative hemorrhage, no deterrent effect upon recovery from the enlargement of the pharyngeal wound and no added pain during the healing process. Indeed, the clinical picture following tonsil and adenoid operations including the removal of the nodules, has been the same as the familiar picture after similar operations without the removal of nodules. The above statement is based upon a followup of most of the patients from whom nodules were removed, but, of course, we are not yet in a position to determine whether there are to be late postoperative effects.

In the event of hemorrhage during or after operation, the possibility of the occurrence of which we have had constantly in mind, it would, probably, in that somewhat awkwardly situated region, be difficult to pick up bleeding points for the application of ligatures, but our success in arresting hemorrhage during and after tonsil operations by continued pressure in the tonsillar fossa from a stick sponge and also outside counterpressure under the angle of the jaw, has been so complete, that we feel confident that sponge pressure upon a bleeding wound caused by the removal of a nodule, and at the same time the application of counter pressure from the outside with the block mould or the hand under the angle of the jaw, would be sufficient to control it.

The operations for the removal of nodules were all performed under general anesthesia while the patients were in both the recumbent and upright positions. Much the best results were obtained in the upright position as the gravid tongue not only permitted an easier manipulation of its base but greatly broadened the operative field. We presume the nodules can be enucleated under local anesthesia but have not yet reached a consideration of that feature of the subject.

When we have acquired the knowledge and skill which will be needed to remove all of the accessory lymphoid tissues in the throat, we can permanently dispose of a considerable percentage of them in our tonsil and adenoid operations. But there, probably, will still remain a larger proportion of such diseased tissues in subjects who either cannot be subjected to, or who will not submit to, radical measures. It is for that larger percentage that we are now seeking

means of relief. While at first sight that may seem to be an almost hopeless task, the experience derived from our searching inquiries into the character of those structures has convinced us that because of the accessibility of and ease of emptying the crypts, it will be possible in many adult cases not only to empty those receptacles but also to destroy their power of making mischief in the future. In addition to measures which are now on trial, so many promising plans have suggested themselves that we believe it will be only a question of a comparatively short time before efficient conservative methods of dealing with the crypts will be found and put into everyday practice. The procedures which are giving us the greatest satisfaction, and with the aid of which we have, in a few cases, obtained nearly perfect results, are punctures through the sides of the crypts of the lingual branches, and curettage of all nodular structures.

Puncture of crypts in the lingual branches ought only to be made when those structures project from the tongue far enough to present definite side walls, as illustrated in Fig. 2. If a branch, so formed, is grasped between the oval blades of a sponge stick the compression will blanch the tissues and, in some cases, bring into relief the outlines of several of the distended crypts, which, then, can be readily evacuated by puncture and the use of the curette. If, however, the incision is carried upward to the surface, our belief is that after healing the crypts will lose their power to collect and retain foreign material. Puncture also can be practised, with perhaps less subsequent reaction than that which is at times caused by the compression forceps, by drawing the structure forward with a broad retractor to put the tissues on the stretch and also establish a firm background upon which to make the incision.

Our experience with curettage in adult cases has been that when a large part of the nodular structures can be brought into direct view by deep central or side pressure upon the tongue, most of the crypts can, in some cases, be thoroughly emptied, and in practically all cases the contents of a large number of them can be removed in a series of sessions, for, unlike the faucial tonsils, when the cryptic openings can be reached directly the contents of the cavities into which they lead can usually be completely culled out. Skilful curettage is an art which requires considerable practice to acquire but the value of the method as a conservative measure makes it worth the while to develop, if possible, the deftness needed for the procedure. During a well illuminated direct exposure of the lingual branches, or of a nodular trunk and the upper part of a pharyngeal branch, or of a pharyngeal nodule, six or eight cryptic openings can be penetrated and reamed out with a searcher. The slight traumatism made by rupturing or stretching the cryptic mouths, marks the positions of the crypts which have already been penetrated, when it is an easy matter to introduce a small ring curette to clear the cavities of debris. If during this minor operation the curette is not allowed to impinge upon the lateral or posterior wall, or is prevented from slipping or sliding from the tops of nodules, the uncomfortable acts of gagging or retching will perhaps be avoided.

For high walled, narrow topped, jellylike lingual branches, in which the crypts are long and their openings minute, an effective method of emptying the crypts is by compressing the nodules with a sponge stick and then expressing the cryptic contents as juice is expressed from an orange. The material in the crypts is thus started, and while that preliminary is of material assistance in curettage we believe that if a choice of methods could be submitted to the patient's feelings, the procedure just described would be the last to be selected. In the majority of cases delicacy of manipulation only is tolerated by this highly sensitized region.

Indirect curettage is more difficult of accomplishment, for it must be carried out with curved or angular curettes (Fig. 6) and a mirror. As in this way the nodules can be seen only in perspective, we have, with this method, rarely attempted to reach out the mouths of any of the crypts, but have relied upon preliminary pressure upon the tissues at many points to effect the rupture, or the starting of the contents, of the crypts. Even without preliminary rupture of the cryptic openings the contents of many of the crypts can often be removed by repeatedly, but with great gentleness, drawing the curette upward over the tops of the nodules. Indeed, some of the most striking and rapid changes in clinical stories have resulted from curettage carried out in this way. It is possible that an indirect curettage of the pharyngeal branches in adults with curved curettes presenting laterally will prove more effective, but we have been satisfied with the effects obtained from the curved curette when it is held obliquely with its handle in the corner of the mouth of the same side. The laryngopharynx is often such a difficult region to work in that tact, patience and effective manipulation are required to secure satisfactory results.

It is a pleasure to acknowledge the courtesy of Dr. Albert J. Keenan, in having placed many young subjects at our disposal in his operating clinic; and we also wish to express our appreciation of Prof. Archibald Murray's collaboration, of Dr. S. Zwerling's valuable aid, and of Mr. J. A. De Veer's care in the bacteriological part of the study.

For a sifting of the statements and a test of the accuracy of the observations recorded in this communication, we gladly submit this brief report of our investigation, to your wisdom, judgment and skill. Many corrections will doubtless be made and much information will be added to that which has been reported, for this study is but the entering wedge driven through the outer barrier of a field which is rich in opportunities. But whatever else may be said, or may be thought and not expressed, the important fact must not be overlooked that the study would not have been begun, and, therefore, the wedge could not have been driven, had it not been for the searching rays of the tonsilloscope.

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150 JORALEMON STREET.

A METHOD OF ANESTHESIA FOR ADENOID AND TONSIL WORK.*

BY JAMES T. GWATHMEY, M. D.,
New York.

General anesthesia for the removal of adenoids and tonsils is one of the most difficult problems that confront the anesthetist. This problem involves: 1, the induction of unconsciousness without struggling or cyanosis, in order to avoid an initial rise of blood pressure; 2, the maintenance of the same level of safe deep surgical anesthesia throughout; 3, bringing the patient out without nausea and vomiting, in order to avoid continued bleeding; 4, the prevention of poisonous aftereffects from the anesthetics used.

To start with the last proposition, the anesthetic most poisonous to the tissues and most detrimental to the various organs of the human body is chloroform; and yet, on account of its cheapness and simplicity in use it is often employed to initiate and maintain narcosis in this particular operation. Chloroform is nonirritating to the upper air passages, the salivary glands are quiescent, and blood pressure is lowered, which means less bleeding during the operation. For these reasons it makes a strong appeal to the oral surgeon and compels us to pause and note other factors which should banish it from the operating room, except for two classes of patients, which will be noted later. Poisoning from this agent may be immediate, as indicated by prolonged vomiting, or it may be delayed, coming on several days after the operation, indicated by nausea, vomiting, a jaundiced appearance of the skin, and occasionally in children, coma and death. Again, the injurious effect may escape detection at the time, but may leave the patient with a damaged kidney or liver as a handicap throughout life.

During the operation reflex stimulation of the vagus, causing inhibition of the cardiac muscle in light anesthesia, may occur, especially with children, as they are particularly prone to chloroform sleep of false anesthesia. When in this condition the anesthesia, to all appearances, may be perfect. The mouth gag is inserted, and as the tonsil is grasped or the first incision* is made, respiration ceases. I had one such experience many years ago, which was sufficient to last a life time. I shall never forget the mental agony while engaged in artificial respiration, which in this instance was successful, the parents meanwhile being just outside the operating room awaiting the completion of the operation. The operation was completed with ether, but from that time on, I have used chloroform less and less.

Only two classes of patients are immune from this protoplasmic poison, the adult obese and the alcoholic. Even here, it should be used as sparingly as possible. The gas ether sequence, with its cyanosis and rise in blood pressure, should also be excluded from this operation. Nitrous oxide and oxygen, with one or two drams (not ounces) of ether, requires such close team work and education

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on the part of the surgeon that it is only mentioned here as a successful technic that is seldom used. The gases must be given under increased pressure, in order to maintain an even anesthesia. This increased pressure, and the fact that the nitrous oxide is in the blood merely in the form of a physical solution, accounts for more oozing and bleeding during the operation than with other methods. But, as this technic requires less time than any other method, and as the nitrous oxide causes no chemical or morphological changes, and as it is rapidly excreted on diminution of the pressure, leaving the blood in a normal condition, there is probably on the whole less bleeding with this than with the ordinary methods.

All authorities are agreed that there is less danger from ethyl chloride with children than with any other class of patients. For this reason, and the further fact that as ordinarily given upon an open mask, drop by drop, or sprayed intermittently, there is no struggling and no rise in blood pressure, the ethyl chloride ether sequence is one of the best technics in common use. The terminal anesthetic, ether, is usually given by the vapor method, that is, air is forced over or through the anesthetic in such a way as to get sufficient ether to establish and maintain the anesthetic tension in the brain. Whenever the nervous element predominates, especially when this factor is further complicated by organic heart lesions, and where struggling would endanger life, the operation should be done without the patient's knowledge. This is possible with colonic anesthesia which will be used more and more as the safety and utility of the method become better known. In heart lesions, in the obese and the alcoholic, the three classes of patients that would give trouble with any inhalation method, colonic anesthesia is especially indicated.

It is not my purpose to criticize operative technic except as it modifies the anesthesia. A common fault with many operators is holding the tongue depressor in such a way as entirely to occlude the air passages. This throws a terrific strain upon the whole nervous system and depresses the heart even more than the tongue. This is not so much the fault of the one holding the depressor, as that nearly all tongue depressors are faulty mechanically. Instead of the handle being at a right or obtuse angle to the blade, it should be at an acute angle, about eighty-five degrees. Its value is still further enhanced if the blade is slightly bent midway between the handle and the tip. The handle should also be bent or curved upward and outward. The tip of the blade should have a slight backward curve and should be milled on its inner margin to prevent the tongue from slipping away. Made in this way it is almost impossible to occlude the air passages and the instrument becomes a retractor, retracting the tongue from the airway. A tongue depressor should never be used.

Another serious fault in technic and unfortunately one that seems to be quite common, is rolling the patient in order to allow whatever blood may be in the throat to flow away, instead of using the suction apparatus, and sponging additionally if necessary. Captain Geoffrey Marshall, with whom

I worked at Casualty Clearing Station No. 17, British Army, was the first to call attention to the fact that rolling a patient after being under the anesthetic for a considerable time lowers the blood pressure. He states that, "At the end of an abdominal operation the patient may be in good condition; he is then turned on the right or left side, in order that the surgeon may excise a wound in the back. In a few minutes there is a great fall of blood pressure and the radial pulse disappears. It may be hours before the patient recovers this lost ground."

The observations of Marshall were verified by so many observers in the different Allied Armies, that surgical technic was considerably modified in this particular. Rolling a patient, and repeating this several times, after a patient has been in deep surgical anesthesia for over thirty minutes, unquestionably lowers blood pressure, and may be one of the factors in inducing unnecessary shock. But this is not the main reason for not turning the patient. The fact that one loses control, for a few seconds, of any blood and adenoid or tonsil tissue that may be mixed with the blood, and that this tissue may be insufflated into the lungs just at this moment, is the principal and vital reason for objecting to this procedure. I have seen one such case, and I have no doubt that tissue can be insufflated into the lungs in this way. With the patient in the usual position, the operator has absolute control of the blood flow with the suction apparatus.

My own method of anesthesia for nose and throat operations was evolved from several years' work at St. Bartholomew's clinic, on Forty-second Street. Here we employed all the methods in common use, but for the last three or four years nitrous oxide and oxygen were the foundation for our work. We use gas and oxygen passed over anesthetic for induction, and gas oxygen ether for maintenance. An electric heater for warming the anesthetics and a vapor mask with Sanford nasal tubes or a mouth hook and a Whitehead self-retaining mouth gag complete the equipment.

Anesthol is in one bottle of the ether attachment and ether in the second bottle. The electric ether heater is placed between the ether attachment and vapor mask, and the current should be turned on at least five minutes before the operation starts. The procedure is very simple. Several layers of gauze are placed on the vapor mask and a towel wrung out in warm water is wrapped around the mask. One or two drops of oil of the bitter orange peel are dropped upon the gauze, to give confidence and to cause the patient to breathe deeply. The anesthetic is started with nitrous oxide through the third hole, and oxygen through the first hole of the sight feed. After fifteen to thirty seconds begin gradually to turn on the anesthol. During induction no one should be allowed to touch or hold the patient, unless the patient asks especially for someone to hold his or her hand. In from one to three minutes the patient is in the third stage of anesthesia, with scarcely ever a struggling stage. The ether is now turned on very gradually. If there is a cough, or the slightest hesitancy in breathing, the ether is turned off again and the anesthetic is continued for a short while longer with gas oxygen anesthol.

The anesthesol stopcock is never turned on full, just sufficient for a small amount of the gases to pass through. The ether is again tried and this procedure is continued until the patient can breathe gas oxygen ether without coughing or hesitation in breathing. At this time, the anesthesol is turned off and the anesthesia is continued with gas oxygen ether. This is practically an open method of gas oxygen supplemented by small amounts of anesthesol or ether, as compared with the closed method usually given with mask and bag. The patient is pink from start to finish, with no rise of blood pressure at any time.

The change from the vapor mask to nasal tubes or mouth hook is not a change from one method of anesthesia to another, as it would be if a closed method were used. It is a continuation of the open low pressure method. This change takes place in two and one half to three minutes from the induction, when the mouth gag—preferably selfretaining—and one that touches the gums instead of the teeth, as a Whitehead (the side gag should never be used), is inserted.

The amount of oxygen is now increased by allowing it to flow through the second hole. In adults, when the patient shows signs of getting into a lighter degree of anesthesia, anesthesol may be turned on again for ten or fifteen seconds. In children up to six years, the ether may be turned off very shortly after start of operation and the anesthesia carried through with gas oxygen only, or the gas may be turned off and the anesthesia continued with ether and oxygen.

When the adenoids are being removed, the nitrous oxide and the ether are turned off and oxygen given through the third or fourth hole. This leaves the patient in a very pink condition and the blood in the best possible condition for coagulation; in addition, the rubber tubing from the ether container to the mouth tube is thoroughly flushed of ether vapor so that the next patient who is anesthetized will get no unpleasant odors.

The mouth hook is used when nasal tubes interfere in any way with the technic of the surgeon. For instance, at one time during our work at St. Bartholomew's clinic, the usual technic was to place the suction tubes in the throat through the nasal passages. The anesthetic was given through the mouth gag. As either the nasal tube or the mouth hook is selfretaining, this leaves the anesthetist with both hands practically free and is therefore able to assist the surgeon by sponging or in any other way that he may direct.

The technic as outlined above is dependent upon team work and the synergistic action of the safest inhalation anesthetics in common use today, that is, nitrous oxide and oxygen, with small amounts of ethyl chloride or anesthesol as the initiatory anesthetic, with nitrous oxide oxygen and ether at a low pressure as the terminal anesthetic, a selfretaining mouth gag—Whitehead pattern, the use of a tongue retractor instead of a depressor, a suction apparatus and sponging, if indicated, with the patient remaining in the same position as when the anesthetic was started.

40 EAST FORTY-FIRST STREET.

THE RELATION OF HYPERTENSION AND HYPOTENSION OF THE MEMBRANA TYMPANI TO DEAFNESS AND TINNITUS.*

BY HAROLD M. HAYS, M. D., F.A.C.S.
New York.

By hypertension of the ear drum, one means that the drum membrane is more rigidly held in place than it should be. It is found in that class of cases which we ordinarily classify as catarrhal deafness—a term which today should be considered more or less obsolete; they should more properly be classified as cases of adhesive deafness. Here we find a drum tensely drawn, with the insertion of the malleus standing out prominently. The greater part of the drum is retracted, and the light reflex is missing; often calcareous plaques can be seen.

By hypotension of the drum, one means that the drum is more or less flaccid. A certain poutingness may be present, so marked that one wonders whether there is not something in the middle ear which presses it out. At other times, one views a drum which looks normal but which, on more exact investigation with the otoscope, shows that its excursions are too great. This flaccidity may extend into Schrapnell's membrane.

In certain cases (and these are more frequent than one thinks) there is a combined condition of the drum hypertension and hypotension. One here sees the deeply indented drum with practically no excursion in the region of the insertion of the malleus and yet there are relaxed portions of the drum on either side. In these latter cases it is exceedingly difficult to give relief and the prognosis should be well guarded until one is able to tell which is the predominating condition.

In papers dealing with this subject, great stress has been laid on the etiological nose and throat factors. And rightly so. I believe that the importance of these factors has been emphasized sufficiently to lay it aside at this time, except to impress upon you, a few important observations. The removal of the tonsils and adenoids, the correction of nasal deformities, such as a deviated septum or hypertrophied turbinates, the clearing up of any catarrhal condition in the nasopharynx, are matters which the faithful ear surgeon attends to at once. But let us discuss in the order of their importance some factors which are not usually considered.

IMPROPER BLOWING OF THE NOSE.

Through a patulous tube.—To my mind there is nothing which tends to create more trouble with the ears than the improper blowing of the nose and this is particularly true if the habit is started in childhood when the nose and throat are frequently infected from continued colds. One has only to think of the mechanics of the ear (and to realize how easy it is to disturb the delicate correlation of bones and muscles therein) to appreciate the fact that the harsh blowing of the nose through a wide open tube will inevitably result in a misplacement

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of the drum which will not allow the proper transmission of air waves. The end result is hypotension of the drum.

Through a partially stenosed tube.—Again we must study the mechanics of the middle ear. What happens can be explained simply. When the nose is blown too forcibly, a certain amount of air gains entrance into the ear under considerable pressure. The tube closes. Whether the drum at first becomes distended or not depends on how much air escapes, how rapidly the contained air is absorbed, and with what amount of force it reaches the membrana tympani. There is another factor here which has to be seriously considered and that is the amount of infection which reaches the middle ear; for on this depends whether we shall later on have to deal with hypertension or hypotension of the drum. In view of the fact that the nasopharynx is seldom free from harmful organisms it is surprising that acute infections of the ear do not take place more frequently in the cases that we are describing. The chief result seems to be the insidious occurrence of adhesive processes.

FREQUENT EARACHES IN CHILDREN.

It is most difficult to test the hearing acuity of a child and an inspection of the ears in these cases may show nothing. By the time the doctor sees the child the earache has often subsided. However, if there are repeated complaints of pain in the ear the cause should be sought for. At such times the hearing should be tested. One often has to distract the attention of the child and then, by roundabout means, determine what he is after. When the child's confidence has been obtained there is nothing better than to play with him and, by question during the play, determine whether the hearing is defective or not. It is surprising how much can be learned in this way. After spending half an hour trying the usual tests on a child without results, I have taken him into the laboratory and shown him the guineapigs, when in a few moments I got what I was after. Of course, in this early stage one does not see evidences of any pathological change in the ear, but he can make up his mind that definite and harmful changes will take place unless the ears are given the most minute attention.

AFTERTREATMENT OF DISCHARGING EARS.

I do not believe that many of us are careless in the treatment of the ears after the discharge has ceased when such a condition occurs in adults, but we are too prone to neglect the child. The suppurative ear in a child is not cured until the hearing is properly restored and the sooner the parents are impressed with this fact the better off the child will be. A suppuration from an ear extending over days or into weeks or months, is bound to result in a temporary loss of hearing which may be permanent unless something is done at the time. Very simple treatment may result in the restoration of hearing. It has been within my experience, in many cases, to restore the hearing fully after suppuration, by proper politizerization, when the child has been left in my care as long as I thought necessary. Children are more easily politizerized than adults and naturally respond more rapidly to such treat-

ment. If proper treatment is not given them at this time, in many instances later on in life we shall see hypertension of an ear drum which possibly may not respond to any treatment at all. In other words, the patient will have a dead ear.

ADHESIONS IN THE FOSSA OF ROSEN-MULLER.

The ordinary examination of the rhinopharynx with the mirror in many cases will not reveal the adhesions. A more careful examination has to be made with the author's pharyngoscope or the nasopharyngoscope of Holmes. One often sees fine bands in this fossa which extend from the recess of the fossa to the base of the promontory of the tube. One of two things happens; either the tube is held too widely open, resulting eventually in hypotension of the drum, or the adhesions interfere with the proper action of the tubal muscles, resulting in a collapsed closed tube and hypertension of the drum. In over fifty per cent. of our cases we have discovered such adhesions, which are readily broken down with the finger inserted deeply into the fossa. I know of a number of cases where this simple procedure has absolutely cured a distressing tinnitus which has lasted for a number of years; at all events, it is impossible to alleviate middle ear symptoms when the tubal action is interfered with.

POLYPOID POSTERIOR TIPS OF THE INFERIOR TURBINATES.

When one considers the close proximity of the tubal orifice and the posterior tip of the inferior turbinate, it is surprising that the diseased condition of this tip is not more often thought of in connection with middle ear conditions. Such tips can readily be seen with the pharyngoscope or nasopharyngoscope. They are often of sufficient size to block the tubal orifice completely. One case will suffice to illustrate this point.

CASE.—Mrs. S. came to consult me complaining of a distressing tinnitus. Examination of the right ear showed a hypotension of the drum of a mild type. The hearing was markedly diminished in both ears. At times the ear could be mildly politizerized, which gave her marked relief temporarily. No sound or bougie could be passed into the Eustachian tube. Examination with the nasopharyngoscope showed polypoid ends of both inferior turbinates. The right one was large enough to swing into the tubal orifice, closing it off tightly. The patient characterized the condition thus: "It feels to me as if a marble rolled around in the back of my throat and then fitted into something—like a ball and socket joint; when it gets into a certain position, my ear feels stuffy and the noise drives me crazy." I removed this polypoid tip which measured two cm. long by three quarters of a cm. wide. After a few treatments, the tension of the drum was restored and the tinnitus disappeared.

DISEASED TEETH OR BURIED MOLARS.

One may properly ask how such factors are of importance in affecting the tension of the ear drums. They are etiological factors of as much importance as diseased tonsils, adenoids or deflected septa, for they are a source of continuous irritation to the nasopharynx. Moreover, in hypersensitive subjects they act as reflex irritants. We are all acquainted

with the fact that carious teeth may cause pain in the ears, but we have not gone far enough to understand that the teeth may act on the ears in more than this indirect way. A recent instance will suffice. I had been treating for a number of years a patient who was suffering from hypotension of the ear drum with a thickened Eustachian tube. I had fed him on potassium iodide although the Wassermann test was negative. I had straightened out his septum. I had dilated his Eustachian tube. I finally was satisfied to politize his ear every week or so until it felt full again. Finally, an x ray picture of his jaw showed a buried wisdom tooth on the right side—the side on which he had his ear trouble. This was skillfully removed by a dental surgeon with the result that the tinnitus entirely disappeared and the fulness in his ear disappeared for months—until an abscessed tooth developed on this same side. This tooth was extracted. Strange as it may seem, his ear drum has greatly changed in appearance. It has lost its thick, pinkish color and has become more or less translucent.

It is unnecessary to burden you with any dissertation on the symptoms resulting from hypertension or hypotension of the drum, the only ones of any consequence that are of interest to us are deafness and tinnitus. These two symptoms are so closely associated that it is seldom we hear complaints of a tinnitus without finding some deafness, the patient frequently being under the delusion that the reason he does not hear so well is because he has noises in the head. On the contrary, we often see cases of deafness due to one of these factors not associated with tinnitus. Why this relationship exists I do not think we are in a position to explain at the present time.

At this point one may ask, "Whenever a hypertension or a hypotension of the drum is discovered, does it necessarily mean that the patient is deaf or is going to become deaf?" By no means. In routine examination of the ears, it is surprising to see how often one encounters a relaxed or stiffened drum which ought to produce symptoms. I have seen ear drums so bound down by adhesions that there was absolutely no movement of the ossicles, yet the test of the hearing, has found it to be normal.

Again I have seen ear drums so relaxed that the slightest touch of the Politzer bag would allow of an inflation well beyond the normal. Yet in these cases the hearing tests show no impairment. How are we to explain such a state of affairs? Only on the basis that it makes absolutely no difference what the tension of an ear drum may be as long as sound waves are transmitted through the foot plate of the stapes so that they are properly interpreted. Many of us have seen ears in which the drum has been entirely destroyed. A residual process has taken place with entire destruction of the malleus and incus and yet the hearing has remained practically normal. Some of you may have other explanations than that given above, but none can gainsay the fact that peculiar paradoxical conditions do exist, at times, which overturn all our preconceived notions of how things ought to be.

EXAMINATION OF THE EUSTACHIAN TUBES.

a. *Tubal orifice.*—It is now possible to determine accurately, by means of the nasopharyngoscope particularly, the exact condition of the tubal orifice. We shall not concern ourselves here with the extratubal conditions, such as adenoids, polypoid turbinates, and so on, but with the condition of the tubal orifice itself. In subacute conditions we frequently see the engorged tube which can readily be shrunken and proper instruments passed through it. But we are more concerned with the chronic pathological states which give rise to interference with intratympanic pressure and cause a hypertension or hypotension of the drum.

In a certain class of cases, examination reveals a swollen, congested orifice. The lips of the tube stand widely open. The dimple is deep and takes a large bend to the catheter. Such a tube may be stenosed well within the opening and allow of the passage of the applicator only under considerable pressure. A second class of tubes present a slitlike appearance. The lips are drawn tightly together. Sometimes they separate easily; at other times they are tightly closed. I have seen every variation from the atrophic tube with glazed, glistening mucous membrane and a wide open mouth to the hypertrophied tube with a mouth so tightly sealed that under no circumstances could proper atmospheric pressure be maintained in the middle ear. Abnormalities have been so difficult to overcome in certain cases that it has been impossible to place a catheter, for proper dilatation of the tube, without the aid of the nasopharyngoscope in the other nostril or the pharyngoscope in the mouth.

b. *Conditions within the tube.*—One of two conditions is evident; either the tube is widely open so that no difficulty is encountered in reaching the middle ear with the applicator or bougie, or else there is some stenosis of the tube usually encountered at the isthmus. The former class of cases is usually found associated with a hypotension of the drum; the latter class of cases is usually found associated with hypertension, although there may be a mixture of the two. A word of caution should be given here. Not all ears should be inflated by catheterization. If a tube is wide open and the drum massaged too forcibly, it is inevitable that the drum will become relaxed, making the condition worse than it was before. The same holds true when an attempt is made to inflate an ear forcibly, where the tube is partially stenosed; either the drum is at once forced out of position by the inflation or else a residuum of air remains under pressure which eventually brings about the same result. I have known many patients who, partially deaf, have consulted an ear specialist, only to have their ears drums forcibly inflated, with the result that they became permanently worse. Changing hypertension of the drum to a hypotension accomplishes nothing.

c. *Diagnosing the condition of the Eustachian tube by means of a sounding tube.*—Under no circumstances should an ear be inflated without the otologist connecting his ear with that of the patient so that he may be able to judge exactly what is taking place. This rule applies as well to politization.

tion as to catheterization and is of particular importance if the tube has been previously dilated. It is surprising how much information can be gained in this way, not only of the excursions of the drum but also the condition of the tube itself.

EXCURSIONS OF THE DRUM.

After proper dilatation of the Eustachian tube, one attaches the Politzer bag to the end of the catheter. A small volume of air is blown into the middle ear by the gentlest inflation, the pressure on the bag being gradually increased if necessary. There are three classes of cases that are met with:

a. A drum which allows of no vibration even with the most forcible inflation with the tube wide open—the rigid drum or the extreme hypertensed drum.

b. The hypertensive drum of the ordinary type, usually called OMCC, where the vibratory excursions are fairly well outlined, the amount of excursion depending upon the force used. This is the kind of drum which can readily be forced into a state of hypotension if too much pressure is used.

c. The hypotensive drum, in which the least touch on the Politzer bag will send enough air into the middle ear to give a sharp vibration to the drum. It is readily recognized by the sensation of a sharp click striking the examiner's ear. Overvibration of such a drum tends merely to make it looser.

From the foregoing, one can surmise that inflation of the middle ear cavity is well nigh useless in the first and third class of cases. In the second class, the cases with moderate hypertension and sometimes adhesions, proper inflation does a great deal of good. But one should judge the amount of inflation that should be used in any given case by the vibratory excursions of the drum and should never use a force which would be likely to cause permanent harm. Such an assertion may sound bromidic but I, as well as others, know of cases where the proper intelligence has not been used.

VARIATIONS IN TUBAL PATENCY.

The Eustachian tube may be so wide open that any air reaching the middle ear during the normal acts of swallowing, yawning, etc., will have no effect on the ear drum. In fact, the atmospheric pressure within the middle ear would be ideal if it were not that the slightest undue pressure, as occurs when blowing the nose or when the ear drum is massaged through the tube, tends to upset the natural balance of the drum. In most of these cases we find a relaxed drum except in a certain class in which there was at first a stenosis of the tube with a resultant hypertension of the drum which had extended to the stage of complete rigidity. In these cases, with the tube wide open, it is almost impossible to create an effect upon the drum even with the most forcible massage. It is possible that the atrophic condition of the tube has extended to the mucosa of the middle ear and that complete ankylosis of the ossicles has taken place.

Before turning to the cases in which there is an almost completely stenosed tube, we must consider a number of conditions which occur in the partially closed tube. Most cases belong in this class. The differentiation of the conditions found

will depend upon a close study of the tubal orifice, the ease or difficulty with which the tube can be dilated, and the sensations which reach the examiner's ear when he massages the drum after dilatation of the tube. There are a number of sounds of importance which may be roughly classified into five groups.

The Eustachian orifice is first cocaineized with a four per cent. solution of cocaine. After a few moments, a Yankauer applicator, carefully wound with cotton, is passed into the tube through a wide catheter and is allowed to progress gently toward the ear until it reaches the isthmus of the tube. Here it is allowed to rest and is then pressed through it until it reaches the ear. After removing the applicator, a Yankauer sound or bougie, previously dipped into some mentholated oil, replaces it. This may be left *in situ* for one to two minutes to half an hour. On removing the sound, the Politzer bag is attached to the catheter and a sounding tube connected with the patient's ear. One now notices the difference in the tubal patency and at the same time has a number of sensations transmitted to his ear which are of distinct value.

a. *Crackling sounds*.—On gentle inflation, one may hear a crackling sound like the soft snapping of twigs. This sound is indicative of dry mucus in the tube or fine adhesions in the middle ear cavity. If it is the former, very little improvement will be noticed in the hearing; if it is the latter, there will be quite a little improvement in inflation.

b. *Gurgling sounds*.—A gurgling sound is often noticeable. This is due to an edematous condition of the tubal mucosa, resulting either from trauma to the mucosa from the insertion of the foreign body or from a chronic edema of the tube. If it is the former, the condition will improve; if it is the latter, the care of the edema becomes a most important matter and it is impossible to prognosticate the outcome.

c. *Whistling sounds*.—A whistling sound reaching the examiner's ear should put him on his guard at once for the probabilities are that he is dealing with a chronically stenosed tube which needs constant dilatation before any attempt is made at inflation. It is in cases like these, where the ear drum is hypertensive, that forcible inflation will result in permanent impairment of hearing by causing a hypotension of the drum. If air is forcibly injected through this narrowed tube, either overpressure is exerted at the time of the inflation or a positive pressure is maintained in the middle ear because there is no way for this air to escape.

d. *Sucking sounds*.—If what is stated above holds true for whistling sounds, it holds equally true for sucking sounds for such sounds occur only when the tube closes up completely immediately after the inflation. The drum is drawn in at the time of such suction with the result that there is a loosening of the annular ligament.

e. *Mucoid sounds*.—It is impossible to classify these accurately; they are of great variety. It has been within the experience of many of us that when the ear is inflated, a bubbling, churning sensation reaches the ear which is indicative of mucus in the

Eustachian tube. Sometime the mucus is in the catheter; if so, the catheter can be withdrawn and cleaned. But if the mucus is in the tube, an attempt at inflation may readily result in the forcing of such mucus into the middle ear with almost inevitable infection.

OTOSCOPIC DIAGNOSIS.

It is impossible to make a proper diagnosis with the ordinary aural speculum. One must use an electric otoscope to which can be attached a massage apparatus. The drum is first examined without the magnifying glass. This examination informs him of the things ordinarily looked for, such as possible retraction of the drum, adhesions, and calcified areas. But it is seldom that such examination can tell him whether the drum is in a state of hypertension or hypotension. The magnifying glass is now put on the otoscope and an interrupted suction apparatus attached. There should be an opening in the tubing from the suction pump at some point so that the finger can be used to vary the amount of suction used. The speculum should be of sufficient size to fit the external canal neatly. When the suction is employed, one notices one of three conditions:

a. *Hypertensive drum*.—The vibrations which reach the drum have very little if any effect upon it. The waves of air strike the drum but one sees very little movement. There may be a slight wave in Schrapnell's membrane or on either side of the insertion of the malleus but one can see that there is no movement of the ossicles. The degrees of hypertension may vary from the almost normal to a drum which is absolutely rigid.

b. *Hypotensive drum*.—As soon as the vibration is started, one can see an oscillating movement of the drum backward and forward. The drum pouts. Even though there may be slight retraction in the region of the handle of the malleus, there is an exaggeration of the light reflex. The laxity of the drum may even be ascertained when a very small speculum is used which does not hug the wall of the canal closely. In no other way can a relaxed drum be so clearly diagnosed.

c. *Combined hypertensive and hypotensive drum*.—A combination of the two conditions occurs very frequently. Certain parts of the drum are rigid, other parts are flaccid. The rigidity occurs most frequently in the region of the insertion of the malleus and that part of the drum called the annular ligament. The relaxed portion occupies either the anterior or the posterior quadrant or both. There may also be a relaxation of Schrapnell's membrane.

TREATMENT.

It is impossible in the limited space at my disposal to go into details of treatment. Briefly it may be outlined as follows:

1. *Preventive treatment*.—This includes the proper hygiene of the nose and throat; the removal of tonsils and adenoids, hypertrophied turbinates, particularly the posterior tips of the inferior turbinates, the correction of septal deformities, the proper draining of diseased sinuses, the care of the teeth, the freeing of adhesions in the fossæ of Rosenmüller, etc. It includes, moreover, the proper care of acute ear conditions in children, particu-

larly the attention to hearing after the acute symptoms have subsided. Lastly, it includes the teaching of the proper blowing of the nose.

2. *Treatment of the ears in cases with hypertension*.—I am of the firm belief that the ordinary catheterization or politizerization of the middle ear gives little permanent relief except in subacute cases. Invariably, where the disease has been of long standing there is a diseased condition of the Eustachian tube which must be overcome. This is best accomplished by dilatation with the Yankauer applicators, sounds and bougies. The mucosa of the tube should first be shrunk with a cocaine-adrenalin solution on the applicator, then the sounds should be passed and allowed to remain in place for from five minutes to half an hour. The majority of men do not leave these dilators in place long enough. Putting them in and taking them right out again does little permanent good.

After the dilators are removed, the gentlest inflation should be tried until one is absolutely sure of the impression he is making on the drum. If there is distinct vibration with very little pressure on the Politzer bag, very little pressure should be used. I have had cases where the slightest touch on the bag has shown a vibration. In such cases, it is better not to use any massage but to allow Nature to do her part with each act of swallowing, during the next twenty-four hours. Other cases are seen (where the drum is almost rigid), in which it will do no harm to use a forced massage but only with the sounding tube in the examiner's ear so that he may be sure of every change that is taking place.

3. *Treatment of the ears where hypotension is present*.—In these cases more harm than good is done by massage through a catheter. Mild politizerization, performed very gently when the tubes are fairly well open, may give some temporary relief but the most important treatment consists in the attempt to tighten the drum. In former papers, I have spoken of some experimental work in this direction and also of the remarkable results obtained by making direct applications of cantharides colloidion to the drum after the method of Heath of London. I do not desire to enter into a discussion of this method here (I realize that it has been greatly discredited) but merely wish to mention that, after employing it in many cases, I am yet to see the first permanent untoward result and can definitely affirm that in a small percentage of cases its employment has resulted in permanent good. During the past winter I saw a patient on whom I tried this treatment for marked deafness and tinnitus six years ago. She had never had a return of her tinnitus. Her hearing, which had improved greatly at the time, had become slightly diminished again but even today is better than when I first saw her. Great care must be exercised in this form of treatment. I feel assured that it should be more universally used in selected cases.

c. *Cases with hypertension and hypotension*.—There is no definite line of treatment that I can outline in these cases. Every patient must be treated differently and often one has to experiment for weeks until he finds the one treatment to which the patient will best respond.

In conclusion, let me say that it is most unfortunate that we find it impossible to analyze and study our clinical cases closely enough to give the poor the relief that they deserve. It is about time that clinics for the treatment of deafness, and deafness only, were established so that men who were particularly interested in this line of work would have the opportunity and incentive to work out problems along scientific lines. It is no longer right to treat deafness and tinnitus empirically. Each case must be carefully studied and given the benefit of personal thought. Such thought cannot be given the deafened who visit the ordinary ear clinic. There is too much there that is more interesting. Moreover, none has the time to give these patients the attention that they deserve. If you have a deaf member in your family or are deaf yourself you will see the sense of these remarks. None deserves more consideration and receives less than the individual who is constantly complaining that he has a noise in his ear or that he is becoming so hard of hearing that he is unable to continue the battle of life with a handicap from which there ought to be some method of relief.

2178 BROADWAY.

TREATMENT OF CHRONIC PURULENT OTITIS MEDIA.*

The Pathology and Anatomical Cure with a Suggested Method of Effective Treatment.

BY JAMES G. CALLISON, M. D.,
New York.

Chronic purulent otitis media is one of the most hopeless conditions that come before the otologist for his professional consideration. The discussion of the subject in textbooks devoted to otology is entirely unsatisfying, except as that discussion deals with operative procedures. Current periodical medical literature throws no additional light on the subject. The only procedure suggested with any assurance of success is the radical mastoid operation. In discussing the subject of rendering men subject to the draft, but suffering from chronic purulent otitis media, fit for military service, so able an authority as Dench has no other suggestion to make than the performance of the radical mastoid operation. He says (1): "Personally, I cannot too strongly urge the reconstruction of all cases of suppurative otitis media by radical operation occurring in patients who are otherwise fit for military service." Were a radical mastoid operation sure of effecting a cure, and were it entirely free from danger, the otologist would at least have some positive advice for those appealing to him for treatment. But the chances of failing to succeed in operating and the element of danger to the life of the patient are enough to prevent most men from advising a radical mastoid operation, except in those cases where bone necrosis, from one cause or another, has created conditions that render an operation imperative. Also, it is well within the knowledge of members of the profession that any patient who has undergone a

so-called successful radical mastoid operation must thereafter be more or less constantly under the care of a specialist. Desquamated epithelium and dirt collect in such an ear, and unless frequently removed, the resultant irritation causes a discharge of pus which, while free from danger to the life of the patient, is not free from disagreeable and annoying symptoms. The hearing in such operated ears is usually much worse after than before the operation, because of the thick pad of connective tissue that may form over the promontory in the healing process. Except for the freedom from danger to his life, the patient who has undergone a radical mastoid operation is, on the average, but little better off than before such operation, and his condition, from an economic standpoint, may be worse than before the operation.

ANATOMY OF THE MIDDLE EAR.

The anatomy of the middle ear interests us here only in so far as that discussion deals with the lining of the cavity, which must be materially altered to effect an anatomical cure of purulent otitis media, as will be pointed out later. On the question of a lining of mucous membrane for the middle ear there is no agreement among the various authorities, and the discussion seems to leave considerable doubt as to the true anatomical condition. Most books on otology content themselves with the remark that the middle ear is lined with mucous membrane. Kerrison goes further and discusses the epithelial lining of the tympanic cavity, while Dench speaks of the glandular structures in the tympanic cavity.

Kerrison says (2): "The mucous membrane lining the tympanic cavity is directly continuous through the Eustachian tube with that of the nasopharynx. Histologically it varies in character in different parts of the tympanum. Over the promontory it is of the cuboidal variety, while on the anterior half of the floor, and in the vicinity of the tympanic orifice of the Eustachian tube it consists of ciliated cylindrical cells. In the vault the cells are of the squamous variety, this type being continued into the aditus ad antrum and persisting throughout the lining membrane of the mastoid cells."

Discussing the lining of the middle ear, Dench says (3): "The mucous membrane is supplied with mucous glands, which are extensively developed in the cartilaginous tube, near the pharyngeal orifice and diminish in number in the bony tube and tympanic cavity. In the middle ear they are mostly confined to the tubal orifice, although they are occasionally found over the promontory."

Piersol says (4): "The epithelium of the tympanic mucosa varies in different parts of the cavity. Over the promontory, the ossicles and the tympanic membrane, it consists of a single layer of low cuboidal nonciliated cells, while over the other parts the cells are ciliated columnar in type. Small tubular glands occur within the lining of the anterior part of the cavity. The subepithelial connective tissue, which supports the vessels and nerves, comprise two layers, the outer forming the periosteum of the bony wall."

Quain's book (5) goes a little more into detail. It says: "The mucous membrane which lines the cartilaginous part of the Eustachian tube resembles

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much the mucous membrane of the pharynx, with which it is immediately continuous; it is thick and vascular, is covered with ciliated epithelium, and is provided with many simple mucous glands which pour out a thick secretion; in the osseous part of the tube, however, the membrane becomes gradually thinner. In the tympanum and mastoid cells the mucous membrane is paler, thinner, and less vascular, and secretes a small amount of less viscid, yellowish fluid. According to most observers, no glands are normally met with in the tympanum, but Krause has described and figured simple glands in parts, and Troeltsch described an acinous gland on the lateral wall anteriorly. * * * * * The epithelium of the tympanic cavity is in part columnar and ciliated, with small cells between the bases of the ciliated cells, but the promontory, the ossicula, and the membrana are covered with a simple layer of flattened, nonciliated cells (Kolliker); and a similar nonciliated epithelium lines the tympanic antrum and cells."

While these anatomical descriptions of the mucous membrane lining the middle ear do not agree among themselves, they seem to agree on two points. The epithelium lining the cavity is probably not of the squamous variety, but of some form of columnar or low cuboidal epithelium; and also that there are present some glands of a simple type, which they all agree in calling mucous glands. Later, in discussing the anatomical cure of chronic purulent otitis media, I shall show how it is necessary to destroy these glands and alter the type of epithelium.

Observation of the pathology of the mastoid bone, as revealed while performing the radical mastoid operation, has shown a bone in most cases completely eburnated, with an entire absence of cellular structure. The antrum is small and filled with granulations, while the attic is of normal size in all dimensions and is also filled with granulations, these being so densely packed that there is no adequate drainage into the external auditory canal. The membrana tympani is usually absent except for a strip along the handle of the malleus and a narrow remnant around the periphery of the external auditory canal. Between the annulus tympanicus and the promontory of the middle ear, there is an expansion of the bony auditory canal, and this space also is filled with granulations. Granulation tissue also extends into the Eustachian tube, and if a successful radical mastoid operation is performed the cavity is continuously reinfected from the tube, unless the operator is successful in obliterating this canal at the time of operation, which is not always easy of performance. One of the astonishing things in performing a radical mastoid operation is the amount of granulation tissue removed from the narrow space around the promontory and extending into the attic.

An anatomical cure of chronic purulent otitis media cannot be said to have been effected until there is a complete dermatization of the promontory and all exposed areas, extending up from the otitic opening of the Eustachian tube. To effect this a complete eradication of the granulation tissue is necessary. There must also be a destruction of the columnar and cuboidal epithelium lining the tympanic

cavity, together with all the mucous and serous glands present, with a simultaneous extension of the squamous epithelium from the external auditory canal over the exposed areas. This is the ideal sought in performing a radical mastoid operation. At the same time the bacterial flora present in the middle ear must be eliminated or reduced to a minimum, as epithelialization occurs most rapidly on sterile or near sterile surfaces. It is also desirable but not absolutely essential that the otitic end of the Eustachian tube be healed off by adhesions and cicatrization, so as to completely separate the pharynx from the middle ear space. This is what has happened in the occasionally seen otitis media residual.

It has seemed to me that if this destruction of granulation tissue could be accomplished, and the middle ear cavity treated with some drug that was antiseptic and at the same time penetrating and diffusible—a drug noncoagulating to proteids—it ought to be possible to secure a very high proportion of cures. As the removal of the granulation tissue by operative means is not possible, it must be done by the application of some drug. For this purpose a saturated solution of nitrate of silver is without a rival. It is efficient in destroying the granulating material with which it comes in contact, but does not penetrate deeply enough to carry any possible danger to the delicate structures of the internal ear. It should be noted in passing that the fused silver bead will not take the place of the saturated solution of nitrate of silver in this work. The bead of silver is efficient only where it can be brought into direct contact with the tissue to be treated. Where it becomes necessary to reach spaces not accessible to direct application, a solution must be used, so that it will spread laterally to parts not directly reached in the application.

As disinfecting agents both penetrating and diffusible, there seem to be four drugs worthy of consideration—two old ones and two new ones. The old drugs are phenol and tincture of iodine. The new ones are acriflavine and mercurochrome-220. Acriflavine is diaminomethylacridine chloride, acridine being one of the coal tar basic dyes, and said to be highly penetrating and antiseptic in its qualities. Because of these qualities it is being used in bladder and pelvis of the kidney infections, and with some apparent success in the treatment of acute gonorrhea. Mercurochrome-220 is obtained by substituting an atom of mercury in the molecule of dibromfluorescein, this latter drug being one of the eosin group of coal tar dyes. It is asserted by the Brady Urological Institute of Johns Hopkins University (6), where it was developed, to have the penetrability of the dibromfluorescein and the antiseptic qualities of the mercury.

These drugs must all be used in a vehicle of fairly high alcoholic content, because of the tendency of aqueous solutions to stimulate the formation of granulation tissue. The two older drugs—iodine and phenol—are both miscible with alcohol and dispensable in combination, and I have used the following prescription in these investigations:

Tincture iodine,	gtt. xv
Phenol, 95 per cent.	gtt. xv
Alcohol,	5iv
Water, q. s. ad.	5j

A small series of private patients (about twenty-five in number) have been used in the work, supplemented by a few of the more intelligent patients in the clinic. So far the treatment has been uniformly successful in effecting a cure, although some apparently very hopeless cases have been included in the list. The method of procedure has been as follows:

Where possible, patients are seen at intervals of from four days to a week. The ear is carefully cleansed and dried with cotton applicators. If pus is hidden in the recesses of the middle ear, as much of this as possible is removed by suction and the ear again carefully dried. Now, under direct vision, the saturated solution of nitrate of silver is carefully applied to the fundus, allowing it to penetrate as far as possible beneath the edges of the drum remnants, and it is applied also as deeply in the Eustachian tube opening as possible with a thin applicator cotton wound. In an exceptional case this procedure will cause considerable pain, and with these patients I am accustomed to begin with a twenty-five per cent. solution and increase the concentration to fifty per cent. and then saturate the solution as the patient will permit. Few patients, however, complain of the pain in the use of the saturated solution.

If a free discharge of pus is present, the patient is instructed to irrigate the ear once or twice a day with boric acid, as the condition may indicate. After irrigation, the ear is dried very carefully with cotton on a toothpick and about five drops of the solution placed in the ear. As the purulent discharge decreases in amount the irrigations are discontinued, and later the drops are used only once a day. Otherwise, the treatment is continued until long after the ear seems to be dry. The time required to effect a cure by this form of treatment has varied from a few weeks to several months, depending on the condition of the ear and the faithfulness with which the patient carried out the treatment. It will not, however, in my opinion, average longer than the time required for the postoperative treatment of a radical mastoid operation, and there will be a larger proportion of absolute cures. So far there have been no returns of the purulent discharge, but the time during which this form of treatment has been used—one year—is too short for the failure of recurrences to carry great weight.

In the treatment of chronic purulent otitis media the conservation of hearing is not the first consideration, although an important one. It is only when a method of treatment becomes unusually destructive of hearing that it must be condemned for that reason alone. In the patients in this series of cases no complete record of the effect on the hearing has been kept, but there has been in practically all cases an improvement so marked that the patients have spoken of it. Those patients who have been under observation for a time after the treatment of the purulent ear has been completed, as in patients with a catarrhal deafness in the other ear, have also observed a continuing improvement as the connective tissue over the promontory has had time to be absorbed. Such a change is to be expected as long as there is a thinning of this pad of connective tissue.

This paper is not intended in any sense as a statistical study, but rather as a record of careful personal judgment. I am convinced that the method of treatment herein outlined has sufficient merit to justify each otologist who is dissatisfied with present results in giving it a thorough trial. No assertion is made that it will cure all cases of chronic purulent otitis media, only that it has cured all of the small series of cases in which it has been tried up to the present time. Those cases with extensive purulent or cholesteatomatous destruction of the mastoid bone must come to operation, regardless of the final outcome or later disagreeable features. This, however, embraces but a small proportion of chronic purulent ears. There is a large class of patients with chronic discharging ears but with such good hearing that under no circumstances is a radical mastoid operation justifiable. Curative treatment of chronic purulent otitis media is directed toward this class.

In addition to the series of patients treated with the saturated solution of nitrate of silver and phenol and tincture of iodine combination, a few patients have been treated with mercurchrome-220. Aside from some initial difficulty in getting the mercurchrome-220 into an alcoholic solution, the results have been most happy. Extreme care must be used to avoid the disagreeable eosin staining of the surrounding surfaces.

In closing, may I be permitted to give in detail the histories of three patients I have treated in this way, representing three types of chronic purulent ears met in practice. The first is a case of possible bone necrosis, the second is a possible cholesteatoma, and the third is an old indolent running ear.

CASE I.—Dr. H. J. B., aged seventy; had a chronic running ear for thirty-five years, following scarlet fever. When first seen he was suffering from chronic furunculosis, the whole canal was filled with granulations, no view of the fundus being possible. Perhaps a month was required to reduce the granulations to a point where it was possible to see the fundus, using constant wet packs and other forms of treatment. The last of the granulations was removed from the floor of the canal, at about the angle, by burning with trichloroacetic acid. The view of the fundus then revealed showed the promontory covered and the space behind the rim of the drum filled with pulsating granulations. A diagnosis of the probable recurrence of a chronic purulent mastoiditis was made, but on account of the age and physical condition of the patient a radical operation was not advised, but he was told that he must be under constant observation. The course of treatment outlined was instituted, resulting in a dry ear in less than two months from the time the granulations were eradicated from the external canal. To the present time, more than six months, the ear has remained dry.

CASE II.—W. McL., aged nine, chronic purulent ear, with a tentative diagnosis of cholesteatoma when first seen. The perforation was small and high up posteriorly. The discharge was sanguinopurulent, free, and exceedingly foul smelling. I did not recommend a radical mastoid operation, because the timid, nervous nature of the boy would have made the postoperative dressings almost im-

possible. The treatment was instituted late in July, the patient being seen once a week, and by the first of November the ear was dry and has remained so. The foul odor persisted for about half of the time, despite the most careful irrigations and toilets of the ear on the part of the mother.

CASE III.—Sgt. M. R., aged fifty-three, of the police force of one of the suburban cities. His ear was infected incident to a cold about twenty-five years ago, while he was a private in the United States Army, fighting prowling Indians in Colorado and Wyoming. The discharge had been continuous since, at times being foul and disagreeable to those about him. It had not been possible for Sgt. M. R. to come for treatment oftener than at intervals of from three weeks to two months. He also admitted not having been faithful with the treatment at home. His ear is now dry after about eight months of this irregular treatment.

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206 EAST SEVENTEENTH STREET.

MASTOIDECTOMY FOLLOWED BY INSANITY.*

By OTTO GLOGAU, M. D.,
New York.

Whether or not an affection of the ear may be the direct or indirect cause of insanity has not as yet been decided. W. Sohler Bryant, after examining a number of insane patients, concludes that aurial disease in some cases has an effect upon the form of psychosis by giving rise to certain hallucinations of hearing. In a smaller number of cases ear disease appears to be an inciting cause of insanity, due to the influence on psychic functions as well as a systemic infection. When the organ of hearing has been operated upon, especially when such vital brain tissues as the sigmoid sinus and the dura had to be exposed, with the factors of anesthesia, shock and systemic absorption playing an important rôle, the possibility of otogenous disturbance of mental equilibrium looms even larger.

Emil Amberg (1) states that in toxemia, exhaustive and irritating conditions accompanying or following an inflammatory infection within the ear, the patient must under certain circumstances be considered as mentally inferior. J. A. Hageman (2) points out that some toxins or substances, with which we are not yet familiar, exert a malevolent influence upon the association centres. W. A. Janes (3) draws attention to the organs of transformation and arrest of function

and elimination, as possible etiological factors. Allan McLane Hamilton considers intestinal auto-intoxication as the cause of insanity and believes that the more suddenly and actively the manifestations of delusions or hallucinations are expressed, the more positive the indications of auto-intoxication. Acute and infectious diseases are, according to J. B. Ayres, frequently followed by insanity. He mentions among others cases of insanity in the course of pneumonia and catarrhal colds. Culpeper, in his work written prior to 1654, says it is probable that some certain poison in the body may be the chief cause of madness. According to Charles K. Mills and others, the mental disorders in pregnancy and the puerperal state are probably in a considerable proportion of cases toxicemic.

Assuming that insanity in these cases is of toxic origin, why do only a comparatively small number of patients show mental aberrations after childbirth, infectious disease, anesthesia or surgical operations? Because the majority of people have a more or less normal mentality and even these toxic influences cannot easily upset their mental equilibrium. Conservative neurologists would try to explain the insanity of toxic origin, by molecular or other determinable changes within the brain. The psychoanalyst denies the importance of an underlying anatomical substratum for psychic processes. He explains our actions by the struggle of suppressed wishes and fears and considers overwhelming complexes at the root of our personality. Only in susceptible subjects with labile mental equilibrium will these toxic influences derange the normal psychic mechanism. A psychoanalytic study of these cases will be of great interest and value. The case reported suggests the assumption that the toxic factor alone is not responsible for the attacks of insanity following mastoidectomy, although the focus of infection is so near the brain, the sinus and dura being surrounded with pus. It is rather a combination of somatic and psychic causes. The repressed wishes and fears, based on actual facts in the patient's life immediately preceding the operation, due to the toxic influence, are aroused and thrust over the threshold of the unconscious and become manifest in these attacks of insanity.

CASE—H. T., twenty-nine years of age, was referred to me on October 24, 1919, by Dr. M. Fishberg. Past history: The patient had always been well and never suffered from ear trouble. About three months previously, he had severe pains in the right ear, which kept him awake at night. He also had an increase in temperature. The doctor who treated him did not advise paracentesis. Several days later there was a spontaneous opening and discharge for a short time. The pain, however, became worse and extended toward the neck and head. The patient became dizzy and weak. Later he came to New York. Paracentesis was performed and he was told to return to his home. The ear continued discharging freely, his pain grew worse, he became dizzy and weak. Because of a severe cough and suspected lung trouble, he was brought to Dr. Fishberg, who recognized the ear as the underlying cause of the condition and sent the patient to me.

Physical examination showed a rather well

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nourished male in a state of marked prostration. He could scarcely walk, appeared pale and sick, complained of excruciating pain in the right ear and of dizziness. The right membrane was discharging freely. The upper posterior canal wall was sagging. There was redness over the right mastoid region and severe tenderness to pressure over the entire mastoid bone, especially far back in the region of the sinus. The local symptoms, together with the apparent brain complications, made an immediate opening of the mastoid and an exploration of the adjoining brain structure imperative. The patient, however, had the operation postponed for a day and his condition became worse. An x ray picture of both mastoids showed destruction of cells on the diseased side.

On October 25, 1919, at 5 p. m., I performed an operation at Beth David Hospital, Doctor Call and Doctor Bernstein assisting. The mastoid cavity proved to be totally destroyed and filled with pus and granulation tissue. The destruction reached up to the dura, which was exposed and found apparently normal. Pointing backward and downward there was an extensive perisinous abscess which reached from the sigmoid sinus toward the region of the bulb, where pus was constantly oozing alongside the sheath of the blood vessel. The sinus was exposed one and one half inches and was found to be pulsating, the wall was apparently of normal color. Thrombosis was therefore not suspected. After removing the diseased tissues, including the entire tip, and enlarging and curetting the necrotized antrum, the mastoid cavity represented the size of a large walnut. Due to the exposure of dura and sinus, the cavity was not closed but lightly packed. The regular dressing was applied. The patient soon came out of the anesthesia and felt quite well. The dressing was changed every second day, the wound looked nice, the patient being comfortable.

For the following description of the course of the disease I am indebted to the house doctor, Dr. Lewinson. On the fifth day, towards evening, the patient appeared somewhat stuporous, his pupils were widely dilated. The same night he became talkative and would not permit anybody, including doctors and nurses, to approach his bed. He stated that he saw a fly at the other end of the room which was the angel of death. He asked that the window should be opened as his wife and children were waiting outside in an airplane. He accused everyone in the room of being a conspirator and an enemy. He became violent and jumped out of the bed. Only by great force could he be given a hypodermic injection and he shouted that this was the sting of the angel of death (the fly). Even after repeated hypodermic injections, he had to be tied down to the bed. He then slept until morning. He woke up with manifestations of great violence and he would knock at the window calling for help.

Dr. H. Climenko, called into consultation, made the following observations: Patient was orientated as to time and place, complained of pain. Without being asked, he told an incoherent story of a fire in his place of business for which he was accused of arson. He motioned constantly with his hand, driving away the angel of death. He saw flies in

the air, and stated that someone persecuted him without reason. He had auditory hallucinations. He heard a train wreck in which his wife and children perished. His speech was incoherent.

Physical examination: Knee and ankle jerks were lively; Babinski absent; left plantar surface irritated; ankle clonus absent; some spasticity in left lower extremity, not enough to be called a Kernig; abdominal reflexes present; both protopathic and epicritic sensibility present in the lower extremity; wrist and elbow reflexes present; no astereognosis. There was some clumsiness of the right upper extremity—diadokokinesis; slight ataxia in right upper extremity. The facial innervation was weaker on right side. A marked asymmetry of face, especially the lower two thirds; divergence of right eye and a slight von Graefe; nystagmus absent; pupils reacted promptly to light; disc clear cut; no break in blood vessels; no tension. Mobility of the lower extremities was normal. There was no past pointing in the upper extremities; slight tremor of right hand; Romberg not absolute, slight swaying. The gait was of a staggering character, head bent to right side.

Dr. Climenko stated that we might find a temporo-sphenoidal abscess and advised the exploration of this part of the brain in case the attacks of insanity should continue, especially if the optic disk should show changes.

From this time on, for six days, the patient acted in the same manner. During the day, he would be quiet, reasonable, and well orientated. He recognized everyone and apologized to the doctors and nurses for his bad behavior on the previous night. He took food willingly but showed no interest in his surroundings. With the approach of dawn, he would begin to express great fear. He would even distrust members of his own family. He talked incessantly until foam appeared on his lips. He expressed religious fear. He said God punished him for his past deeds. He asked God to forgive him for going out with indecent girls and for having secret relations with his sister-in-law. He was constantly reciting prayers in Hebrew, at times he would refuse food, asserting that it was a fasting day. He tried to convince God that he did not commit arson when his place of business burned down. He also tried to bribe God by offering charity. He was extremely restless and tore off the dressing. His relatives urged that something should be done and almost insisted upon an exploratory operation on the brain. I refused to do this, stating that we were not dealing with a brain abscess, but with toxic insanity, which in due time would disappear.

At this time, a second neurologist, Dr. Isidor Abrahamson, was called into consultation, who saw him during his time of quietness and orientation. He gave the following report:

Left hemiparesis, mainly of the face, less in the arm and hand, least in the leg. Tendon reflexes livelier on the left side. Superficial and corneal reflexes normal. Left abdominal reflexes diminished as compared to the right. Right plantar reflex always of a flexor type, left frequently extensor, but no Babinski; same of Chaddock. Mendel-Bechterew present on the left; left adiodokokinesis.

Left upper extremity ataxic, overpointing; tremor of both hands, especially of the left. Pupils, ocular movements, normal; fundi, slight venous congestion; visual fields normal. No sensory disturbances, no astereognosis, no disturbance of deep sensibility. Psychically the patient was completely orientated as to time, place, and person, memory good, speech normal, attention normal. No evidences, at the time of the examination, of hallucinations or delusions as determined by the actions of the patient. The patient tells freely of his hallucinations and ascribes his delusions to dreamy states of consciousness.

Summary of findings: Dreamy states characterized by visual hallucinations; mastoiditis with involvement of the brain substance; clear intervals. A spinal fluid examination for cells was thought desirable. There was a strong suspicion of temporosphenoidal abscess. Further observation was thought necessary for the spread of signs and symptoms for the formation of laudable pus on the side of the involvement and an exploratory operation when this appeared. After this report for the following two days the attacks of insanity continued. His relatives urged me to perform an operation of the brain. This I refused to do. Spinal puncture showed the fluid to be under moderate pressure with a negative Wassermann. The cytology was normal and no bacteria were present. The fluid was clear and one plus for globulin.

Gradually the patient became more and more sensible at night and would talk less, falling asleep when exhausted. During the day he would even read the newspapers intelligently. He soon had perfectly quiet nights. He now recollected with fear all of his delirious acts, explaining that he heard threatening voices, saw faces and people (dead and living) calling him and God who appeared to him asking him to lead a more religious life.

On November 20th, he was discharged from the hospital. The mastoid wound was dressed a few more times and was totally healed on December 8th. On December 10th I sent the patient back to Dr. Abrahamson, in order to have him make a neurological examination. He gave the following report: Subjectively: Slight blurred vision occasionally, especially at home, perhaps some dizziness, no tinnitus, no diplopia. Sleeps poorly, awakens after a few hours of sleep and finds it hard to fall asleep again. Bowels somewhat constipated. Physically the patient is subjectively and objectively normal. Physical examination: The right pupil is larger than the left, both react normally. Insufficient convergence O. D. The right eye is more prominent. Upward rotation of the right eye more than the left; right aperture larger than left. Weakness of left lower two thirds of the left facial innervation, seen especially when laughing. The jaw jerks were lively, jaw to left and downward, chin to the right, head flexed on left shoulder. Grips, right stronger than left. Tendon reflexes lively and equal; abdominal reflexes lively and equal; plantar reflexes normal and equal. The fundi oculi were normal; no corneal anesthesia. There was no Romberg, no ataxia, no tremors, no pastpointing. The power in

the lower extremities was equally normal. Nystagmus easily induced on rotation, especially when rotating to right; nystagmus to left.

SUMMARY.

Little was left that was pathological as far as the central nervous system was concerned. The deviations from the normal in the right eye may have existed prior to the mastoid and cerebral involvement. There was at this time no evidence of mental disease. I would regard the entire picture presented by the patient at my first examination, as composed by two components: 1, a local edema of the temporosphenoidal lobe; 2, general toxic manifestations in the course of septic disease. With the recession of the focal edema most of the focal signs vanished. With the recession of the infection, the infectious toxic signs vanished.

The following laboratory findings were found during the stay of the patient in the hospital: Cerebrospinal fluid, as reported. Urine was examined daily during the period of actual delirium; it showed albumin and a few hyaline casts. Blood: White blood count first 12,000, gradually decreased to 9,000. Differential count was at first eighty-two polynuclears, which gradually decreased to seventy-five. The blood Wassermann was negative. The temperature varied from 99° to 101°. The variations were irregular and apparently not coinciding with the variations in mental equilibrium. The pulse varied from 76 to 95, only once reaching 100, respirations, 22 to 26. An inquiry into the patient's life elucidated the fact of the fire which destroyed his place of business, for which he collected insurance and for which he was falsely accused of arson. There also seemed to be quite some foundation for the sins which he tried to bribe God, during his attacks of insanity.

CONCLUSIONS.

The following conclusion may be drawn from the report of the case: Attacks of insanity following mastoidectomy, especially with exposure of sinus or dura, are of toxic origin. The contents of the hallucinations and delusions point also to a psychic cause or rather susceptibility, which was founded on certain suppressed wishes and fears that occupied the patient's unconscious state previous to the operation. The otologist should therefore also have some understanding of the psychoanalytic side of the problem.

Previous to any operation, especially on structures near the brain, an investigation of the patient's psychic status should be made. In case such postoperative attacks of insanity occur, mind rather than matter will then be regarded at fault. Disregard for the psychic aspect of the problem may incorrectly lead to the assumption of a temporosphenoidal abscess being the cause of these attacks of insanity may lead to an unnecessary exploration of the brain.

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64 EAST NINETY-FIRST STREET.

TECHNIC OF THE SIMPLE MASTOID OPERATION.*

By C. M. SAUTTER, M. D.,
New York.

To perform the simple mastoid operation today means to exenterate thoroughly all the cells of the mastoid bone. To be content with merely removing the cortex and draining some of the cells is to subject your patient to a course of long delayed resolution, possibly a chronic discharging ear, impaired hearing, and the necessity for a secondary operation. It has been said that the complete obliteration of cells should not be done, as the mucous membrane is essential to the formation of granulations. This conception tempts an operator to leave diseased areas with a prolonged period of healing, rather than a quick resolution.

Cells vary as to number and size. In the sclerotic type, where the cells are usually confined to the antrum, or where the lateral sinus is far forward, simply gaining entrance to the mastoid antrum oftentimes suffices for drainage alone. But in the diploetic or the pneumatic type, where the cells are sometimes very extensive and numerous, it is imperative to remove all the cells, even at the risk of injuring dura or lateral sinus. Obviously it is of considerable surgical importance to appreciate the type of bone that you are contending with.

When no complications have arisen prior to the mastoidectomy, it is a comparatively safe operation when in capable hands. An early recognition of the virulence of the infecting organism and the appreciation of the clinical symptoms materially aid in lessening the number of postoperative complications. On the two surgical staffs that I have been associated with, the New York Eye and Ear Infirmary and St. Luke's Hospital, the mortality rate has been less than one half of one per cent.

THE PREPARATION OF THE PATIENT AND THE POSITION OF THE OPERATOR.

The usual preparation consists of shaving the hair about the ear for a distance of three inches, painting the surface with a fifty per cent. solution of iodine and alcohol, then wiping with ninety-five per cent. alcohol. In a female patient it is well to apply a narrow strip of adhesive along the margin of the hair line so as to aid in keeping the hair free from the operative field.

The operator assumes his position at the head of the patient, shifting only slightly to each side of the patient when curetting, but never working from the foot of the patient. In taking this relationship he will be less likely to injure the dura and incidentally will consume less time in operating.

Incision.—Palpate the mastoid tip. Then start the incision from a point slightly below this prominence in a curved line upward to the top of the auricle so that at midline the incision is about a quarter inch back of the attachment of the auricle and more forward at the top so as to avoid the fibres of the temporal muscle. The cut should be quickly carried through the skin, subcutaneous tissue, and the periosteum. The quicker this is done

and the elevation started, the less hemorrhage. Any spurting vessels may be clamped at this time. If there is much edema of the parts, it may be necessary to make another incision at right angles to the original one, extending an inch posteriorly on a line with the external meatus. Sometimes as the operation proceeds you find the cells so extensive that this posterior incision may be necessary. The object is to get a good free exposure first.

Elevation.—This should be done so as to expose the whole of the mastoid process from the tip to the top of the auricle, and forward so that you may see the superior and posterior walls of the bony meatal canal. At the tip the muscle fibres of the sternomastoid are inserted so that one finds it more difficult to elevate here.

Exposure of mastoid tip.—The fibres of the sternomastoid should be cut with a small, slightly curved scissors. In doing this hug the bone very closely, especially in front, so that you may not accidentally cut the facial nerve in an anomalous position.

Expose and outline triangle to learn position of mastoid antrum.—With a small elevator gently push forward the auricle so that you may see the superior and posterior walls of the bony meatus. Then draw an imaginary horizontal line tangent to the superior wall of the meatus and a tangent line from the posterior wall. The intersection of these two lines will form a triangle which, when penetrated to a depth of one half to five eighths of an inch will enter the mastoid antrum. To know the landmarks is to know where your antrum is, and no operation is complete without its accessibility. Some operators speak of the spine of Henle as a guiding point, but this sometimes is very rudimentary and oftentimes not perceptible. Another triangle that is sometimes used is that bounded by the temporal ridge above, with a tangent line from the posterior canal wall. This, however, often impinges on a low dura or a far forward sinus. The dura very seldom comes as low down as the superior meatal wall line. A mistake that may be made is to make insufficient exposure of the bony meatus and infer the spine of Henle to be the upper wall. In doing so, the antrum is sought at a lower level, and with the added danger of injuring the facial nerve in its course just below the level and external to the horizontal canal.

Removal of cortex.—A gauge is used in the removal of the cortex, starting from the superior canal line above down to the tip, keeping close and parallel to the posterior wall. On inspection sometimes you may observe a very superficial sinus, so that discretion must be exercised in the successive removals of cortex shavings. In two cases I have seen the sinus covered by a thin plate of bone no thicker than the finger nail. The better plan is to adhere to one groove until you strike cells. If the cortex is found to be quite thick, you may remove more posteriorly.

Removal of the mastoid tip.—In adults or children more than five years of age the removal of the tip is next indicated, for the reason that you may learn to know the position of the lateral sinus with less possibility of injuring it. In every com-

*Demonstrated before the Clinical Congress of the American College of Surgeons, New York, October 20, 1919.

plete simple mastoidectomy in adults the tip must be removed in its entirety down to the digastric muscle, for oftentimes there are several strata of cells present that you may otherwise overlook. The tip frequently harbors free pus when no other portion of the mastoid does. Some surgeons approach the mastoid antrum first, but, especially for beginners, I believe this to be the more difficult procedure. An injury to the sinus at the very start of the operation may cause considerable delay and anxiety to the operator. Of course, both the antrum and the tip must be exenterated in any complete or successful operation.

Gain entrance to the mastoid antrum.—With the given landmarks the antrum may be attained by the combined use of a narrow gauge and small Spratt curette. The latter may be used in boring fashion directly downward and slightly inward. A fine silver probe may be used at intervals to determine the earliest presence of the antrum. The probe should be curved at the tip and, when introduced, directed anteriorly so as to enter the aditus. When in position it will feel semifixed. Another advantage of standing at the head of the patient is that in determining the position of the antrum you will be less likely to dislocate the incus, the short process lying at the lower level of the floor of the antrum.

Removal of all cells.—For convenience of exenterating the mastoid the cells may be classified in five areas. These, when curetted and coalesced, remove every vestige of disease. First, the tip cells. Secondly, after gaining the antrum, lying posteriorly and straight back from the superior canal line, are the cells lying just above the sinus, or the suprasinus cells. Third, the zygomatic cells. Fourth, the infrasinus cells or those lying just below the sinus. And last, the postsinus cells or those lying behind the sinus. These cells are always constant in every pneumatic bone and in some of the diploetic type, and are always to be looked for. The various sizes of Spratt's and Richards' curettes may be used. The former should be held between the thumb and forefinger as a fulcrum and with a slight rotary or turning motion of the handle, the force of the side of the bowl is directed against the cellular bone, but always away from either the sinus, dura or facial nerve. The Richards curette may be held as you hold a pencil, to smooth off the cells, especially over the sinus plate and along the posterior canal wall. It is better to attack the cells above and below the sinus first, so you may orientate yourself more easily as to the position of the lateral sinus, and be comparatively free from injuring or exposing it. As soon as you have an overhang this should be removed before proceeding further, as curetting in the dark may cause some damage. The overhang may be removed by use of the gauge or the rongeur. From time to time a ring curette or probe may be used to determine the presence of cells, dura, sinus or facial nerve. When completed, the cavity should be perfectly smooth. The antrum cavity must have no impending bone, especially in the zygomatic angle. All ridges or elevations must be exposed for the presence of buried cells. The antrum above must be perfectly

smooth with the dural plate and all necrosis or granulations removed from the floor and the ivory appearance of the horizontal visible. To curette the aditus may dislocate the incus below, and if made too large is to make your patient more susceptible to reinfection, especially in children.

Exposure of sinus or dura.—The accidental exposure of either of these structures during the operation is quite common and often present from disease. In either case the exposure should at least be made as large as the little finger nail, as a free area of drainage is deemed more safe from postoperative infection. This may be done by a small curette, but deferred until near the completion of the operation. Iodoform gauze should always be held in readiness in case of an accidental injury to the sinus. A roll of gauze quickly applied and held in position for about five minutes will usually stop the hemorrhage. In case of injury to the dura it is better to make a crucial incision at the point of traumatism. The free drainage made will be less likely to cause a meningitis.

Packing.—Iodoform gauze is used for packing. If either sinus or dura has been exposed, a strip may be placed over each area and allowed to terminate freely from the lower portion of the wound. One strip may be placed in the antrum.

Closure.—Two thirds of the wound may then be closed with the Michel metal clamps or silk worm sutures. The gauze strips may protrude from the lower third of the wound.

Aftertreatment.—The outer dressing should be changed the next day, as it will add to the comfort of the patient. Usually on the third day the complete dressing may be changed and the clamps removed. Thereafter daily dressings should be made for about ten days, depending on the profuseness of the discharge. The packing should be light, and after fourteen to twenty-one days removed. No irrigations are necessary. If the patient has been thoroughly curetted, three to six weeks will form complete resolution. Too insistent and firm packing has a repressive effect on the growth of healthy granulations, and has the tendency to cause the formation of deep postoperative cavities.

11 EAST FORTY-EIGHTH STREET.

Endoscopy.—C. J. Imperatori (*American Journal of Surgery*, May, 1920) states that in order to perfect one's technic in endoscopy, continued practice is essential. An occasional endoscopist can do great damage to the parts and even cause death. While the mechanical manipulations of the instruments and apparatus require practice, the eye must be repeatedly viewing the internal structures of the larynx, trachea or esophagus in order to appreciate the findings. Parenthetically, the contention of the older laryngologists that the indirect method has become a lost art is hardly true, for this method will always be practised. The common notion regarding endoscopy is to associate it with the removal of foreign bodies. While this is a brilliant and spectacular procedure, still the use of endoscopy as a means of diagnosing and treating diseases of the upper air passages and esophagus is assuredly an advance in medical progress.

FOUR PATIENTS WITH CYSTS OF THE LARYNX OPERATED UPON UNDER SUSPENSION LARYNGOSCOPY.*

BY WOLFF FREUDENTHAL, M. D.,
New York.

The question almost everyone is likely to ask in referring to this series of cases is: How did it happen that in one short term of service four such cases were seen? I am sure I am quite as unable to answer this as another question, viz.: How is it that in my present term of service ten patients presenting all grades of tuberculosis of the tongue were seen, while at other times we may have to wait a year before seeing a single case? Lacking any other explanation this phenomenon may be called the law of multiplicity.

Coming to the theme of our discussion, the four patients were all suffering from pulmonary tuberculosis, and that may perhaps account for the fact that in all cases we encountered more than the ordinary amount of bleeding, and in one case a severe hemorrhage. Permit me to give you the histories.

CASE I.—G. R., forty-eight years of age, a tailor born in Russia, suddenly became ill three years ago. He complained of shortness of breath, also cough and expectoration. He was taken to Bellevue Hospital and then to the Metropolitan Hospital, where he remained for twenty-two months. His weight decreased to seventy pounds. For the last year his appetite was poor and the shortness of breath was pronounced.

March 1, 1918, I saw him for the first time, and was struck by the marked difference between the small area affected by his pulmonary condition and the great dyspnea. The patient also complained of pain upon swallowing. On examination it was found that both conditions were due to a large, sessile mass on the left side of the lingual surface of the epiglottis, apparently a cyst. This neoplasm pressed the epiglottis down to such a degree that the difficulty in breathing could easily be understood. The vocal cords were free and there was no ulcerative process going on in the larynx. He was placed under suspension laryngoscopy and the entire mass was easily removed with Killian's forceps. There was little bleeding, but some pain for about a week.

June 3, 1918. The cyst apparently had not been entirely removed since a recurrence had taken place, and the patient complained both of dyspnea and dysphagia. The mass was again removed under suspension, and the patient allowed to sit up, when suddenly he commenced to bleed profusely. The ordinary measures were immediately taken, but without avail. The danger of a *Schluckpneumonie* had to be kept in mind, so we lost no time, and placed him again under suspension. The method employed was in accordance with Killian's original advice, viz., with the head hanging down. That procedure proved to be of great benefit. Since the blood could no longer run down into the larynx, he quieted down and the work was much easier. Adrenalin and ferropyrin stopped the hemorrhage

somewhat, but blood was still oozing from two or three spots. The galvanocautery point was then applied, which not only arrested the bleeding, but also prevented a recurrence of the cyst. This time the patient had been under suspension forty minutes. The reaction that followed was severe, but was practically over in five days. The patient soon gained in weight and had no more dyspnea or dysphagia.

The microscopical findings were of interest. The preparations showed a large space filled with blood and lined by structureless, somewhat necrotic tissue. Surrounding this zone of necrotic tissue there were bundles of striated muscle fibres on the surface of which there is a layer of stratified, squamous epithelium, supported by a stroma of connective tissue. In the latter there are imbedded several mucous glands and the cystic ducts. The diagnosis of hemorrhagic cyst was made.

September 1, 1918, the patient was discharged, his pulmonary condition improved. There was no recurrence of the cyst.

It is my conviction that if suspension laryngoscopy with the patient's head hanging down had not been employed it may have proved extremely difficult, perhaps impossible, to control the hemorrhage. I therefore feel inclined to recommend this position for similar operations. The dysphagia in this case was of a different nature from that of laryngeal tuberculosis, and although there was some pain present, the difficulty was more mechanical than sensory.

CASE II.—P. S., a carpenter, was admitted to the hospital with a doubtful diagnosis of pulmonary tuberculosis. He had been hoarse for more than a year, and that indicated tuberculosis. Tubercle bacilli, however, were found later, and a positive diagnosis was established. The laryngeal examination did not reveal any evidence of the disease, except that signs of a chronic laryngitis were present. However, a rounded, yellowish tumor, with blood vessels on its surface, was seen occupying almost the entire space between the tongue and the epiglottis. It seemed to have its origin in the centre of that space and only occasionally gave rise to slight dyspnea. On examination with a probe, fluctuation was felt and the diagnosis of a cyst made certain. In this case, too, we considered it best to operate as in the previous one. The patient was not easily managed, and several attempts were made before a good view could be obtained. After that the grasping of the cyst and its removal were done in a short time. Pure carbolic acid was then applied to the wound. It bled a little periodically for several hours. There was no recurrence after six months. The specimen proved to be a cyst. On pressure cheesy material escaped from it.

CASE III.—W. S., aged fifty-two, tailor, was a heavy drinker and smoker up to the beginning of his sickness, that is, two years ago. He is now suffering from pulmonary tuberculosis. When I examined him I found slight bleeding from the retropharynx, due to some varicose veins in that region. There were infiltrations and ulceration of the posterior commissure of the larynx and a small ulcer on the free border of the left cord. The most important

*Read at the Second Annual Meeting of the Association of American Peroral Endoscopists, Brooklyn, June 5, 1919.

finding, however, was the presence of two neoplasms, one on each side of the epiglottis in the fossæ glossoepiglotticæ. They were a little larger than lima beans and pearly greyish in color.

After treating the laryngeal condition for a time the patient improved, the ulcer of the cord healed, there was hardly any dysphagia and no bleeding. He was operated upon under suspension laryngoscopy on October 15, 1918.

The right mass was removed with practically no bleeding. After excising the other body, he bled profusely, but his head was kept down and the bleeding stopped. I feel sure that the patient did not get a drop of blood into the larynx, excepting perhaps after he was allowed to sit up. But then the quantity was so small that it was negligible. In this case the appearance, two weeks later, of a round, well circumscribed ulcer of about the size of a ten cent piece on the left side of the pharynx seemed remarkable. After applying the chloride of zinc (fifteen per cent. solution) the ulceration healed nicely. What was the cause of the ulcer? Was it a traumatism due to suspension? I am unable to give a positive answer, although it must be admitted that it could not have been tuberculous, or it would not have healed so quickly.

CASE IV.—N. S., aged thirty-five, whose anamnesis was not important, had been suffering from pulmonary tuberculosis for the past four years, but was hoarse long before that. He had had his tonsils removed in order to cure his lung affection, but did not notice any benefit from it. The last physician by whom he was examined told him that he had a tumor in his throat. On looking into his larynx I found a most interesting picture. The left vocal cord was covered by a whitish grey mass. It was so big that only the posterior end of the vocal cord was visible. At this point one could notice how the tumor turned outward, i. e., into the ventricle.

The patient was operated upon under suspension laryngoscopy. After I had grasped the mass with a strong forceps a white, seropurulent fluid escaped. Here again we encountered some bleeding, but it was of no consequence. His voice became clear afterward, and when he left the hospital, several months later, there was no sign of recurrence. Microscopical diagnosis: retention cyst.

In reviewing these cases I would remind you of the excellent work that has been done in this field by men like Chiari, Glass, Greene, Beck, New, Chamberlin and others. I agree with the last named colleague, who says that "one cannot but be impressed with the difficulties which confronted the operators in earlier days, especially in children, and the boon to patient as well as operator, which suspension laryngoscopy affords." I feel that the life of the patient with the hemorrhagic cyst was certainly saved through this method of Killian's. The hemorrhage was of such a nature that we would have had a most unpleasant task, to express it mildly, had we operated by any other method. I repeat that the bleeding in all these cases was unusual, and I attribute this to the fact that they all were suffering from pulmonary tuberculosis.

AN UNUSUAL CASE OF INJURY TO THE LARYNX.*

BY FIELDING O. LEWIS, M. D.,
Philadelphia.

CASE.—Fred Wilson, aged sixty-two years, married, American born, occupation iron worker, was referred from the Midvale Steel Works at Coatesville, Pa., in August, 1918, with the statement that on the previous day, while performing his usual work of rolling out sheets of hot steel a small fragment of steel flew off, striking him in the neck. Shortly after the injury he experienced great difficulty in breathing, and had a spasmodic cough and severe pain in the region of the wound. After a sleepless, anxious, and uncomfortable night, he was brought to the Jefferson Hospital. On admission the patient presented the cardinal signs of laryngeal stenosis; an anxious expression, husky voice, a well marked cyanosis, recession of the accessory muscles of respiration, and complained of difficulty in swallowing.

On examination there was found a small cut to the left of the median line of the neck, extending through the left wing of the thyroid cartilage, through which a small quantity of air was escaping. There was some emphysema in the tissues of the neck. Indirect examination of his larynx showed the arytenoids were swollen, the left immovable, the vocal cords could not be seen, and the lumen of the larynx was greatly narrowed.

He was immediately placed on the operating table and tracheotomy performed, in the usual manner, under local anesthesia. The foreign body could not be detected by probing. As there was difficulty in swallowing, a Jackson esophagoscope was passed, and the wall of the esophagus found normal. Direct laryngoscopy was also performed, with negative findings as to the foreign body. Two days after tracheotomy, Dr. Bowen reported the x ray findings as follows:

"In the fluoroscope a dense triangular foreign body was seen to the left of the midline in the soft tissues of the neck. It lay anterior to the esophagus. The plates show in addition that the foreign body was located in a plane with the left transverse process of the fifth cervical vertebra. It lay in a slightly oblique direction with the more blunt end pointing backward. A residue of barium coated the walls of the esophagus. While the anterior wall was somewhat roughened above the foreign body it had evidently not penetrated, as the barium did not escape into the surrounding soft tissue. The shadow of the trachea and larynx was so much obscured by the laceration that it could not be clearly defined in the pictures."

Following the x ray findings, an incision was made through the soft tissues of the neck, at the point indicated by the x ray report, and the dissection extended down until the esophageal wall was seen and recognized. Fearing damage might result from too extensive dissection, the search for the foreign body was discontinued for further x ray study.

*Read at the Second Annual Meeting of the Association of American Petoral Endoscopists, Brooklyn, June 5, 1919.

The findings being the same as before, the wound was again cocaineized and by means of the fluoroscope and a probe it was seen that the previous dissection had just stopped short of the foreign body, which was lodged between the larynx and esophagus. It was removed with little difficulty. On account of the marked inflammation caused by the entrance of the hot metal, it was necessary to leave the tracheotomy tube in position for several weeks.

When last seen, in May of this year, the tracheotomy wound had completely healed. There was fixation of the left side of the patient's larynx, with some narrowing of the lumen. He is now working and enjoying good health, with the exception of some dyspnea on marked exertion.

Conclusion: My reasons for presenting this case are: First, the unusual injury. Second, the injury was of such a nature as to produce a semitracheotomy, which I feel saved the man's life; third, the position in which the foreign body was found, with no injury to the esophagus; fourth, demonstrating the valuable aid of the x ray and fluoroscope in foreign body cases.

CANCER OF THE LARYNX REMOVED BY THE INDIRECT METHOD.

By MILTON J. BALLIN, M. D.,
New York.

There is no pathological condition in the larynx which causes so much concern to the laryngologist as a malignant growth. The finding of such a tumor is invariably associated with a most hopeless prognosis and one fraught with the gravest concern to our patient. Yet, as one reviews the literature on cancer of the larynx, one does read of an exceptional case in which an operative procedure has allowed us to assume a more hopeful view of this distressing condition, and in which an occasional cure has been attained. To be sure, such a cure has been achieved only when the growth was recognized in its incipient stage, and before the deeper structures of the larynx and glands of the neck had become involved. Such growths are generally situated somewhere along the superficial layers of the true vocal cords, and have not as yet extended into the deeper underlying structures. When, on the other hand, these deeper parts become involved, the process has already taken a firm hold and has shown a tendency to spread. Such a condition tends to render the prognosis more unfavorable, and allows one to hope for an ultimate chance of success only by a complete or partial laryngectomy. In epitheliomata of the larynx, on the other hand, in which merely the superficial layers of the cord are involved, one may be fortunate enough to remove the growth completely by the indirect method, and thus bring about an arrest and ultimate cure of the process. I operated upon a patient in this condition almost three years ago, in whom the growth was completely removed by the indirect method, and there has been no recurrence up to the present time. The case is most instructive, and is briefly as follows:

CASE.—Mr. I. W. L., forty-two years of age, was referred to me in May, 1917, by his physician, Dr. M. Taschman. The patient was a robust individual who always enjoyed the best of health. In April of that year he caught cold and noticed a gradual loss of voice. He was under the care of Dr. Taschman and a thorough examination of his chest did not reveal any signs of tuberculosis. There was no history of syphilis and a Wassermann test likewise proved negative. As the hoarseness persisted and grew worse he was referred to me for a laryngological examination. I found his cords greatly inflamed and infiltrated and covered with thick mucous secretion. The edges of the cord were thickened and irregular, but showed no impairment in mobility. The inflammatory process was confined to the true vocal cords, and the entire clinical picture gave the impression that it was an ordinary case of subacute laryngitis. He was treated two to three times a week for several weeks with the ordinary mild astringent instillations and inhalations, so there was a gradual improvement in the inflammatory condition, with the exception of a small polypoid elevation about the size of a pea which remained in the anterior portion of the left vocal cord near the anterior commissure. The hoarseness was still pronounced owing to the mechanical obstruction of the growth, and suspecting that I was no longer dealing with a chronic inflammatory thickening, I decided to remove it. On August 27, 1917, after a thorough cocaineization of the larynx, I removed the growth by the indirect method, and sent the specimen to Dr. E. P. Bernstein for pathological examination. His report was as follows: "The examination of the tissue removed from the vocal cord of Mr. I. W. L. showed the typical picture of an epithelial carcinoma (epithelioma)."

I was astonished at this report and had the unpleasant task of imparting the nature of the ailment to the patient. Realizing the seriousness of his condition he consulted various laryngologists, who assured him that there was no longer anything visible on his vocal cords, as apparently the growth had been entirely removed. The patient still being skeptical, and of a very neurotic temperament, took the slides to Dr. H. T. Brooks, who likewise pronounced them epithelioma or squamous celled carcinoma. Convinced that we were dealing with a malignancy, the question was what to do next. The patient refused to submit to a major operation, and as his throat assumed a more healthy appearance, and his voice had almost returned to normal, I advised him to have nothing done for the present. I impressed upon him, however, that if there were the slightest signs of recurrence he would have to undergo a more extensive operative procedure. I have kept him under close observation for the past two and a half years, and up to the present there has been absolutely no signs of recurrence.

My reason for reporting this case is that occasionally cases, which are regarded clinically as being benign and in which no pathological examination has been made, have been in reality of a malignant nature, having been cured, as in this case, by intralaryngeal removal, the sur-

geon being ignorant of the true nature of the affection. A case like the one detailed here emphasizes the importance of having every section removed from the larynx examined pathologically, and not to rely on the clinical picture alone, for, as in this very case, the small tumor had the appearance of being benign until the laboratory report proved otherwise.

When a case terminates as the one cited, in which repeated examinations over a long lapse of time, namely, two and a half years, do not reveal any sign of recurrence, I think we are justified in assuming that the process has been arrested and that we are dealing with a cured case of cancer of the larynx.

108 EAST SIXTIETH STREET.

THE VOICE AND THE LINGUAL TONSIL.

By PAUL V. WINSLOW, M. D.,

New York,

Attending Laryngologist Brooklyn State Hospital, Instructor in Diseases of the Nose and Throat in the New York Post-Graduate Medical School and Hospital.

At the base of the tongue, on each side of the middle line, behind the circumvallate papillae and just in front of the epiglottis, there is an area of lymphoid tissue known as the lingual tonsil. Being subject to the same pathological changes that are characteristic of other structures in this region, this lingual tonsil may be found upon examination to have become hypertrophied and may also be either acutely or chronically inflamed. When this condition is present, there is an uncomfortable feeling in the throat, which causes coughing, hawking, and a frequent desire to swallow, and usually there is hoarseness and an interference with the voice, which necessitates clearing the throat before speaking or singing. All these disagreeable symptoms can be relieved by removing the lingual tonsil.

The following is a report of three cases which were sent to me for examination and treatment:

CASE I.—Woman, twenty-eight years old, soprano singer, who had studied in Germany and Italy for eight years, was sent to me on account of an uncomfortable feeling in the throat, hoarseness, and an inability to reach the upper tones in her range. While in Germany she had a portion of her left middle turbinate removed, which resulted in a marked improvement in the voice resonance. On examination I found a marked hypertrophy of the lingual tonsil, which was also chronically inflamed. I removed this growth, whereupon the uncomfortable feeling in the throat, the hoarseness and the difficulty in reaching the high tones disappeared.

CASE II.—Woman, twenty-six years old, contralto singer, was sent to me because of hoarseness, an uncomfortable feeling in the throat, spreading of the voice, and singing off pitch. On examination I found a large mass of lingual tonsillar tissue at the base of the tongue, pressing down the epiglottis and interfering with the sound waves coming from the larynx; associated with this tonsillar condition was a mild pharyngitis. I removed the lingual tonsil with the result that the discomfort

in the throat was relieved and the singer regained complete control of her voice.

CASE III.—Woman, twenty-five years old, a school teacher, was sent to me suffering from a hoarse, rough voice. She complained of undue fatigue following any extended effort to talk. This patient had been operated upon by two specialists, one doing the nasal septum operation and the other removing her tonsils, without effecting any improvement in her voice. On examination, I found, just as I had in the other two cases described, a large mass of lingual tonsillar tissue. I removed this and in less than two weeks this woman had a perfectly normal voice.

These are just a few of the many cases which I have encountered in my practice wherein the lingual tonsil has been the primary cause of faulty tone production. Many actors and singers continue to suffer from this trouble without having it corrected. When a closer cooperation exists between vocal teachers and teachers of elocution and the laryngologists, the public will have the pleasure of hearing voices whose beauty is not marred by removable defects.

SOME ENDOSCOPIC MISHAPS.*

By H. ARROWSMITH, M. D.,

Brooklyn.

A child aged three years was referred to me by Dr. N. L. Wilson. Three weeks previously it had swallowed a twenty-five cent piece. Several unsuccessful attempts at removal had been made. There was considerable reaction due to the traumatism, but there was no particular difficulty in seizing and extracting the coin. No anesthetic was used and the child was put to bed and slept quietly through the night. At intervals it took a total of twelve ounces of milk. In the morning it was bright and lively, was bathed and played with the nurse who made its toilet.

I was in the hospital that morning and was summoned in haste at about nine o'clock. I reached the child in less than three minutes and found it dead. Immediate esophagoscopy examination showed the esophagus intact, no evidence of new traumatism and nothing to explain the sudden death. There had been no cyanosis. The trachea was unfortunately not examined, so it is possible that there may have been some thymic enlargement.

A child, aged two, was seen April 1, 1919. Twenty-four hours previously it had inhaled an open garter pin; a safety pin with an extra wire loop to which the garter is fastened. Without anesthesia the foreign body was seen immediately below the vocal cords. There was already considerable tumefaction and it was impossible to manipulate any sort of forceps so as to engage the pin and close it. (I am inclined to think that Hubbard's shield hook would have solved the problem.) Under light chloroform anesthesia a tracheotomy was done by a laryngological confrère who was greatly hampered by a very dull knife; during this procedure the pin was displaced down-

*Read at the Second Annual Meeting of the Association of American Peroral Endoscopists, Brooklyn, June 3, 1919.

ward and on lower bronchoscopy was seen to be in the trachea and right main bronchus. Rather unduly persistent efforts were made to extract it and finally the attempt was abandoned to be resumed later. The child died the next morning apparently from shock.

In this case more than an hour was consumed in the attempted removal, the patient being under anesthesia about half the time, far too long an attack under the circumstances. The lesson seems to be that if a foreign body in the larynx or high in the trachea cannot be removed from above, its displacement should be guarded against during the performance of an external operation.

170 CLINTON STREET.

REMOVAL OF FOREIGN BODY FROM THE BRONCHUS.*

By WILLIAM B. CHAMBERLIN, M. D.,
Cleveland, Ohio.

CASE.—The patient, Pearl S., white, aged eighteen, was referred to me in September, 1914, from the medical service of Lakeside Hospital. She complained of headaches, extreme nervousness and bronchitis for the past three or four years. The latter had been extremely severe for the past month, with paroxysms of coughing, lasting frequently an hour, and accompanied by the discharge of a thin yellow and very offensive pus. There were frequent and prolonged attacks of headache, relieved by cold packs. Physical examination by the medical service was as follows:

Lungs.—Costal angle narrow; left chest moved decidedly better than right, the latter moving but slightly on respiration, vocal fremitus increased throughout the entire back; percussion note decidedly dull throughout right chest, hyperresonant in back on left, except at apex and base where it was dull. On auscultation many râles of all kinds were found throughout entire chest; at the angle of the right scapula the breath sounds were very close to the ear and cavernous in type.

Heart.—Upper border of cardiac dullness at lower edge of second rib; left border at 11, 12 and 12.5 centimetres from midsternal line in third, fourth and fifth interspace respectively; right border at 4.5 centimetres. Retrosternal dullness increased to right.

Extremities.—Marked clubbing of fingers, slight clubbing of toes, with slight cyanosis of nails.

X ray.—Showed foreign body in right lower bronchus with well defined abscess cavity around it.

Operation.—September 25, 1914, at Lakeside Hospital. The anesthesia was difficult on account of the extreme cough and frequent discharge of thin and extremely foul pus. Thirty minutes after introduction of the tube, owing to the profuse discharge of pus, a foreign body was located in a large abscess cavity in the right lower bronchus, thirty-five centimetres from the teeth. With extreme difficulty, owing to the discharge of pus, this was grasped with extension forceps and withdrawn with the tube, a profuse discharge of extremely foul pus accompanying its withdrawal.

The patient was admitted to the hospital on two different occasions, an interval of two months intervening. An operation on first admission was refused. A comparison of chest signs after operation with those on previous admission showed a slight increase in size of the abscess cavity at the angle of the right scapula. Anteriorly it was apparently smaller. On first admission the physical signs of these cavities would vary with the amount of pus expectorated and could be clearly made out after a prolonged spell of coughing.

The progress after operation was uneventful, the patient leaving the hospital at the end of one week. She was kept under observation for three months subsequently, when she disappeared and could not again be located. On last examination there was a marked decrease in cough, both as to frequency and duration of paroxysms. There was still a discharge of pus, but markedly decreased in amount as well as offensiveness. Her general health was much better. It is a matter of extreme regret to me that she could not have been kept under examination for a longer period.

Careful questioning subsequent to the operation elicited the following interesting history. At ten years of age (eight years before operation) she remembered having a metal clip in her mouth and that it slipped down her throat. This was followed by a prolonged spell of most violent coughing, lasting, according to the story of the parents, at least an hour. When shown the foreign body the patient recognized it as one which she had purchased with some candy at a corner drug store.

This case illustrates the great value of the history in all foreign body work and also the extreme importance of x ray examination, even where a foreign body may not be suspected.

OSBORN BUILDING.

AN UNUSUAL FOREIGN BODY IN THE ESOPHAGUS.*

By C. J. IMPERATORI, M. D.,
New York.

The radiographs in this case show a wire within the esophagus. This wire, a heavy copper one, was ten inches long, the upper end of it being located just above the bronchial crossing, while the lower end was in the stomach.

The history of the case was that the patient had been in the habit of swabbing his throat with this wire, one end of which was wrapped with cotton. During one of these manipulations the wire was pushed down so far that attempts to get it out were without avail. Within a few hours after the accident he was seen by a laryngologist who made several unsuccessful attempts to get hold of the upper end of the wire by the indirect method. The next day he went to the Volunteer Hospital where I was asked to see him. A radiograph was taken and the foreign body located.

Esophagoscopy showed the upper end of the wire embedded in the lateral wall of the esophagus at a point about nine cm. below the cricopharyngeal constriction, that is, about twenty-five cm. from the

*Read at the Second Annual Meeting of the Association of American Peroral Endoscopists, Brooklyn, June 5, 1919.

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upper teeth. Rotating the wire and relieving the upper end from the lateral wall of the esophagus brought it into the end of the esophagoscope. As there was considerable edema and swelling of the tissues of the laryngopharynx, a seven mm. Jackson esophagoscope was used. On making attempts to withdraw the foreign body it was necessary to pull with considerable force—the lower end seemed to be firmly held.

The x ray of the lower end of the wire was not definite and the exact description of how the cotton was wound around the lower end of the wire had not been definitely described to us by the patient. From the necessary force required to pull the wire it was thought that the end of the wire was hooked in the mucous membrane of the stomach, and further attempts were not made until an x ray of sufficient clearness could be made and the patient further questioned.

The case was an exceedingly difficult one to esophagoscope and a general anesthetic was used. The surgeons in charge decided against further manipulations by the natural route and decided to do a gastrotomy. This was done the following day and the wire removed. However, the patient died thirty-six hours after the operation from pulmonary embolism.

The reasons for reporting this case are: 1. The unusual length of this foreign body and the method of entrance; 2, the unsuccessful attempt at removal because of the conditions noted. Examination of the lower end of the cotton wound wire after its removal by gastrotomy showed a mass of cotton—pear shaped—five cm. long and three cm. at its greatest diameter. The cotton mass undoubtedly was held by the cardiac constriction; 3, the final outcome of the case.

17 EAST THIRTY-EIGHTH STREET.

CONSERVATIVE NASAL SINUS SURGERY.

By M. S. ITTELSON, M. D.,
Brooklyn.

Assistant Surgeon, Manhattan Eye, Ear, and Throat Hospital.

There are cases of sinus disease where the indications for operation are clear. These consist of the more serious types in which severe symptoms are manifested which are due to defective drainage. The good result which followed some of these operations has encouraged many physicians to treat surgically the more frequent, milder chronic conditions. Sinus surgery, which until a few years ago was the exception, is now the rule. We refer particularly to the intranasal operations; the Mosher or Faulkner method of cleaning out the ethmoid cells and the extensive removal of the nasal wall of the antrum. The sphenoid is now also held responsible for symptoms believed to be due to the involvement of the ganglia and nerves that lie close to the sinus and is also frequently approached. It is well to consider how far we are justified in doing this.

Inflammation of the sinuses is a frequent occurrence. Postmortem examinations made in cases irrespective of cause of death show that from twenty-two per cent. to forty-seven per cent. of the patients

had sinus involvement (1). If we include the mild and cured cases the proportion will be larger. The anatomy of the sinuses and their relation to the nasal chamber explains this frequency. The mucous membrane lining the sinuses is identical in structure to that of the nose, but is much thinner (2). The outer covering consists of ciliated cylindrical epithelium and the membrane is rich in blood vessels and glands (3). The frequency with which the nasal mucosa is subject to inflammation is well known.

The mucous membrane of the sinuses, being similar in structure and more or less exposed to the same influence, becomes similarly and sympathetically affected. The submucous tissue becomes infiltrated with serum and white blood cells. These pass through the epithelial covering, and becoming mixed with bacteria, dust and mucus from glands, form the discharge which escapes through the normal openings of the sinuses into the nose (4). This discharge is mucous, mucopurulent, or purulent depending on the various elements that compose it. Clinically it has some significance. Mucous discharge is seen in patients who complain of excessive sneezing and hay fever. Part of the purulent nasal discharge that occurs in children is of sinus origin. In acute colds and coryza, at first during the sneezing stage, the discharge is mucous; later it becomes purulent. Up to a certain point this sinus inflammation is a conservative reaction to various adverse irritants, and the discharge is a means by which the sinuses are flushed and kept clean from dust, bacteria and other material which would otherwise fill it. However, when this inflammatory reaction becomes excessive and there is an ulceration of the mucous membrane, bone, or nerve involvement, toxic absorption or deficient drainage, then the question of proper treatment arises.

For purposes of discussion we may divide suppurating sinusitis into two classes: 1, those with adequate drainage; 2, those where the drainage is imperfect. It is not unreasonable to draw an analogy between a suppurating mucous membrane of the sinuses and a similar affection of the mucous membranes in other places; the urethra, conjunctiva or the nose. The only surgery we can do in cases that have good drainage is to remove the suppurating area. We cannot replace the normal epithelium, and operation at best substitutes one pathological condition for another. The resulting tissue often granulates and requires a secondary operation; and when healing occurs is likely to scab and produce unpleasant symptoms. Obviously then, surgical measures are indicated only in exceptional cases after a thorough trial of conservative means.

More important, clinically, are those cases that have inadequate drainage. Proper sinus drainage depends on the action of the ciliated epithelium, size of the ostia, consistency of the fluid and on various other physical forces such as gravity, capillary attraction and syphonage (5). Any of these factors may be impaired, and we have either a temporary or permanent condition of impaired drainage. In acute cases, as a rule, this defect is temporary. Operation in these instances is contraindicated, not only for this but for a more important reason: the danger of general infection. But we can have a permanent

condition of impaired drainage where operation is not advisable. The openings of some sinuses are so situated that drainage does not begin until they are partly filled and the fluid reaches to the level of the opening. Just why the antrum drains into the middle meatus, or the ostium of the sphenoid is situated above its most depended portion, is not clear. Neither do we know why the antrum persistently resists our efforts to maintain an artificial opening, or the sphenoid to the enlarging of the natural opening. This point is mentioned by Mackenty (6). It is well to respect this natural tendency.

The sinuses do not always empty directly into the nasal chamber. The discharge from the frontal sinus may first pass into the anterior ethmoidal cells and then into the nose. The ethmoids may drain into the antrum, or the posterior ethmoidal cells into the sphenoid. We must bear in mind that sinuses may never produce symptoms even if they are filled by products of their own glandular secretion. This is more so if they are filled up by the secretion flowing in from another sinus (7). A suppurating ethmoiditis may discharge into the antrum where the drainage is permanently impaired. A Caldwell-Luc or a Denker operation under these circumstances would not relieve the suppurating ethmoid condition. Were the results of sinus surgery uniformly good, there would be little need of this more or less theoretical discussion. But the results of sinus surgery are not uniform, and it is important to recognize cases that need no operation.

The subjective symptoms are just as important as an indication for operation, and it is for these that patients seek relief. Here we are confronted with other problems. Headache, which is a frequent sign of sinus disease, may arise from many other causes. To determine definitely that it is of sinus origin is difficult in actual practice. Even if this is determined, the reason for these headaches is not clear. Sinus headaches may be due to the involvement of the mucous membrane, bone, or nerves, to toxic absorption or deficient drainage. Of late it has been suggested that a negative pressure in the frontal causes some headaches (8). The opening of the frontal sinus at the hiatus semilunaris becomes completely blocked and the oxygen within the sinus is absorbed, thus causing a frontal vacuum. We may mention here that this theory implies a total cessation of all glandular and epithelial activity of the mucous membrane within the sinus, and the actual presence of a vacuum has not been proved. These are only some of the factors that cause headaches. The result after radical operation, even after obliteration of the sinus itself, is uncertain and bears out this lack of definite knowledge. The purulent discharge is annoying, and is another frequent complaint. The discharge is usually an evidence of drainage, and, as mentioned, best treated conservatively.

Both of these symptoms may improve or disappear under treatment, and it is well to tell this to the patients, who often exaggerate their complaints. Surprisingly good results follow this simple suggestion. Many physicians will disapprove of this attitude, feeling that an inflamed sinus, like chronic appendicitis, is a source of potential harm, which at any time may assume a serious aspect (9), and

should be treated energetically from the start. When we consider the frequency of these chronic sinus affections and the comparatively rare instances where these become virulent, much of this fear is exaggerated.

Patients are often referred for examination by the internist, with a view of clearing up some indefinite toxic or rheumatic manifestation. Diagnosis of sinusitis is comparatively easy. To determine definitely that the sinus is responsible for this condition is difficult, and is often a matter of individual opinion. Conservative treatment should also be tried in these cases. As radical sinus surgery is a more extensive operation than the removal of an abscessed tooth or a suspected tonsil, it is only fair for the internist to share part of the responsibility.

Polypi in the nose are an evidence of a similar condition in the sinus. Their recurrence after removal caused many to go after them at their seat of origin. Some of these polypi spring from the orbital or cranial plate in the ethmoids, places where even the bold operators have a natural and proper timidity. They are likely to recur after the more radical and dangerous operations. A simple snare operation is harmless, often gives relief for a number of years, and when the polypi recur they can be snared off again.

The usual minor surgical methods are often efficient and well worth trying. Among these may be mentioned puncture and irrigation of the antrum. A larger opening with a Faulkner chisel may be tried later. A high deflection of the septum pushes the middle turbinate and causes it to press on the uncinate process or bulla, thus closing the infundibulum. A submucous operation under these circumstances improves the drainage and relieves the condition. An obstructive bulbous middle turbinate should be snared off: the anterior third is sufficient. Suction as recommended by Coffin, vaccine therapy, and the treatment of the general condition in many cases gives good results.

Our knowledge regarding the underlying causes of sinus diseases is constantly changing. The accepted mode of procedure today will most likely be different tomorrow. Until more has been said on this subject and the results are more uniform, many physicians will feel that the interest of the patient is best conserved when they refrain from operating until they have to, and then do as little as they can.

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THE HUMAN SCRAP HEAP.

It is an astounding and very generally unrecognized fact that the great bulk of patients are suffering from chronic ailments. This results from a large number of factors, the most prominent among which are the neglect on the part of the patient to consult a physician during the acute stage of the disease and failure on the part of the physician to diagnose accurately and treat intelligently acute conditions which frequently are mild in their incipency. Not uncommonly the physician, either by indolence or ignorance, is led into the fallacious habit of allowing time to make the diagnosis, thus permitting the change of an acute condition which might yield readily to proper treatment into one which is intractably chronic. The result is the creation, from an economic viewpoint, of a large number of subnormal persons.

Just as the farmer has learned that it is poor business to leave plows and reapers out in the weather, there to undergo deterioration, so have the captains of industry realized that it is quite as important for them to keep their operatives off the scrap heap as it is for them to maintain at an efficient standard the machinery in their plants. The development of industrial medicine and surgery, the nation wide movement for health conservation and community betterment are but expressions of the idea that, after all, the human mechanism is the most important instrument in the commonwealth. At the present time, large

employers of labor are earnestly endeavoring not only to prevent accidents in their shops and to employ prophylactic measures against the communicable infections, but to undertake as well those measures which have to do with the prevention of subnormal states through chronic infections and bad mental habits.

When it is realized, however, that most of the cripples are produced before they have reached the age of fourteen years, the whole question immediately assumes a much broader aspect and it is seen that the matter goes much further than patent physical disability and includes mental and moral disability as well. The United States Government, through the Bureau of War Risk Insurance, the United States Public Health Service, and the Federal Board for Vocational Education, has undertaken an enormous program in the financial, physical, and mental rehabilitation of those who have suffered disabilities growing out of the war with Germany. The prime object of this movement is the prevention of chronic subnormal states. The man who has received a war injury has in addition suffered an economic shock as well as a lesion of morale. Therefore, the Government offers him financial, medical, and educational assistance to the end that he may be returned to normal usefulness.

Recent legislation purposes the extension of similar benefits to those who have been industrially handicapped in civil life. In other words, as a nation, we have awakened at last to the importance of keeping our citizens off the human scrap heap, there to lead a life of underproduction which will work an untoward effect not only upon the present generation, but upon the generations yet unborn. Collectively, the medical profession of America is heart and soul behind this movement. It would seem, however, as though there was individual responsibility resting upon each practitioner. This takes the form of educating the general public to apply for treatment early, even for the most obscure and apparently slight deviation from the norm, and consequently the prompt and accurate recognition of the nature of the disease or injury in order that chronicity does not supervene. One word of caution, though, in all this movement for community betterment: It must never be applied in such a way as to undermine individual morale and transform a nation of sturdy, independent, thrifty members of society into a body politic of volitionless parasites.

THE MUSCULAR SYNDROME AND SIGN OF THE FOOT TIP IN SCIATICA.

Chiray and Roger describe the various anatomical and physiological changes in the muscles of the limb—exclusive of indirect motor disturbances—directly caused by sciatica. The muscular symptoms which are well known in traumatic or surgical sciatica have been neglected in medical sciatica. These symptoms are: muscular atrophy, exaggeration of idiomuscular contractility, hypotonia and changes of the electric contractility. These disturbances rarely end in paralysis but often result in weakness of certain muscles of the leg and foot, made evident by the sign of the foot tip. Atrophy is generally moderate in sciatica, being most evident in the leg and foot, but in the more stubborn types the thigh or even the gluteal region may be involved. The muscles present spontaneous or provoked fibrillary contractions, provoked when percussion is made and indicating an exaggeration of idiomuscular contractility. This phenomenon has been especially studied by Villaret and Faure-Beaulieu. Percussion of the gastrocnemius produces a more ample and longer contraction on the diseased side, which is especially marked following slow plantar overflexion. The Achilles reflex is diminished in weak plantar flexion. If this reflex is sought by percussing the tendon over its external aspect an abnormal flexion of the great toe ensues. These researches may be systematically carried out in other muscles and give interesting data. Hypotonia begins in the plantar aspect of the foot and is also encountered in the triceps and the muscles of the posterior aspect of the thigh. The relaxation of the latter, whose resistance is diminished, explains why there is a pseudoexaggeration of the patellar reflex.

Chiray and Roger have studied the electric excitability in 175 cases of sciatica; ninety-two presented normal reactions, while in eighty-three these were changed. Of the ninety-two cases with normal reaction, the Achilles reflex was absent in twenty-six and present in the others. Of the eighty-three cases with changed reaction the Achilles reflex was present in twenty-two. From these data it may be assumed that, according to the intensity of the morbid action, the electric excitability is often the first to decrease and more rarely the reflectivity, while in some both are involved at the same time. As to the topography of these disturbances, in twenty-four cases out of the eighty-three the changes were confined to the territory of the external popliteal, and in twenty-three the internal popliteal, while in thirty-four the domain of both nerves was involved.

There exists an evident contrast between the sensitive and muscular disturbances of sciatica, the lat-

ter being multiple, variable and proteiform, the former only presenting variations in intensity and acuity. The discovery of radiculitis has led to the notion of radicular sciatica, whose reality is proved by the topography of the sensitive disturbances, muscular and reflex changes, as well as by the success obtained from epidural anesthetic injections and the results of systematic lumbar puncture, which show that in more than fifty per cent. of the cases the cerebrospinal fluid is hyperalbuminous and usually with a discrete lymphocytosis. There therefore is an unquestionable meningeal inflammatory process with occasionally a positive Wassermann. Sciatica is consequently dependent upon some irritative action involving the radicular roots and sheaths in their intervertebral portion—the causal factor of almost all sciaticas, excepting in the very rare instances in which the roots are compressed in the true pelvis.

The etiological factors of radiculitis are most frequently syphilis, tuberculosis, and paludism, but rheumatic sciatica cannot be excluded and holds a preponderant place. But the muscular syndrome forms an integral part in sciatica, it varies in importance according to the case; it cannot serve to create a distinction between sciatic neuritis and sciatic neuralgia because they have the same etiological factors. Neuralgia is a temporary neuritis and neuritis is a neuralgia which is lasting. The indicative sign of the muscular syndrome is the sign of the foot tip, which can be elicited in all cases of sciatica of any gravity. This sign consists in the patient not being able to raise himself on the tip of his foot on the diseased side, or if he does so, it is only momentarily. This phenomenon is due to muscular impotence and not to pain. The sign of the foot tip is of great value and is present in practically all cases of sciatica of any intensity. Its absence indicates integrity of the motor neuron and consequently a favorable prognosis. Its presence indicates the existence of muscular lesions with commencing degeneration. This sign persists for a long time after the painful phenomena have subsided.

THE MANEUVER OF THE LEG IN PARALYSIS.

To the numerous signs at our disposal for differentiating organic palsies from those of pithiatic nature such as changes in the reflexes, and other signs, Prof. Barré, of Strasburg, has added a new one that he calls "the manœuvre of the leg." The subject lies on his abdomen on a table or bed; the legs are bent at right angles on the thighs and after telling the patient to hold them in this position they are released. A normal subject will retain the legs

in a vertical position for some time without any difficulty, but when there is a paralysis or merely paresis from involvement of the pyramidal fasciculi, the leg on the affected side drops more or less quickly and suddenly and is more or less exempt from jerks, according to the intensity of the paralytic process. In cases where the drop simply commences or is incomplete, the patient is asked to flex both legs on the thigh as far as he can and the bending will ordinarily take place more easily and more completely on the normal side when there is a unilateral lesion. Finally, when both legs are flexed on the thighs an attempt is made to extend them while the patient is told to oppose the action. There will be an immediate resistance on the normal side, while it will be delayed on the involved side.

The semeiological value of this sign may be summed up as follows: The manœuvre of the leg is positive in cases of organic paralysis or paresis resulting from a perturbation of the voluntary motor fasciculus—hemiplegia, hemiparesis, paraplegia, monoplegia and other affections—no matter what the nature and site of the cause of the paralytic disturbance may be. The sign is negative in cases of pithiatic paralysis and likewise in paralyzes dependent upon a lesion of the peripheral neuron on the condition that the less is not equivalent to division. In *tabes dorsalis* the leg does not maintain the vertical position for any length of time but it does not remain immovable; it is carried inward or outward, falls suddenly or becomes forcibly bent on the thigh. In the latter case, considerable resistance may be offered to extension. In cerebellar cases, even in those patients who require help to take a step, the manœuvre of the leg is absolutely correct. In the majority of paralyzes dependent on pyramidal lesions, this diagnostic procedure coexists with other numerous signs. In some it will be positive when the other signs are negative and ordinarily it is the most faithful of all. It may greatly help in locating certain medullary lesions of the cauda equina or peripheral nerve, while its disappearance during the evolution of a paraplegia marks the complete return of the force of voluntary movement.

THE TONUS OF AUTONOMIC SEGMENTS.

Kempf asserts that the fundamental psychophysiological processes upon which health depends must be looked for in the postural tensions of autonomic segments which stimulate the proprioceptors buried in their tissues and the enteroreceptors in the mucous membranes. These in turn give rise to the afferent streams of feeling or better designated the affective cravings. These are evinced in our thought and behavior. Evolution from a simple organism has

provided man with an autonomic and a projicient apparatus. The former consists of the organs of the various systems, the sexual apparatus, the glands of internal and external secretion, and the ganglionic portions of the nervous system which regulate these. The function of the autonomic apparatus is the assimilation, conservation, transformation, distribution and use of the energetic products necessary to life and the elimination of waste. The projicient apparatus has been developed to serve the autonomic system and the cravings related to its various segments and through the projicient apparatus the organism adapts itself to the environment and appropriates that which serves its needs. The skeletal and striped muscle systems, the exteroceptors, the intermuscular proprioceptors and their cerebrospinal nervous systems are the organs by which this is accomplished.

Although the autonomic apparatus is already functioning at birth it has to learn to coordinate the projicient apparatus to its needs. This suitable co-ordination is subject to the pressure of environment and may be seriously disturbed by the overimportance of any one autonomic segment. Kempf shows that there exists a continuous state of postural tonus of the striped muscle through the continuous action of numerous efferent-afferent-efferent circuits associated together. The hollow viscera also manifest more or less constant tonus. These visceral or autonomic tensions influence the tonus of the striped muscle and the nature of the kinesthetic stream and so the content of consciousness.

Then again while the peripheral origin of the emotions may be accepted, account must also be taken of the acquisitive or avertive response which the organism makes to the stimulus. This means "that whenever we feel affective or emotional reactions to a certain situation the autonomic apparatus, in some segment or segments, has assumed certain postural tensions which are giving off the afferent stream of feeling or emotion." Here exists the possibility for a postural tension or spastic adjustment which may be harmful to the wellbeing of the whole personality. This is represented by deranged digestive processes and adrenal and thyroid disturbance, and these produce also a disturbance of the social adjustment.

This comes about through the imperfect evaluation and adjustment of the various segments of the autonomic apparatus and of the cravings they represent to the personality. These cravings constitute the ego and support and establish it. Yet they must be controlled relatively toward each other and toward outer circumstances. They must all be refined, guided into harmony of action, some

must even be eliminated in their primary form. Only thus can the full dynamic power of the organism be attained.

Instead these segmental cravings are likely to be submitted to a suppression or a deeper repression of some form of craving, the overemphasis of some segmental need, which has more or less dominated the personality, and tends to result in abnormal behavior unacceptable to consciousness or otherwise causing organic derangement of the personality. Suppression tends to prevent this craving from resulting in objectionable overt action although the conscious personality is aware of the need. Repression effaces even the conscious awareness of the craving.

Kempf goes on to show, largely through a number of abstracted cases, that such postural tensions of particular visceral segments are probably always to be found beneath the various psychoses. The latter he believes are "always resultant courses of behavior and are symptomatic of definite, conflicting autonomic affective cravings striving to obtain gratification at the same time with the same means—the striped muscles." Either the psychopathic personalities cannot allow their autonomic affective cravings to dominate their behavior or they cannot find relief for them through acquiring the appropriate stimulus. Then if there is only suppression of the craving there is fear toward the environment and anxiety and depression. Or if there has been repression there is a desperate attempt by the ego to so coordinate its powers as to maintain unconsciousness of the organic need. There may be an effort to eliminate the craving from the personality, perhaps symbolically through a destruction of some other part of the personality, or there is a regression to a lower biological social level where indulgence is secured through simulation of postures which will gratify the craving. The author discusses more in detail the form of striving characterizing the various forms of psychoses and neuroses and outlines the reconditioning of these segmental cravings wherein lies the principle of a cure or a better adjustment of the disturbed personality. He lays emphasis upon a few psychotherapeutic principles to be observed. The first is a positive transference between patient and physician as this represents the patient's wish to bring about a better relation to environment. Suggestion builds up the powers of selfcontrol through various means and stimulates the patient to a counter attack upon the disturbing craving. Psychoanalysis permits the patient to become fully aware of the repressed interests, allowing them through free use of the speech apparatus to become at last assimilated to the ego as intimate parts of the conscious personality.

News Items.

Cholera in Japan.—Nineteen cases of cholera have been reported at Kobe, according to the Tokio news dispatches to the *Nippu Jiji*.

Hungarian Relief.—A report from Hungary is to the effect that there are 20,000 homeless people in Budapest and that public relief is being given 11,000 families.

Belgian Psychiatric Congress.—The Society of Mental Diseases of Belgium will celebrate the fiftieth anniversary of its founding with a congress at Ghent, September 25th and 26th.

Anesthesia Research.—Dr. Yandell Henderson, of Yale University, and Dr. Charles H. Baskerville, of New York, have become members of the research committee of the National Anesthesia Research Society.

Philadelphia Civil Service.—The Philadelphia Department of Public Health announces civil service examinations on June 24th for the positions of bacteriologist, salary \$2,000, plus bonus of \$300, and assistant bacteriologist, salary \$1,500, plus bonus of \$300. Residence of applicants is waived.

Gift to Rochester University.—A medical college, a dental school, and a 250 bed teaching hospital have been given to the University of Rochester by the Rockefeller General Education Board and Mr. George Eastman, of Rochester. The value of the gift is \$900,000. The Rochester Dental Dispensary is also given as a clinic for the dental school.

Medical Clinic for Canada.—A medical clinic which will supply a standardized systematic examination and which will include specialists in each branch of medicine and every form of modern equipment will be established by the newly incorporated Kingston Clinical Association. It is the first clinic of the kind to be established in Canada.

Venereal Disease Prevention in Canada.—The Canadian National Council for Combating Venereal Diseases has organized its first municipal committee in Toronto, with Dr. F. W. Marlow as president and Dr. H. C. Cruikshank as secretary. The National Council is undertaking general educational work throughout the Dominion. It will organize committees in other municipalities as fast as practicable and will cooperate with the provincial health departments.

Health Conditions on the Mediterranean.—In the interior of Tunis exanthematous typhus, which threatened to spread with the customary migration of nomads at this season, has manifested itself only in rare and isolated cases, and no epidemic is foreseen. Plague always exists in the eastern basin of the Mediterranean at Salonica, Constantinople and around the Black Sea, at Smyrna, Beirut and at Port Said. Cholera, which had not been found at Constantinople for a month, has reappeared. Typhus has reappeared in European Turkey. The Black Sea ports, which had been a focus for the ravages of cholera, are under suspicion because of the lack of intelligent direction of their hygienic conditions.

Personal.—Dr. Menas Gregory, who has been in charge of the psychopathic ward of Bellevue Hospital, has been appointed to the board of managers of the State Reformatory for Women at Bedford, N. Y. The necessity of psychopathic treatment for some of the prisoners was brought out at a recent investigation into conditions at the reformatory.

Dr. E. Pearl Hopgood has been appointed second assistant woman physician to the Nova Scotia Hospitals at Dartmouth, N. S.

Peking Medical College Changes.—Dr. Henry S. Houghton, formerly dean of the Harvard Medical School of China, at Shanghai, has been appointed acting director of the Peking Union Medical College, following the resignation of Dr. Franklin C. McLean. Dr. McLean resigned as director in order to devote his time to the work of the department of medicine at Peking College, of which he is professor and head.

Smallpox in Scotland.—An outbreak of smallpox has occurred in Glasgow and the disease threatens to become epidemic in Scotland. New cases are occurring at the rate of about ten a day. The Scottish Board of Health fears a wide dissemination of the disease owing to the passenger traffic between Glasgow and other parts of Scotland. A large proportion of the population under thirteen years of age is unvaccinated.

Spread of Plague.—A report from Mexico states that two cases of bubonic plague have been found in the Republic of Salvador and that the Central American nations have declared a quarantine against Salvador. State health officers have reported a case of plague at Pensacola, Fla., and efforts are being made to prevent the spread of the disease. Fumigation will be insisted upon, and ships that dock at Pensacola will be required to have proper rat guards.

Venereal Disease Prevention in Quebec.—Under the terms of a law recently passed, the provincial government of Quebec has designated the committee for public protection against venereal diseases. The members are: Dr. A. Simard, Quebec; Dr. S. Boucher and Dr. J. A. Hutchinson, Montreal; Dr. A. H. Desloges has been named director of anti-venereal service, and Dr. Ranger assistant director. The committee is authorized to establish free dispensaries and laboratories for the treatment of venereal diseases, provide for the treatment of venereal patients detained in jails, asylums, etc., and promote educational propaganda.

Western Electrotherapeutic Association.—At the annual meeting held May 27th and 28th in Kansas City, the following officers were elected: President, Dr. B. B. Grover, of Colorado Springs, (reelected); first vice-president, Dr. S. Grover Burnett, of Kansas City; second vice-president, Dr. H. W. Nye, of Osborne, Kansas, secretary, Dr. Charles Wood Fassett, Kansas City; treasurer, Dr. Charles Keown, of Independence, Mo. (reelected); registrar, Dr. E. A. Nelson, Phillipsburg, Kansas (reelected); trustees, Dr. W. P. Patterson, of Springfield, Mo., and Dr. O. U. Need, of Oak Hill, Kansas. The next meeting will be held May, 1921, in Kansas City.

European Physicians Here.—Five distinguished European medical men are making a tour of this country in order to study the methods of medical education. While in America they are the guests of the National Board of Medical Examiners of the United States. The visitors are: Sir Humphrey D. Rolleston, Royal College of Physicians, of London; Col. H. J. Waring, Royal College of Surgeons, of London; Dr. Norman Walker, Royal College of Physicians and Royal College of Surgeons, of Edinburgh, and the Royal Faculty of Medicine and Surgery, of Glasgow; Prof. Gustave Roussy and Prof. E. E. Desmarest, of the University of Paris.

Allied Housing Conference.—The Interallied Housing and Town Planning Congress recently opened its sessions in London.

Representatives of the United States, France, Spain, Sweden, Holland, Belgium, Finland, Denmark, Czechoslovakia, Italy, Japan, Poland, Chile, Rumania, Siam, Uruguay and Jugoslavia, in addition to Canada and other British dominions, are in attendance.

The collection and coordination of information as to the construction of dwellings and the stimulation of official effort are among the objects of the meeting. One of the chief aims will be the formulation of a scheme of international application by which every family may be provided with proper housing within a period of twenty years.

New Psychiatric Society in Ontario.—A society known as the Ontario Neuro-Psychiatric Association has just been founded in Canada, with the object of promoting a greater interest in nervous and mental diseases. Its work is designed to be more widespread, however, and will extend to the study of defective children, social welfare work, selection of emigrants, problems relating to the feeble-minded, and to psychoses and neuropsychoses. The following officers have been elected: President, Dr. E. Ryan, of Kingston; vice-president, Dr. H. Clare, of Toronto; secretary treasurer, Dr. C. Crawford, of Whitby; executive committee, Dr. W. M. English, of Hamilton; Dr. Goldwin Howland, of Toronto; Dr. Beemer, of Mimico; Dr. R. H. Armour, of Toronto; Dr. C. K. Clarke, of Toronto.

Plague at Vera Cruz.—Bubonic plague has made its appearance at Vera Cruz, Mexico, and up to June 6th twenty-five cases, most of which have proved fatal, have been reported since the outbreak. Several additional cases have been reported from neighboring cities, and two patients suspected of having plague are under observation in Mexico City. The outbreak dates back to May 15th, when the first case developed. Judging from the individuals attacked and the location of their homes, it is considered probable that the disease was transmitted by rats from the warehouses by the docks. Cuba has declared a quarantine against Mexico and New Orleans, and the Cuban sanitary department has commenced a war on rats. Surgeon General Cumming of the U. S. Public Health Service has instructed quarantine stations in this country to hold for thorough fumigation all ships entering American ports from Vera Cruz.

Book Reviews

FOREL.

La Question sexuelle. Par Auguste Forel. Ancien professeur de psychiatrie à l'Université de Zurich Yvorne (Suisse). Quatrième édition revue et corrigée. Illustré Paris: Masson et Cie, 1919. Pp. viii-620.

Forel was a pioneer in the discussion of the sexual question. He gave the problem much careful thought and finally presented the results of his findings to the world. When his work appeared in America a tremendous furor was raised. We were confronted with the picture of a sincere scientist offering information to the world through the medical profession and an outcry raised against him by professional puritans. He was assailed, as are many others who seek to shed light on obscure problems, by a cowardly group who were trying to call to the attention of the world their shield of purity, which concealed—we know not what. These upholders of the home, equipped with blinders which kept them from seeing things as they were, and probably prevented them from seeing themselves as they really were, finally succeeded in excluding part of the text matter from the English translation.

Many years have passed since the first edition was published. We have grown more sensible on many subjects. Some of the former objectors, who were sincere but misguided, finally advocated the teaching of sex hygiene, while others remained in the rut and continued their flamboyant forms of self-advertising.

Sex ignorance is responsible for many of the physical and still more of the psychical ills of mankind. Forel saw this and wrote his book as propaganda against this evil of darkness. He took up the subject, gradually unfolding the processes of cell division, reproduction, development, and through to the final stages of sexual union in the higher species. He did not dwell upon the abnormalities, as did Havelock Ellis, but rather emphasized what the normal course should be.

The sexual cravings of the sexes, puberty, the marriage state, the effect of many social customs and usages, such as alcohol, are discussed. It is to be remembered that his attitude is a Continental one and, while it may not differ fundamentally from what it would be if he were discussing the problems peculiar to Anglo-Saxons, and more particularly Americans, who have taken over the Anglo-Saxon attitudes on many matters of sex and attempted to adjust them to our heterogeneous population, yet there are enough fundamental truths presented to make a study of it well worth while. For all that the sex urge is much the same in all countries; it is only the variants in eccentricities that are emphasized.

Freud and his followers have made the greatest advance in the placing of sex on a rational plane since Forel first appeared. We are now beginning to realize how vastly important the question of sex is in controlling our lives and the acts of everyday life; what a powerful factor it is in the drive that dominates us; how these slumbering, repressed, sexual impulses have been forced into the unconscious and played havoc when they finally broke forth in a distorted fashion. Here the gro-

tesquely disguised images were found and finally brought to light in a number of instances.

More light and the study of books like Forel's *Sexual Question* will prevent the forcing of sexual matters into the unconscious. The result will be an immediate gain in a more intelligent handling of the sex problems with which we are confronted and an avoidance of the pathological outbursts which are created by suppression.

Now, after the war and during the period of reconstruction, more than ever before, we should bend our efforts to education in sexual matters. While we cannot all agree as to the various details as set forth by Forel, many of the truths he speaks of are fundamental and worthy of careful study. His sincerity we cannot doubt and the need for study of this subject cannot be questioned. Educated people cannot be harmed by more light, and the unlearned will be educated.

THE PSYCHOLOGY OF ADOLESCENCE.

The Adolescent Girl. By PHYLLIS BLANCHARD, Ph. D., Author of *Psychoanalytic Study of Augustine Comte*. With a Preface by Dr. G. STANLEY HALL. New York: Moffat, Yard & Co., 1920. Pp. v-242.

The problems of the adolescent girl have received but little straightforward scientific treatment, although their importance as well as their baffling mystery have been the theme of superstition, adoration and fear, the subject of story, the perplexity of parent, teacher, and physician. They underlie the woman's own hesitancy and fear of herself and her vaguely understood possibilities for good and evil; they represent her egoistic striving for power and its conflict with the deeply laid racial instincts, more profoundly hidden, more completely unified in the feminine than in the male psychology; they underlie the social unrest and uncertainty which mark the attitude of the modern girl and woman. Their psychic background, however, gives promise of a fuller service of individual love poured out in a wider dynamic realization, in a love which touches all the needs and activities of the race. It provides for a better recognition of a feministic movement toward the finding and establishing of a place for woman's service based upon her own distinct nature and complementing and fulfilling man's place rather than usurping it.

All this the author brings forward in her book, developing her theme in vitally interesting and stimulating fashion. She presents the genetic viewpoint in which such a conception of woman and particularly of the unfolding of adolescent woman is possible. Thus it can be seen how her sexual and maternal instincts have their place in her nature. The difficulties which these encounter in the adolescent period when they begin to assert themselves and yet must be subject to repression and redirection are also explained. They must be brought into the proper interrelation of the egoistic tendencies and the deeper racial ones and must be guided to inform and inspire all other activities of the personality in its relations to sublimated racial service. Just here lie the possibilities of hindrances and diversion into neurotic and criminal channels. On the other hand,

healthy development provides for the leading of the libido into the fullness of individual love and its passage over into the service of a wider love which touches reality in every direction. Woman's true social sphere lies in realizing such an end and helping man through his love also to extend his power. This will bring her to find her suitable place in the political and economic world where as guardian of the home and family she has certain special functions to perform.

This is all presented with abundant historical material, showing the setting of feminine adolescent problems in all the thought of man. There is a tendency, however, to obscure the practical serviceableness of the book and its soberer application by a too disproportionate introduction of this wider material and a somewhat rhapsodical method of discussion of all the promising possibilities lying within the healthy adolescent development. The readability of the book is also somewhat marred by a too frequent use of quotations and references to authorities. Moreover, the author tends to apportion out certain partial concepts to various authorities as if Freud, for example, and many others had not comprehended their subject broadly but each contributed only a separate share. Progressive thinking is not carried out so narrowly nor would the author probably intentionally give such an impression. These are defects of form of statement which the author's own wider comprehension of her subject should have eliminated. For it is on her part a book of wide conception, instructive and stimulating in its sympathetic and understanding treatment of this important subject. It is to be regretted that the sublimation possibilities should have been rather dogmatically summed up in a religious necessity. It would seem to bring the adolescent girl back into too much of a mere father substitution.

SEX ATTRACTION.

Sex Attraction. By VICTOR C. VAUGHAN, M.D., LL.D., Professor of Hygiene and Physiological Chemistry, and Dean of the University of Michigan Medical School, Ann Arbor, Mich. St. Louis: C. V. Mosby Company, 1920. Pp. vii-44.

It is not often that one reads so satisfactory an expression of views on the all important subject of sex. This little book is written from the viewpoint of the physiologist and enjoys the distinction of being uninfluenced in the least by theology. So many of our so-called experts and authorities on sex matters, including the venerologists, are in the habit of bolstering up their sex pleas with such assistance as theology and morality can give them, that the average intelligent reader picks up a sex book and prepares for the usual "sob stuff."

In this little work the reader is likely to be disappointed—most agreeably, however. There is not a word that could well be omitted. There is not a line that could be changed or improved. It is well written and the theme of the work is clearly stated. The reader is carried along smoothly and easily from the most elementary physiological discussion of the sex function in the lower forms to the matter of instruction in sex hygiene and heredity—all without a single tear being shed for the sinful sower of wild oats, or for the virtuous maiden who becomes his victim.

This book ought to be read by every boy and girl, and there is not a word in it that would bring a blush to the cheek of the the most sensitive woman or girl. It is not only filled with sound biology and physiology but with common sense, just the kind of knowledge people, both old and young, require. We commend it most heartily as a most useful and sensible contribution to this subject of sex. It can be read in fifteen minutes but it embraces the knowledge acquired only after many years of thought and study. It is a pleasure to recommend it to all who may be interested.

THE FEEDING OF NATIONS.

The Feeding of Nations. By ERNEST H. STARLING, C.M.G., M.D., F.R.C.P., F.R.S., Chairman of Royal Society Food (War) Committee, Honorary Scientific Adviser to the Ministry of Food. London: Longmans, Green & Co., 1919. Pp. v-146.

Even as doctors bring cases to medical meetings to show results of treatment or operation that similar cases may benefit in the future, so Dr. Starling brings nations from his food clinic and speaks of their actual requirements; provision of necessary food by production, purchase or importation; distribution according to individual needs. All three questions require a study of the physiological principles on which they are based and the proportion of cures made.

No amount of statistics based on calories or basal metabolism would convince a food director any more than cases gleaned from the literature would convince medical confrères of a real cure being presented to a meeting, but back of the book stand nations who were rationed and did not greatly suffer, indeed, often advanced in health because of such measures. The somewhat grim idea presented is that the food comptroller of the next war can quickly form estimates of food supply and feeders; in the meantime it must not be put away, because it gives such interesting facts, or rather, solutions of dietetic problems, that even the unlearned may know exactly how much food his wife, his man servant, his maid servant, his cattle and the stranger will require to secure their wellbeing. At any rate, he will not puzzle, as the professor did, how a brown cow, eating green grass, could produce white milk.

HYSTERIA OF LADY MACBETH.

The Hysteria of Lady Macbeth. By ISADOR H. CORIAT, Author of *Abnormal Psychology*. New York: Moffat, Yard & Co., 1912.

Modern psychology throws light upon the artistic creations which have always performed their emotional service but sometimes imperfectly for lack of clearer understanding. On the other hand, such artistic creations, when better understood, shed radiance upon modern psychology and help to confirm its methods and its conclusions. Coriat's study of Lady Macbeth leads into the mechanisms of hysteria as they have been utilized by Shakespeare to typify in this tragic character a common psychoneurotic situation and its results in dismembering a life and precipitating its ruin. Coriat describes the determinism by which events arise out of a ceaseless chain of previous psychic experiences and ideas. He shows something of the production of a disso-

ciated state of the psychic personality when part of the personality, its wish force, must be repressed and then the censor must again prevent this repressed force from coming into consciousness. One manifestation of the escape of this secondary repression, in dissociated form, is the somnambulistic activity, such as that revealed with masterly hand in the character of Lady Macbeth.

Coriat believes the childlessness of Lady Macbeth is the underlying motive of her difficulty. This sexual complex is transformed over into ambition in the case of Lady Macbeth under the investigation of the witches' suggestion, in her husband to criminality. Her natural cowardice is repressed and this, with the repressed knowledge of the murders, forms the mental dissociation. Then in the somnambulism she repeats the content of the repressed material. Coriat has given a partial psychoanalytical explanation of the sleep walking but it is not complete enough to reveal a convincing psychic sequence. It is as if he made the hysteria a cause rather than an expression of deeper lying causes working to a final hysterical dissociation and the somnambulistic expression. There is confusion of words arising out of this absence of penetration into something more fundamental. Perhaps it arises from the author's rejection of the father complex in explaining this drama. There is more at work than mere substitution over upon criminality, a more fundamental striving of elements which drive the personality into its final disastrous splitting which ends in suicide.

THE YOUNG PHYSICIAN.

The Young Physician. By FRANCIS BRETT YOUNG. Author of *Marching on Tanga*, etc. New York: E. P. Dutton & Co., 1920. Pp. vii-520.

It is curious how many of the leading novelists seem to have taken up an intensive study of the boy, in fact, nearly half a volume may deal with school life only. This is partly due to the increasing realization of the importance of young life, to the growth of psychology and diminution of reserves, the intimate life of the boy being so strongly given that the telling of it suggests it to be an explanation—sometimes apologetic—of the writer's self as he appears to others and is known to himself. It is the truthfulness of the telling which attracts a reader to *The Young Physician*, as the latter, clad in etons, sits crying over the hardships of his first term at school. Somewhat of a dreamer, this lad, but determined to make the best of his dreams realities. A costly venture, with social position not assured, with lack of ready money or ready understanding of the God and devil in those older than himself.

His life as a medical student is well given, the good points in the doctors he meets, even in the one who gathers Lydstonic literature as delectable reading, are those which every humane reader may find, and the romance of the laboratory, the excitement of seeking or confirming, appeal to every budding medico. Edwin is disgusted and tearful in the first chapter. Deceived by a girl, dumb with grief, yet characteristically reaching out a hand to hope, he sails away over the margin of the last page—to China. We hope the author will let us see him again when the voyage is over.

THE BOOK OF MARJORIE.

The Book of Marjorie. New York: Alfred A. Knopf, 1920. Pp. 128.

This book is a destroyer of old coldblooded theories concerning love flying out of the window when poverty comes in at the door and proves the little maid of the nursery rhyme wrong when she asks her husband:

"Will the love that you're so rich in,
Make a fire in the kitchen?
Or the little God of Love
Turn the spit, spit, spit?"

for Jim and Marjorie are happy in a flat, even so small as to require a two burner gas stove behind a curtain. The great event is the coming of the Baby, to whom his mother writes a letter before he (or she) is born, and she herself being presumably dead is to have the answer in his or her blameless life. There is much concerning the inner life of baby Peter and his delivery at the Lying-in-Hospital which would have made our grandmothers rather pink, but the twentieth century has cleared our vision about such details.

Many grave talks occur between Jim and Marjorie as to the correct way of moralizing the infant and leading him to useful citizenship. Here comes the one little flaw. The book beguiles us into the idea that it is a story and it savors of the deceitfulness of those moral stories of our youth. There is a powder under the jam. Very useful, but Jim should have come to the end a little sooner and put his ideas on the rearing of children as an appendix. They are quite sane and well founded and not likely to have been ignored.

VERTEBRATE ZOOLOGY.

Vertebrate Zoology. By HORATIO HACKETT NEWMAN, Ph. D., Professor of Zoology and Embryology in the University of Chicago. Illustrated. New York: The Macmillan Company, 1920. Pp. vii-432.

The author aims to present those aspects of vertebrate zoology which are not adequately brought out by laboratory work in comparative anatomy. The book is intended for premedical students and others who have had a course in general zoology, but is not meant to be a substitute for a college course. The reader will find the book of unusual interest because of the fact that the author approaches his subject, not merely as dealing with a group of animals belonging to the present, but as a very ancient assemblage of related forms that arose from simple beginnings many millions of years ago and have passed through the endless vicissitudes involved in the mighty world changes of ancient times. The book is therefore of considerable historical interest; it is replete with chapters that are often of more dramatic interest than the vertebrates of the present day can command. The student thus obtains a novel conception of the modern end products of evolution.

An interesting feature of this work is the attempt to interpret vertebral structures in terms of the axial gradient conception of Professor Childs. This conception appears to the author as being strictly in accord with the principles of racial senescence, as presented by Osborn and Lull in their recent vol-

umes on evolution, much of which is incorporated in the present work.

The book is beautifully printed on fine paper, and with its 217 illustrations make a valuable contribution to this subject. Both author and publishers are to be congratulated on their joint effort.

ENDOCRINOLOGY IN FRANCE.

Quatre leçons sur les sécrétions internes. Par E. GLEY, professeur au Collège de France, membre de l'Académie de Médecine. Paris: Librairie J. B. Ballière et Fils, 1920. Pp. ix-145.

Gley presents a résumé of the work done by some of the early workers in endocrinology in the French school. There is little new presented and the radical advances which have taken place in the domain of clinical or pragmatic endocrinology are scarcely touched. So much has been done recently that is of practical value to the practicing physician that it seems strange that no cognizance has been given to the work of other men. In the light of later day findings the work of Gley seems rather rudimentary.

AMERICAN SURGICAL ASSOCIATION.

Transactions of the American Surgical Association. Thirty-sixth Volume. Edited by JOHN F. BINNIE, M. D., Recorder of the Association. Illustrated. Philadelphia: William J. Dornan, 1918. Pp. xlv-600.

This volume contains the papers read before the association at the meeting held June 16 to 18, 1919. War surgery and its problems occupy a fairly large portion of the attention of the writers, but these topics do not predominate. Among the important papers are the following: The Influence of War Surgery Upon Civil Practice, by Dr. Lewis Stephen Pilcher; General Considerations as to the Treatment of War Wounds, by Antoine Depage; The Most Important Factor in the Treatment of War Wounds and in Civilian Surgery—the Good Surgeon, by Dr. George W. Crile; Treatment of Recent Wounds of the Knee Joint, by Dr. Eugene H. Pool and Dr. John H. Jopson; Transthoracic Laparotomy, by Dr. Willy Meyer; The Treatment of Gunshot Wounds of the Chest, by Dr. Ellsworth Eliot; Thoracic Fistula and Chronic Empyema, a Nondeforming Operation for Its Cure, by Dr. Howard Lilienthal; Notes on Stumps and Amputations, by Dr. Frederick J. Cotton; A Case in Which for Over Thirty-Five Years a Woman Defecated and Urinated for Eleven Years Menstruated by the Rectum, by Dr. William W. Keen; The Transplantation of the Rectus Muscle for the Cure of Inguinal Hernia, etc., by Dr. Joseph Colt Bloodgood; The Results of Splenectomy in the Anemias, by Dr. William J. Mayo.

AMERICAN MEDICOPSYCHOLOGICAL ASSOCIATION.

Proceedings of the American Medico-psychological Association. Seventy-fourth Annual Meeting, held in Chicago. June 4-7, 1918. Baltimore: American Medico-psychological Association, 1918. Pp. viii-397.

The meeting of which these proceedings form a record was held in June, 1918, in Chicago, under the presidency of Dr. James V. Anglin. Almost half of the volume is taken up with nonscientific data of interest only to members of the society. The late Dr. E. E. Southard has contributed a paper on Recent American Classifications of Mental Dis-

eases; Dr. Michael Osnato has reviewed the pathogenesis of dementia præcox in relation to psycho-analytical principles. Other interesting papers are The Study of the Personality in Psychiatric Cases, by Dr. George S. Amsden; The Psychological Treatment of Retarded Depressions, by Dr. L. Pierce Clark; A Clinical Summary of 106 Cases of Mental Disorder of Unknown Etiology Arising in the Fifth and Sixth Decades, by Dr. E. T. Gibson; Psychoses in Mental Defects, by Dr. Alfred Gordon, and The Content of the Schizophrenic Characteristics Occurring in Affective Disorders, by Dr. Phyllis Greenacre.

New Publications Received

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

PLAYS. By SUSAN GLASPELL. Boston: Small, Maynard & Co. Pp. iii-315.

LANCELOT. A Poem. By EDWIN ARLINGTON ROBINSON. New York: Thomas Seltzer, 1920. Pp. i-184.

SANITY IN SEX. By WILLIAM J. FIELDING. New York: Dodd, Mead & Co., 1920. Pp. vii-333.

THE ORdeal of MARK TWAIN. By VAN WYCK BROOKS. Author of *Letters and Leadership*, etc. New York: E. P. Dutton & Co. Pp. vii-267.

THE SIX HOUR SHIFT AND INDUSTRIAL EFFICIENCY. By LORD LEVERHULME. Introduction by HENRY R. SEAGER. New York: Henry Holt & Co., 1920. Pp. v-261.

HUMAN PSYCHOLOGY. By HOWARD C. WARREN, Stuart Professor of Psychology, Princeton University. Library Edition. Illustrated. Boston: Houghton, Mifflin Company, 1920. Pp. vi-460.

THE HISTORICAL SOURCES OF DEFOE'S JOURNAL OF THE PLAGUE YEAR. By WATSON NICHOLSON, Ph.D., Author of *The Struggle for a Free Stage in London*. Illustrated. Boston: The Stratford Company, 1919. Pp. v-182.

CUNNINGHAM'S MANUAL OF PRACTICAL ANATOMY. Revised and Edited by ARTHUR ROBINSON, Professor of Anatomy in the University of Edinburgh. Seventh Edition. Second Volume. Illustrated. New York: William Wood & Co., 1920. Pp. v-524.

PHARMACEUTICAL BACTERIOLOGY. By ALBERT SCHNEIDER, M.D., Ph.D. (Columbia University), Professor of Pharmacognosy, College of Pharmacy, University of Nebraska, Lincoln. Second Edition, Revised and Enlarged. Illustrated. Philadelphia: P. Blakiston's Son & Co., 1920. Pp. v-441.

A DIABETIC MANUAL FOR THE MUTUAL USE OF DOCTOR AND PATIENT. By ELLIOTT P. JOSLIN, M.D., Assistant Professor of Medicine, Harvard Medical School; Consulting Physician, Boston City Hospital, etc. Second Edition, Revised. Illustrated. Philadelphia: Lea & Febiger, 1919. Pp. vii-191.

PRINCIPLES OF HUMAN PHYSIOLOGY. By ERNEST H. STARLING, C.M.G., F.R.S., M.D., Hon. Sc.D. (Cambridge and Dublin), F.R.C.P., Jodrell Professor of Physiology in University College, London. Revised and Rewritten by H. HARTRIDGE, M.A., M.B., Cantab. Third Edition. Illustrated. Philadelphia: Lea & Febiger, 1920. Pp. v-1315.

THE PRACTICAL MEDICINE SERIES. Under the General Editorial Charge of CHARLES L. MIX, A.M., M.D., Professor of Physical Diagnosis in the Northwestern University Medical School. Volume vii. Skin and Venereal Diseases. Edited by OLIVER S. ORMSBY, M.D., Professor and Head of the Department of Skin and Venereal Diseases, Rush Medical College, and JAMES HERBERT MITCHELL, M.D., Instructor in Skin and Venereal Diseases, Rush Medical College. Series 1919. Illustrated. Chicago: The Year Book Publishing Company. Pp. v-250.

Proceedings of National and Local Societies

ASSOCIATION OF AMERICAN PERORAL ENDOSCOPISTS.

Second Annual Meeting held in Brooklyn, N. Y., June 5, 1910.

The President, Dr. HUBERT ARROWSMITH, of Brooklyn, in the Chair.

The President's Address.—Dr. HUBERT ARROWSMITH, in his opening address, said it was with great satisfaction that he welcomed to Brooklyn the Association of American Peroral Endoscopists and its distinguished guests for the second annual meeting. The fact that this was the second annual meeting and that so many had been sufficiently interested to come, some from a great distance, assured the organizers that they were justified in the assumption that there was a definite field for this new venture and indicated that no anxiety about its future need be felt. He said that some of those present knew that there had been a great deal of opposition from certain quarters to the plan on the ground that such an association might injure the older laryngological societies, by diverting an important subdivision of throat work from their meetings. That and other objections had been disproved and he felt assured that the organization from now on would pursue a path of progressively increasing usefulness and prosperity. Dr. Arrowsmith said that we owed a great deal to Dr. Chevalier Jackson and Dr. Henry L. Lynah, with whom he had first discussed the project, for their unwavering support of the proposition; without their help, nothing could have been accomplished.

Dr. Arrowsmith said that he was particularly favored in being president at this time, when the turmoil of war had calmed down and when several of last year's absentees had returned from the service of their country, covered with honors, to a grateful nation and to loving friends. It was his special privilege and happiness to welcome an endoscopic cousin from abroad; one of the world's most famous laryngologists, equally distinguished by his broad knowledge of our art, by his operative skill and by his facile pen. He already had hosts of admirers in this country and all would be glad to recollect in the future that they had become personally acquainted with their famous British confrère, Sir St. Clair Thomson.

Sir ST. CLAIR THOMSON thanked the officers and members of the society for their cordial welcome and said that he would not fail to convey it to his brother laryngologists on the other side of the Atlantic. He considered himself very happy in being present on the occasion of this second birthday of the society. Of course there had been a great deal of discussion about the various war babies, but this society war baby could apparently be welcomed by every one. One could not always be sure about the paternity of these babies, but with the French it was the rule not to inquire about the paternity; it was sufficient to know the maternity. Well, this great country was the mother of this very promising infant, and one could heartily wish it all prosperity.

Three New Instruments for Endoscopic Work.

—Dr. SAMUEL IGLAUER, of Cincinnati, presented these instruments. He said that the first instrument might be said to date back to the prehistoric times to which the president had just referred. It might be called a bronchoscopic probang. The objection to the original probang was that one had to work with it in the dark. This one was intended to be used through the bronchoscope, and after having passed it beyond the foreign body it was presumed that by means of this probang the foreign body could be extracted. The first one was made of bristles, but it would not work. The one presented was made of watch springs and attached to the ordinary forceps handle.

The second instrument was a potential probe, and consisted of a piece of spring wire passed through a slender tube and controlled by a thumb nut. The idea was to protrude the spring through the side of the tube and extract the foreign body as with a hook.

A third instrument, used by cystoscopists (Capt. Rheinstein), consisted of a wooden applicator with a piece of cotton twisted on the end and then glued on with flexible collodion. Nothing could pull it off, thus making it perfectly reliable. Doctor Iglauer said that he considered this device superior in many respects to the ordinary spongeholder.

Bronchoperiscope.—Dr. WOLFF FREUDENTHAL, of New York, presented this instrument, saying that he had demonstrated a rough model of it a year ago. In the last few years it had been difficult to have anything made and most of the models made for him did not work. The one presented had just been received and had not yet been tried on a patient, but seemed as though it would be effective. It had three advantages: First, there was a light at the distal end as is customary now; second, there was a tube for applying an anesthetic, or to be used in connection with a suction apparatus; and third, there was a mirror at the distal end. When the lamp was lighted and the mirror illuminated, it could be turned in any direction desired. Thus one should be able to look not only in a direct line, but also at an angle. This was the most important part of the instrument. Doctor Freudenthal said that he hoped the instrument would prove of value for diagnostic purposes.

Esophageal Pouch.—Dr. H. P. MOSHER, of Boston, said that three years ago he reported a series of cases of esophageal pouch in which the common wall between the pouch and the esophagus was slit for relief of the difficulty in swallowing. The immediate result in all the cases was good. For the procedure to become established it was necessary for the relief to be more than temporary. He said that he would report on all the cases later. He gave the result of the most dramatic case of the series, the one in which there was the largest pouch. The patient, a retired English army officer, was for two years before operation living on slops, eating alone, and lying on his belly. Two thirds of the

common wall between the esophagus and the pouch was slit and within two weeks he was eating a normal diet and taking it in a normal way. After three years he was still eating anything he wished. Dry food bothered him a little and about once a month he spat up something from the remnant of the pouch. He found that it was better to eat slowly; if he did so he had no trouble. The treatment of an esophageal pouch as described above gave immediate relief to the obstruction to swallowing. The final result tended to show that the improvement was permanent.

Dr. Arrowsmith asked Dr. Mosher how he assured himself about the extent of the common wall, to guard against injury. Dr. Mosher said that he had spent ten years of his life in trying to introduce ballooning esophagoscopy, and thought he had a faithful disciple in the presiding officer. Dr. Arrowsmith said that he was a thorough believer in the ballooning procedure, but wanted the other members to understand about it.

Foreign Body in the Bronchus for Eight Years, with Bronchiectasis.—Dr. WILLIAM B. CHAMBERLIN, of Cleveland, Ohio, presented a report of this case which is published in full on page 1084.

Dr. LEE W. DEAN, of the State University of Iowa, discussed the question of the prognosis in bronchiectasis. He mentioned three types encountered. The first and most common type was that resulting from a primary inflammation of the lung, which caused a fibrosis with a contraction of the lung tissues. By its shrinkage there was a pulling upon the bronchi causing their dilatation. In this class of cases he had frequently found no stricture. Marked temporary improvement had been secured by cleansing and the injection of various emulsions. The cause had not been reached, and in no case had there been anything like a permanent cure. The second class was composed of those which resulted from a foreign body in the lung. A stricture of the bronchus was found and beyond it the bronchus was dilated. Dilatation of the stricture and removal of the foreign body relieved the condition permanently. The third type of bronchiectasis was that resulting from syphilis. In these cases excellent results had been secured by dilating the stricture and combining local and systemic treatment.

Referring to Dr. Mosher's report Dr. Dean said that three years ago he had a patient with advanced cardiovascular disease and esophageal pouch. The surgeon refused to do the Jackson-Gaub operation and he advised the patient to see Dr. Mosher for operation. The patient agreed to do so but in the meantime, as the result of several cleansings of the pouch, the patient was completely relieved of his subjective symptoms. During the last two or three years the condition had been controlled very satisfactorily by an occasional cleansing of the pouch. Dr. Arrowsmith asked him if he had used Dr. Yankauer's method, to which Dr. Dean replied that he had used a double tube—one for suction and for injecting fluids.

Dr. W. H. McKINNEY, of Memphis, told about a boy, nine years of age, who had swallowed an eightpenny nail. He had suffered from a cough for four years, and a surgeon, by means

of the x ray, had located the nail in the lower part of the left lobe. The child also had an empyema. The surgeon performed thoracotomy, but failed to remove the nail, and the boy died in a week or ten days from pneumonia. Later the surgeon said that the reason he had not referred the case to a bronchoscopist was that he thought it would be impossible to see the nail and extract it. That was a case in which the fluoroscope would have been valuable in guiding the tube and removing the nail. He said that in cases where the pus could not be evacuated, it was possible to see the foreign body and be guided in its removal. The patient might be saved by proper instrumentation.

Dr. THOMAS HUBBARD, of Toledo, said that Dr. Dean's remarks brought up an interesting point to the general surgeon who saw cases of bronchiectasis occasionally, and he cited an experience to illustrate. The patient, a woman, had a bronchiectasis with a copious thick, tenacious expectoration. The cavity was cleaned out by intratracheal injections so that she could go without coughing for twenty-four hours, whereas previously the cough and expectoration were almost constant. Later on he heard that she had died in the hospital. He investigated the matter and learned that she had been given general anesthesia, and there was no doubt that she had drowned. With the supine posture and the anesthesia, there was an overflow from the cavity that caused death.

In another case in which there was an unpleasant odor and copious expectoration he had thought it necessary to do a tracheotomy in order to evacuate the cavity before attempting extraction of the foreign body. In working with a bronchoscoper where the patient was expectorating nasty stuff, it was much simpler to do a tracheotomy with local anesthesia and then pump out the cavity. In the case to which he had referred there was an interval of a couple of days between the operations, and anesthesia was much facilitated by passing a small catheter down and evacuating the cavity; when the anesthesia was complete there was a comparatively dry cavity to work in, which greatly facilitated the extraction of the staple which had been in there for ten years. The procedure shortened the operation and made the profound anesthesia comparatively safe. The procedure of evacuating the cavity as the anesthesia progressed was the important point.

Sir ST. CLAIR THOMSON said that he had come to the meeting to learn, for there was no doubt that work of this type was much further advanced on this side of the Atlantic than in England. There were many reasons for this, one being that in America there were better technicians in the manufacture of instruments, and another, that there was a larger population to draw upon. In England people were content to keep tight hold of anything they could clutch, whereas here they appeared either to swallow or inspire it, and so got it thoroughly absorbed. Even relatively to the population there was nothing like the amount of foreign body practice in England compared with that in this country. Perhaps, also, it was more widely distributed. Every laryngologist in England considered himself an endoscopist.

One or two points had been brought up that he would like to comment upon. At his age, there was a certain amount of satisfaction in looking backward, and perhaps from an historical point of view it might interest the members if he referred to the case of an American lady who lived in England, because her daughter married an Englishman. This lady was now seventy years old. Some years back, before there was any such thing as an endoscope, this lady consulted him for a difficulty she experienced in swallowing. From the conditions and the symptoms he expressed the opinion that she had an esophageal pouch. Then she went to Sir Felix Semon and Mr. Butlin, who examined her and told her she had nothing of the sort; and as the result of this unfortunate opinion the lady put up with her condition. During the early years of the present war, Sir St. Clair Thomson said he went down to the little village of Newhaven where one could see the steamers going across the Channel nightly with the supplies for the army, and while taking a meal there he heard curious chuckling sounds from the next table, and there sat his American friend! She told him what had happened during the last twenty years. When they returned to London an x ray examination was made, and a perfect esophageal pouch was discovered. She was instructed how to wash it out and so make herself more comfortable. This poor lady had not had to eat on her stomach, as Dr. Mosher had said, but she had had to go to her meals early, before other visitors, and had been practically cut off from society for the last twenty years.

Another point was that everyone should do all the work that was possible with these various methods, but it was not fair to run any risk to patients. For years many had held the opinion, handed down from our forefathers, that tracheotomy was a thing to be avoided, but, excepting for a trifling scar, he did not look upon a tracheotomy as much more serious than a manicure! It was not a serious operation and, except for the little scar it caused, it could be carried out, in the words of Hippocrates, *tuto, citro et fecunde*. It could be done completely, quickly, and happily for the patient in a great many cases. Sometimes there was too much hesitation in resorting to it, for not every practitioner was as skilled as were the members of the society. He said that it was their duty to tell the profession what cases to send to them, but it was also their duty to tell them what they might safely do. The speaker said that if he were in Central Africa and inspired the end of a pencil, he would much rather have a tracheotomy performed than let a tyro try his endoscope on him. We were likely to be too much carried away by our own powers, and it was unfortunate that often the more perfect the instrument the less efficient the man. Dr. Arrowsmith had most interestingly shown what remarkable men our forebears were and what wonderful things they were able to do with very simple means. After all, it was the man behind the gun who made the hits.

Dr. W. B. Chamberlin said the only point in this case was the fact that the foreign body had been *in situ* for so long a time—eight years. It was a matter of extreme regret to

him that he had not been able to follow up the case. At the end of three months the patient disappeared, and although he had made every effort to trace her, it was of no avail. He then referred to the absolutely crass ignorance of the surgeon, not alone the country surgeon but the surgeon of ability and reputation, in regard to the work the endoscopists were doing. The patient he had mentioned was rescued from the hands of one of the most prominent surgeons in Cleveland, a man of national reputation. He had simply happened to be in the room when this surgeon was examining the x ray plate of the patient preparatory to doing a thoracotomy. Dr. Chamberlin was finally allowed to bronchoscope the child. He said that he knew of a thoracotomy for a simple foreign body that had been done a few months before with fatal results. Judging from the plates, it would have been easy to have removed it bronchoscopically. It seemed strange that men of ability should be so ignorant of the work that was being done along these lines. Apparently some of the surgeons regard this work much as they do that of the dentists.

Dr. SAMUEL IGLAUER, of Cincinnati, said that there was another way of circumventing the general surgeon in a case of foreign body in the lung where there was so much pus that one could not see the foreign body. A few years ago he had reported such a case. Owing to the large amount of pus present, nothing else could be seen. After doing a tracheotomy, however, he was able to introduce a steel bar into the lung cavity, and by connecting the bar to a giant magnet he was able to extract the foreign body, which happened to be a metal screw. There are several cases on record where the foreign body was extracted by a magnet. Where it was known that the foreign body was steel, it was possible in some instances to extract it in that way.

An Unusual Injury to the Larynx.—Dr. FIELDING O. LEWIS, of Philadelphia, presented a report of this case, which is published in full on page 1081.

Sir St. Clair Thomson asked if he was correct in understanding that the patient was getting along without the tracheotomy tube. As a consequence of the war, he had seen a good many cases of injury to the larynx, some of them including the larynx and esophagus. Soldiers had told him that at the first drink they had they were amused to see tea running out of a hole in the neck. When they reached the casualty clearing station a tracheotomy was done and in very many cases the tracheotomy tube was put in too high. In lecturing to his students, Sir St. Clair Thomson always impressed upon them the importance of not having the tracheotomy too high. In one instance he knew of the tube being put in between the alæ of the thyroid cartilage. It should certainly be below the first ring of the larynx, and if possible there should be two rings above the tracheotomy tube. If it was too near to the subglottic region it produced much irritation, and one of the results of these high tracheotomies was to start granulation tissue which had a tendency to contract and produce troublesome stenosis of the larynx. Many soldiers in London were

still going about with their tracheotomy tubes. As Dr. Chamberlin remarked, too many of the cases were handed over to the general surgeon, and he was always in a hurry to get rid of the tracheotomy tube. Sir St. Clair Thomson said that the injuries from foreign bodies in the esophagus which had come to his attention had healed surprisingly well. Many of the soldiers that arrived at the military hospitals in London gave a history of having had the esophagus perforated and healing taking place without stenosis. Dr. Lewis was to be congratulated on the success in his case, for it was one in which many would have failed.

An Unusually Interesting Case of Foreign Body in the Esophagus.—Dr. C. J. IMPERATORI, of New York, presented this case report, which appears in full on page 1084.

Dr. H. P. MOSHER said he would like to speak on three points in connection with this case: First, he would praise the speaker's frankness; second, it was not safe to perform esophagoscopy without having a suction apparatus readily available; third, if ballooning was employed in esophagus cases, you could generally tell where you were. If Dr. Imperatori had used the ballooning attachment he probably would have found it of great assistance.

Dr. Chamberlin said it was sometimes a good thing to hear about failures for it helped to smooth the places in one's own career. It was not difficult to overlook a foreign body. He had over-ridden a penny with the esophagoscope, and by subsequent x ray examination found it exactly where it had originally been. Dr. Mosher was entirely right about the necessity of having an x ray apparatus at hand. He spoke of his own difficulties in the case of a child with a stricture of the esophagus where a gastroscopy had been done. The child was so emaciated and dehydrated that a gastrostomy had been done by the surgeon immediately after it had been admitted to the hospital. A filiform bougie was passed into the stomach, with great trepidation, fearing that a false passage might be made. He said that if any one thought it was easy to find a filiform bougie in the stomach, he was mistaken. A Kelly cystoscope was then passed through the gastrostomy wound and after minute search the filiform bougie was found and pulled through the abdominal opening.

Sir St. Clair Thomson related an interesting case recorded by Dr. W. Hill. An Irishwoman who was celebrating armistice night got a piece of half masticated meat stuck in her throat. She gave it a push with her finger, and thought she felt it move, but had not gotten rid of it. Then she took a three pronged fork and with the handle pushed it once or twice. She felt the piece of meat move, but, to her horror, she felt something gripping the fork, and it also went down! It passed clear through the esophagus into the stomach and was removed by a gastrostomy quite successfully.

He said he did not know that this was the time for a general confessional, but he agreed with the speaker who said that it is from the confessional that we learn most. He himself had not lost a case from esophagoscopy but had been almost scared out of his life by his first few cases. He had stud-

ied esophagoscopy first in 1906 under Killian. With two of his early cases of esophagoscopy—done under cocaine, as he had been taught, and without any trained assistant—there was a very nasty emphysema of the neck, a crackling all over the neck which he tried to squeeze out. Fortunately, however, all went well, and he had had no mishaps since, but the occurrence taught him to warn his students of the greater danger of esophagoscopy as compared with bronchoscopy, especially under a general anesthetic. Within the last six months, two of the most skilled endoscopists of London, while examining a pharyngeal pouch in an elderly man of seventy-six, went right through the pouch, and the man died of mediastinitis. They got the specimen showing that this pouch of the esophagus was as thin as the thinnest sheet of note paper, with no muscle in it.

In another instance he had a mishap in which he nearly lost, not the patient, but the fee! He was engaged in removing a tack from a small boy's bronchus, and after he had gotten hold of it and pulled out the forceps there was no tin tack with it, so he went in again and no tack was to be seen. The other bronchus was therefore searched, and he began to feel very hot and clammy, and finally said: "Let's all have a breath!" They had been working in the dark, and when the lights were switched up the little boy's nurse, who had insisted on being present, picked up the tack off the floor. The parents did not want to pay, for they insisted that the child had coughed it up and that therefore there should be no fee.

Some Endoscopic Mishaps.—Dr. HUBERT ARROWSMITH, of Brooklyn, read a paper on this subject which is published in full on page 1083.

Dr. Arrowsmith asked if anyone could suggest the possible cause of death of the first patient which he had just reported. No anesthetic at all had been given. Dr. Hubbard asked whether it would be fair to assume that it was due to a thymus gland if the patient was cyanosed. Dr. Arrowsmith replied that the patient was not cyanosed at all. There was a very poor x ray plate. The operation was done in a hurry for the man who brought the child in was anxious to get away. Had the child lived, another x ray would have been made the next day. Dr. Wishart said that an x ray would have shown the enlarged thymus.

Removal of Four Cysts from the Larynx by Suspension Laryngoscopy.—Dr. WOLFF FREUDENTHAL, of New York, presented a report of this case which is published in full on page 1081.

Dr. ROSS H. SKILLERN, of Philadelphia, said that he wished to report from the mourner's bench, and then told of a fatal case which happened under suspension laryngoscopy within the last ten days. While the case was not directly in his hands, he was assisting in the operation and had as much to do with it as the operator. The patient was a woman about thirty years old who presented a very curious condition, in that immediately above the left tonsil there was an opening into which a small filiform bougie could be passed, going down that side for about three inches. It was decided to swing her up under suspension laryngoscopy and to open the

fistula. This was done and the probe was inserted going to the bottom of the fistula. The fistula was more or less superficial and did not go across the throat but seemed to go below the mucosa directly downward parallel with the esophagus and the cricoid cartilage. Everything was apparently going on all right when suddenly there was an enormous gush of blood which overshadowed any bleeding he had ever seen or hoped to see again. It opened with a gush which filled the upper part of the mouth and throat, and necessitated taking the patient down. It was absurd to put in anything like a sponge and it could only be controlled by pressure from the outside. It was more like a hemorrhage from an internal operation than from the throat. It was a question of thinking, and thinking very quickly, and ligating the common carotid. Instead, however, of doing that themselves they sent for a general surgeon who happened to be in the hospital, and the delay incident to getting him was directly the cause of the patient's death; for with the control of the hemorrhage from the outside and with a sponge on the inside she could have been kept alive for ten or fifteen minutes; whereas, by the time the general surgeon arrived the patient was dead. Whose was the fault, it was very difficult even at this date to say, but if he had to do it over again he would not wait to call upon a general surgeon.

Dr. SIDNEY YANKAUER, of New York, said he had not been fortunate enough to see a case of cyst of the epiglottis, but there was no question of the correctness of Dr. Freudenthal's remarks about the value of suspension laryngoscopy. He himself had removed a carcinoma of the larynx under suspension laryngoscopy, taking away half of the epiglottis, with very satisfactory results. It might be interesting to hear about a war case of the larynx in which he had had opportunity to use suspension laryngoscopy. The anterior portion of the patient's larynx had been perforated, and the bullet in passing had damaged the anterior part of both vocal cords. The internal surface was loosened for one centimetre down the trachea, and as far backward as the arytenoid. The piece of membrane which was loosened was dangling down into the trachea and causing more or less dyspnea. Dr. Yankauer said that at first he was inclined to leave it alone, but as the patient was suffering from these attacks of dyspnea, he was put up in suspension, and it was found possible to replace the flaps of mucous membrane and hold it in place with catgut sutures. It remained in place, but the patient did not regain his voice during his stay at the base hospital. Later he was sent back to the United States, but had been lost sight of. In this case there was a condition which might at any time have resulted in a sudden choking and that was completely relieved under suspension laryngoscopy.

Sir St. Clair Thomson said that he had not observed any frequency of these cysts and that this series of Doctor Freudenthal's was just a pure run of luck. As regards cysts in that neighborhood, which often occurred, he had watched them for ten or twelve years during which time they caused no trouble and no interference, and were discovered only by accident. While a believer in suspension

laryngoscopy, he wished to say a word on behalf of a dying art. While he did feel that "What is old need not be true, O brother man, nor yet the new!" yet in his practice he had come across only two cases in which he had not been able to remove a growth from the vocal cord by the indirect method. In one of these cases the patient was a very nervous woman, and in the other the patient was a man. It seemed that this art of indirect laryngoscopy was doomed to die, but if patients knew it they would regret it; for in some hundreds of cases which he had handled with the galvanocautery by the indirect method there was only one instance in which it had to be done under direct laryngoscopy. All the others were done by the old indirect method; and in some instances when he had been absent from town and the treatment in these cases was carried out by some colleague or assistant, the patients had said they would never again consent to be hung up and treated so long as he was able to carry out the indirect method of treatment. It could be done alone, in the office, without a nurse, and without the paraphernalia of this team work. He had learned this method in Vienna some time in the last century, and we should not only do our patients good by preserving this delicate though dying art, but by teaching to students this more delicate handling of patients by the indirect method (when it was available) we should be improving their *tactus eruditus*.

(To be continued)

'Births, Marriages, and Deaths.

Died.

ARMSTRONG.—In New York, N. Y., on Wednesday, June 9th, Dr. William W. Armstrong, aged fifty-four years.

GODDING.—In Providence, R. I., on Friday, May 28th, Dr. Clarence M. Godding, aged sixty-three years.

HARROUN.—In Santa Fe, N. M., on Saturday, May 22nd, Dr. William S. Harroun, aged eighty-four years.

HOUSTON.—In Lancaster, Pa., on Saturday, June 5th, Dr. Joseph W. Houston, aged eighty-seven years.

JENNINGS.—In Pittston, Pa., on Saturday, June 5th, Dr. Joseph A. Jennings, aged forty-seven years.

JONES.—In Camden, N. J., on Tuesday, June 8th, Dr. William S. Jones, aged sixty-two years.

JORDAN.—In Wakefield, Mass., on Sunday, June 6th, Dr. Charles Jordan, aged ninety-one years.

McGIVERIN.—In Salt Lake City, Utah, on Monday, June 7th, Dr. Edward Dennis McGiverin, of Jersey City, N. J., aged thirty-four years.

MULLER.—In New York, N. Y., on Thursday, June 3rd, Dr. Richard W. Muller, aged sixty-nine years.

ROBERSON.—In Hurricane W. Va., on Friday, May 28th, Dr. Grover Cleveland Roberson, aged thirty-six years.

SAWYER.—In Bradford, Mass., on Friday, May 28th, Dr. Benjamin Addison Sawyer, aged seventy-seven years.

SELL.—In New York, N. Y., on Monday, June 7th, Dr. Edward Herman M. Sell, aged eighty-seven years.

SPAULDING.—In Ballston Spa, N. Y., on Sunday, May 30th, Dr. William W. Spaulding, aged fifty years.

TETLOW.—In Stonington, Conn., on Friday, June 11th, Dr. Herbert Tetlow, aged fifty years.

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Original Communications

INDUSTRIAL TOXICOLOGY.*

BY WILLIAM S. WADSWORTH, M. D.,
Philadelphia.

I have long been interested in the subject of industrial medicine and know of no other advance in the whole field of medical work which compares with it in importance to the public welfare. The field is vast. The results already attained give rich promise of incalculably great good in the future. The workers are in earnest and we may well be enthusiastic over the prospects, but we shall need all of our enthusiasm to tide us over the pioneer stage upon which we are just entering.

This is specially true of industrial toxicology which is so far behind the branches which rest purely on mechanical sense problems or surgical arts. Little indeed is the general comprehension of toxicology in any field and the sum total of industrial toxicology is hardly a decent beginning. Toxicology seems to be losing ground to its less desirable handmaidens of the ultralaboratory type.

Never before in the history of the world has the servant been so generally greater than the master as in these days of disorganization, but we hope for a gradual return of sanity when the part shall no longer be of more significance than the whole and when toxicology shall again become something more than pharmacodynamics. I believe that this will come about very largely through the growth of industrial toxicology, because big results will be called for and such results cannot come from the fragmentizing process so often lauded under the title of specializing. The sophomore mind easily takes things apart and dwells on the parts, even in childhood one sees this tendency, but only the moron stays in the dissecting stage all his days.

In the past we had three sources from which to draw our toxicology, medicolegal, therapeutic, and chemical. The medicolegal literature gave us cases where extreme effects were found and more or less carefully observed and recorded. The therapeutic literature gave us much observation, some insight into the action of poisons on the whole system, and any quantity of theory. The chemical literature gave us some partial insight into the nature of the substances outside the body. How much more is needed is best realized by those who have had actual problems to solve, and after thirty-five years of

struggle with chemical problems—thirty years' labor in physiological analysis and twenty-five years' work in practical toxicology—I am greatly impressed by the ignorance, the stupidity, and the wrong thinking shown in much of the literature of our field, and it is upon that literature that you are forced in large measure to rely for your data, if not your thinking.

The medicolegal writers of England, France, and Germany have built up a very considerable mass of material but in most of it there is a painful lack of large physiological conceptions of the human body as a living, working organism.

The chemical writers are perhaps even more ignorant of biological principles, often spending years of labor in imitating some phase or form of organic substance to the total exclusion of the one vital thing—sensing what living organic matter is rather than proving some fine spun theory that rivals the vagaries of the philosophical quibbles of the dark ages.

We do get some help from the therapeutic writers of former days because they occasionally forgot theories and condescended to observe the action of poisons on the whole body. Today therapeutic literature is given up to the intensive study of some phase of the subject as developed in a laboratory, with mental outlook as limited as the physical room in which the work is done, where there are six sides, with few windows and often these facing in the wrong direction for a good view.

I often wonder how an automobile maker would fare if he devoted most of his energy to intensive laboratory study of the pharmacodynamic type and neglected the real problems of his business. I know how these laboratory workers fail when they tackle real toxicological problems, but the story is too sad and too long to tell.

Let me assure you that the man who thinks he can solve the large and difficult problems in this field without severe mental discipline, broad biological views, and considerable knowledge of the results from laboratories, but a very critical acceptance of such results, is doomed to failure at the very outset of his career; and if he has had a literary training only he had better remain a blind leader of the blind and teach industrial medicine in a modern medical school. You may do valuable work in your factories and industrial plants with a very modest grasp of toxicology for some years to come, for it will take a long time to develop

*Read before the Philadelphia Association of Industrial Medicine, April 9, 1920.

a general toxicological consciousness that will compare favorably with the mechanical consciousness now already reached in industry, but the time is surely coming when such a crude condition will not be tolerated, so you might as well prepare for the new era, else you will blunder and be found out and others will fill your places.

It is your duty to strive to make progress in this vastly important field and from my rather unusual experience and more unusual training, I will venture some of the ways by which you can reach a larger comprehension of the subject and a fuller power of mentally handling the problems you will sooner or later meet.

First.—Try to get a clear notion of what a poison is. This will not be gained by reading chemical or legal definitions. Legal definitions are notoriously bad on most subjects but specially so on poisons because they introduce quantitative conceptions when only qualitative will serve. The poisonous quality of a substance does not depend upon the number of grains required to kill nor yet the number of grams to the kilo to kill in a given number of seconds. A poison is a substance which produces a deleterious effect upon any protoplasmic organism by reason of its chemical properties. The intensity or quantitative aspect is to be determined by a most careful study of all the effects, as signs and symptoms in relation to all sorts of doses, however administered and under all variations as to absorption and elimination and with strict note of the time sequence. It is well, however, not to attempt to measure a thing until you are fairly well assured you know what it is and at present there are more measurements than conceptions regarding poisons.

The lists of poisons given in the textbooks show how completely we have failed to grasp the fundamental nature of poisoning. The poisonous nature of many substances has been strangely overlooked by all writers and many more substances are ignored by most writers. Today almost no one recognizes carbon as the most common and probably the most powerful of all poisons and few consider tin as a practical poison. Our states regulate by law the relatively harmless sewer gas while little or nothing is done to check the wholesale poisoning by carbon monoxide gas.

Textbooks are full of references to sulphuric acid—and one often hears that the amount of that substance used is a measure of the civilization of a country, but how many point out the fact that most commercial sulphuric acid contains arsenic and that plants and workshops may have a liberal supply of arsenuretted hydrogen to cause a particularly serious type of chronic poisoning that will readily escape the unthinking, unobservant routine follower of the books. One cannot read the literature without being impressed by the frequency of the remark that certain substances are insoluble and therefore are not to be regarded as poisons. This is one of the statements made regarding tin salts, in spite of the fact that dozens of organic salts of tin are quite soluble and do actually cause frightful symptoms and death. So astounding is this that one of the most pretentious works on toxicology does not list tin in the index as a

poison. Learn therefore what constitutes a poison and cheerfully ignore that wonderful nihilism that is born of fixed ideas nurtured by foolish methods and encouraged by interest.

Second.—After learning that any substance is capable of producing a bad effect and without worrying about how much is required to kill or whether it raises blood pressure or whether it purturbs the heart of the noble frog, set yourself to find out what it does. Get a clear image of the action of some poison you have met. Do not fear to use the results of homely experience, remember some of the things that made your eyes smart or your mouth hurt; or your experience with mint, pepper, vinegar, sulphur, castor oil, and other joys of your youth. Remember some of the tricks you had played on you and from those memories you will perhaps be able to build some useful concepts regarding the action of poisons that will be of more service than volumes of protocols of laboratory experiments. Then you will realize the next step.

Third.—The substance must reach the protoplasm and for that there are three main ways: a, by the skin; b, by the mucous membrane; c, by the digestive tube. For practical purposes you may ignore the other modes of entrance, except that of a subdermal introduction in wounding. But on the surface is not in the body, and while some poisons act on the surface chiefly, others are only active when they reach certain specially altered protoplasm and then show selective action. You may not always be sure about all the details of absorption either as to a place, amount, or rate. Given a man exposed to and poisoned by a substance your problems are chiefly along other lines but do what you can incidentally to master absorption. Above all remember that not a few insoluble substances are absorbed.

Fourth.—The fate of the poison in the body is always of importance and will at times give you the greatest difficulty. Your knowledge of physiology will be taxed to the limit and the available toxicological literature will generally fail you. Do not expect to solve too many of these problems. You cannot, with the present available knowledge, hope to do much, but do what you can and avoid pretending either to others or to yourself that you know what poisons really do in the body, except in so far as you find out gross results and effects. These you must know and be very sure about.

Fifth.—As to the elimination you can get some help from the literature, but here again be cautious not to accept crude conclusions based on irrelevant and unresponsive replies clumsily drawn out of unwilling witnesses on the laboratory stand. Remember how these laboratory gentlemen love each other and how they do not believe too freely. I would that you could be critical but not sceptical—scepticism is one of the distempers found endemic in laboratories.

Sixth.—Your treatment of the men and recommendation to the owners and management must be based on your own observation of conditions and effects and you must cultivate such accuracy of observation, alertness to possible explanations, common sense judgment of values in selecting your

conclusions, and a dignified assurance from a knowledge of the care exercised and rightness of your method. Your work must be empirical to a very large degree, but see to it that it is the right sort of empiricism.

Seventh.—Your practical study of the problems in your place of work. I cannot at this time outline for you the thousands of substances that have been recorded as poisonous and it would not help you if I could. Rather should you step out for yourself and do this. There is only one way, and that is, learn all substances that enter the factory, not simply a few of the most obvious raw materials; follow each substance through from the point when it enters the plant to its point of exit and note the processes each takes part in or goes through, and consider well the impurities that may be found in each. When you consider processes do not too readily rest content with the statement of the chemists as to what takes place, for if you do you will be very likely to discover how wonderfully limited is the knowledge of chemists and how little do they themselves realize this. Master the substances, then the paths these substances take in the plant, then watch the workers along these paths, and especially watch the new men on the job for they are likely not to have acquired that tolerance that makes serious chronic poisoning possible. When you have studied the substances in the available literature you may be wiser, you may be sadder, but do the best you can with it, hoping for a time when a real toxicological literature shall exist. Having found out all about the trouble take it up with the management. This brings us to the unpleasant part of our subject—obstructionist management and inertia on the part of men and employers. Remember toxicology means next to nothing to the average man and the word poison is likely to cause a panic.

Your troubles, however, will not be limited to ignorance, they will include conservatism, self-preservation, stupidity, cupidity, at times utter recklessness, and worst of all, organized obstruction. Between abominations hallowed by long use and deadly new installations that have cost much and mean much to the owners, you will need all the caution and tact you possess. You may not be able to cause even a mitigation of remediable evils. You may not be able to approach the fundamental source of the trouble, but beware of becoming hardened, await your opportunity, persist with all the wisdom you can acquire. Let me beg of you that you avoid becoming part of that most horrible of all modern wickedness, the poison propaganda.

Remember how powerful and insidious are the forces at work in foisting on the public both in and out of industries their deadly stuffs and how readily they spend large sums for experts, lawyers, and schemes to thwart all efforts to check the ghastly work of wholesale poisoning. Some employers fall an easy prey to schemes and will willingly prostitute their workers to further this system.

The wise man, be he employer or physician, will recognize that the ultimately successful method and the right one are the same, but remember that there is a right one and be very careful to stick to that.

THE HEALTH OF THE WORKER IN INDUSTRY.

By CLIFFORD B. CONNELLEY,

Harrisburg, Pa.,

Commissioner of Labor and Industry.

ILL HEALTH THE GREATEST MENACE TO INDUSTRY.

The war and tuberculosis.—The war has thrown the spotlight upon many conditions in American life which until this time have been accorded only a passive interest by most of us. In a statement issued by the National Tuberculosis Association in connection with its nationwide crusade against the white plague, it is asserted that sixty-nine thousand men were rejected by local draft boards because they had tuberculosis, unknown to themselves and the health authorities. For the same reason twenty-three thousand more were rejected when they reached camp. Ten per cent. of this number, or at least nine thousand, were from Pennsylvania.

Slowing down of industries during the war.—In a survey of the so-called second line of defense, made by physicians, it was found that production in industry was hindered by lack of care of the human machine, opening it to unnecessary wear and tear, disease and injury. It was shown that the slowing down of industry at a critical time was caused by—a, excessive labor turnover; b, physical breakdowns, due to insanitary conditions of shops and home (lack of medical supervision), or to lack of early recognition and prompt treatment of ailments leading to invalidism; c, absence from work, due to preventable accidents, or to lack of immediate medical and surgical care; d, lack of output because of those killed or permanently disabled.

Noneffectives in industry.—The noneffectives in industry are estimated between three and six per cent., or thirty and sixty in every thousand workers, on account of sickness. It has also been stated that the time lost due to sickness is nine days each year for each person. Such facts come to us as a challenge to enter the lists against an enemy within which has affected industrial life to a far greater degree than anybody knows.

Ill health is the greatest menace to industry and less is done to combat it in an organized way than many lesser evils. The diagnosis of the safety first clinics have reduced materially the loss to industry through accident. It remains now for an effective remedy to be discovered that can be applied in a large way to combat the first cause of most of the industrial disorders of our day.

EFFORTS TO COMBAT ILL HEALTH IN INDUSTRY.

The safety first movement.—Labor organizations and manufacturers' associations have given considerable study to this problem, and both have gone on record as to its importance. The worker recognizes that health is his greatest asset. The employer comes to the same conclusion from the viewpoint of production. Good health promotes good morals. Ill health is a fertile field for every conceivable labor disorder, and ranks with ignorance on this score. The safety first movement, organized in 1912, is perhaps the first effective step lead-

ing toward conserving the human element in industry.

Efforts of medical organization.—Two years later a group of physicians who saw that safety first was the twin brother of preventive surgery joined the safety movement and organized the health service section of the National Safety Council. As a matter of more than historical interest to all of us, 1914 is also notable for the birth of the section of industrial hygiene as a part of the American Public Health Association, and also the conference board of physicians in industrial practice. In 1915 the American Medical Association gave recognition to the industrial physician and industrial medicine. The next year the American Association of Industrial Physicians and Surgeons came into being and now has a membership of about six hundred. Thus the great medical profession is joining hands with industry in the interests of the health of the worker.

The work of the U. S. Government.—The Government is also making its contribution toward an effective remedy. Since 1912 the United States Public Health Service has had a Division of Industrial Medicine and Hygiene. The United States Department of Labor in its studies along the lines of occupational diseases, accident hazards, fatigue, ventilation, posture of workers, lighting, child labor, etc., has done a definite piece of work. Various of the other Federal bureaus are interested in this work, but the suggestion has been made that something should be done to centralize these efforts.

The work of the State of Pennsylvania.—In the State of Pennsylvania the two bureaus that touch the problems most intimately are, of course, the Department of Public Health and the Department of Labor and Industry. It would be presumptuous on my part at this time to say anything concerning the excellent work that is being done by the Department of Public Health, under the able leadership of Colonel Edward Martin. It may not be amiss, however, to review briefly the part that the Department of Labor and Industry has taken in this work. The act creating the department rests within the department broad powers for the welfare of those who toil. It must see that the workplace is safe and healthy. It has issued thirty standards for health and hygiene to date. The Division of Industrial Hygiene and Engineering provided for a group of experts to aid in the conservation of life and health by advising as to proper and adequate methods for improving sanitation. Many hundreds of plans of bakeshops, foundries, exhaust systems, and sanitary equipment have been examined. Special studies have been made as to the sanitary conditions in textile mills, of plants manufacturing or handling explosives, of the health hazard of powdered coal, of means for the reduction of dust in cement manufacture, of systems of ventilation both natural and artificial in bakeshops, of the methods of spraying lacquer and paints and the securing of adequate ventilation in plate glass factories, of the hazard in the use of insanitary wiping rags, of poisons generated in dye plants, of the industrial hazard in the manufacture of cigars. An industrial diagnostic clinic has been established in the University of Pennsylvania Hospital, in cooperation with

Dr. Alfred Stengel, wherein studies of occupational diseases have been made. Much educational propaganda has been furnished in the publication of numerous articles on the health of the worker and the distribution of thousands of copies of *Timely Hints to Employer and Employee*. Nine conferences have been held with industrial physicians of the state and nearby commonwealths, to discuss this very question. Many safety rallies have also been held to keep both the employee and the employer informed of the necessity of health and sanitation.

NEED FOR EDUCATION AND COOPERATION.

Ill health, whether from tuberculosis, occupational disease, or any other form of illness, needs to be fought and the employee and the employer can well afford to agree on this issue. It may be that the employer has been readier to take advantage of what the State and medical fraternity have to offer, but we can be sure that labor is not unmindful of its interests in this direction. It is perhaps true, too, that the doctor must still be educated to the point where he sees a field in industrial practice and not consider it a mere sideline. It is up to him to lay aside the robe of professional dignity perhaps and learn something of the dignity of the man in overalls. The State in its work in this connection must not make this a field for partisan politics, working the two arms of industry—labor and capital—against each other in order to secure selfish interests. There is need then for the full cooperation of the employee, the employer, the medical profession and the State. These are the immediate factors that must be allied to win the victory against industry's greatest menace.

The employee.—The employee is the most important factor, because his physical, economic, and social wellbeing is concerned directly. He spends at least one third of the full day of twenty-four hours on the job and he cannot afford to work at a job that will make him unhappy in his home duties and in his leisure life. He has a right to expect from his employer that the job shall present no insanitary conditions or health hazard of any kind. He should welcome therefore all that any agency is doing to make his job a safe place to work. The worker who takes a chance at a dangerous job for the money there is in it is a menace to society.

The employer.—The responsibility rests with the employer to safeguard his own interests, as well as the welfare of the man or woman who is a part of his organization. It devolves upon him to make sure that the work that he has to offer is as safe for the worker as the article he sells to the consumer. He has a right to expect that the person who comes to him to work is in good physical condition. An employee called at the office of the company's physician to have an injured hand dressed. The physician noticed from the general appearance of the man that something further ailed him. An examination revealed an advanced stage of tuberculosis. This led to an examination of his fellow employees and it was discovered that three other cases of tuberculosis existed among those who worked near him. This led to medical inspection in that plant. The day is rapidly approaching when no firm

that employs groups of men or women can consider itself well organized that does not have a reputable physician in its organization, with a standing on a par with a director or at least with the management. It has been recommended that firms which employ the full time of attorneys might render a service to employees by furnishing them legal aid when necessary at the expense of the company, and thus create a friendlier attitude among the men. Toward such an end the company's medical member could render a much larger service. He should be to the men what the safety engineer is to the equipment.

The medical profession.—The obligation rests upon the medical profession to join in the movement in the interests of industrial hygiene. Medical specialists in industry are just as necessary as lawyers learned in business and industrial law. This offers a field with unlimited possibilities, making the study of medicine and surgery even more attractive than they have been in the past.

The State.—It is for the State at this time, not to make more laws safeguarding the health of the worker, perhaps, but to see to the enforcement of those already upon the statute books. As far as the Department of Labor and Industry is concerned, it is a privilege to offer to the worker in industry, to the employer, and to the medical profession the resources and facilities of the entire department. We can offer you the services of the Industrial Board with its broad powers to investigate health conditions, to make safety standards, and to pass its approval upon devices for the wellbeing of all concerned. Our bureau of inspection with its hundred and more employees can furnish data on the actual working conditions in the industries of the state. Our division of hygiene and engineering can furnish the necessary technical information along the lines of industrial hygiene. At first thought it might seem farfetched to suggest the services of the bureau of mediation and arbitration, but industrial ill health is not entirely apart from physical ill health of workers and insanitary shops, factories, and places of employment. The bureau of compensation is in a position to show that, while ill health and occupational diseases do not come directly under it, that there is a close connection between accidents and ill health. Our bureau of employment could function very acceptably in scientific placement based on medical certification. Our new bureau of rehabilitation will serve to show too that cripples in industry are made as much from ill health as any other cause and that if its work is to be effective the health of the recreated man must be looked after by the man himself, the employer, and the medical fraternity, as well as by the State.

Etiology of Yellow Fever.—From comparative immunological studies on *Leptospira icteroides* and *Leptospira icterohæmorrhagæ* Hideyo Noguchi (*Journal of Experimental Medicine*, February, 1920) concludes that the strains of these two organisms form closely related but distinct groups, perhaps two subgroups or races.

FILTERED X RAY DOSAGE.

By W. D. WITHERBEE, M. D.,

New York,

AND JOHN REMER, M. D.,

New York,

Rosenbaum, Vanderbilt Univ. College of Physicians and Surgeons, Columbia University.

The barrier to a full destructive dose of x ray in a deeply seated tumor is the toleration of the skin covering the part. This naturally led to the adoption of the crossfire method of treatment. The crossfire method of today implies the use of a filter. The varieties of material used and the reasons given for the various combinations of aluminum, glass, leather, wood, and other materials will add another page to empirical medicine.

For our purpose, up to the present time, we have confined our investigations to aluminum only. On June 1, 1917, we reported the following experiment with three mm. aluminum:

	M. A.	Sp. G.	D.	T.	P.	SH
1.	40	7	7 inches	4 mm.	1 skin H	81
2.	42	9	14 inches	4 mm.	1 skin H	41

In this experiment two pastilles were used, one at seven inches distance and one at fourteen inches from the target, both pastilles being exposed at the same time. It will be seen that instead of the pastille at the half distance reading four times the amount of full distance as in unfiltered experiments, it reads only twice the amount.

In this experiment a technical error was made in the estimation of time to produce two skin units with a nine inch gap four and a half mil. at seven inches distance:

7	40	T	81	81
			7	14

One skin unit of standard factors with three mm. of aluminum equals:

9	40	7	14	81
				20

$\frac{81}{20}$ the standard skin unit divided by $\frac{81}{14}$ to find time necessary to produce one skin unit with

40	7	14	81	81
			7	14
20	14	10	27	27

If it takes two minutes to produce one skin unit with a nine inch gap with four and a half ma. at seven inches distance it will take four minutes to produce one and a half skin units and six minutes to produce two skin units instead of four minutes as quoted in the original experiment.

Recently the pastille readings were taken using 1, 2, 3, 4, 5, 6, and 7 mm. of aluminum, respectively. Throughout these experiments, instead of the half distance pastille registered registering in twice the amount of that at full distance we find that when the half distance pastille reaches one and a half skin units the full distance pastille

ONE HALF DISTANCE.					FULL DISTANCE.				
Sp. G.	M. A.	D. $\frac{1}{2}$ mm. aluminum	T.	P.	Sp. G.	M. A.	D. $\frac{1}{4}$ mm. aluminum	T.	P.
9	5	10	42 sec.	1 skin unit	9	5	20	1 min. 24 sec.	1 skin unit
9	5	10	1 min. 24 sec.	1 1/2 " "	9	5	20	2 min. 6 sec.	1 1/4 " "
9	5	10	2 min. 6 sec.	2 " "					
9	5	10	2 min. 48 sec.	2 1/4 " "					
$\frac{1}{2}$ mm. aluminum.					$\frac{1}{2}$ mm. aluminum.				
9	5	10	1 min. 6 sec.	1 skin unit	9	5	20	2 min. 12 sec.	1 skin unit
9	5	10	2 min. 12 sec.	1 1/4 " "	9	5	20	3 min. 18 sec.	1 1/4 " "
9	5	10	3 min. 18 sec.	2 " "					
9	5	10	4 min. 24 sec.	2 1/4 " "					
1 mm. aluminum.					1 mm. aluminum.				
9	5	10	1 min. 34 sec.	1 skin unit	9	5	20	3 min. 48 sec.	1 skin unit
9	5	10	3 min. 48 sec.	1 1/2 " "	9	5	20	5 min. 42 sec.	1 1/4 " "
9	5	10	5 min. 42 sec.	2 " "					
9	5	10	7 min. 36 sec.	2 1/4 " "					
2 mm. aluminum.					2 mm. aluminum.				
9	5	10	2 min. 20 sec.	1 skin unit	9	5	20	4 min. 40 sec.	1 skin unit
9	5	10	1 min. 40 sec.	1 1/2 " "	9	5	20	7 min.	1 1/4 " "
9	5	10	7 min.	2 " "					
9	5	10	9 min. 20 sec.	2 1/4 " "					
3 mm. aluminum.					3 mm. aluminum.				
9	5	10	2 min. 34 sec.	1 skin unit	9	5	20	5 min. 8 sec.	1 skin unit
9	5	10	5 min. 8 sec.	1 1/2 " "	9	5	20	7 min. 42 sec.	1 1/4 " "
9	5	10	7 min. 42 sec.	2 " "					
9	5	10	10 min. 16 sec.	2 1/4 " "					
4 mm. aluminum.					4 mm. aluminum.				
9	5	10	4 min.	1 skin unit	9	5	20	8 min.	1 skin unit
9	5	10	8 min.	1 1/2 " "	9	5	20	12 min.	1 1/4 " "
9	5	10	12 min.	2 " "					
9	5	10	16 min.	2 1/4 " "					
5 mm. aluminum.					5 mm. aluminum.				
9	5	10	7 min.	1 skin unit	9	5	20	14 min.	1 skin unit
9	5	10	14 min.	1 1/2 " "					
9	5	10	21 min.	2 " "					
9	5	10	28 min.	2 1/4 " "					
6 mm. aluminum.					6 mm. aluminum.				
9	5	10	7 min.	1 skin unit	9	5	20	14 min.	1 skin unit
9	5	10	14 min.	1 1/2 " "					
9	5	10	21 min.	2 " "					
9	5	10	28 min.	2 1/4 " "					
7 mm. aluminum.					7 mm. aluminum.				
9	5	10	7 min.	1 skin unit	9	5	20	14 min.	1 skin unit
9	5	10	14 min.	1 1/2 " "					

reads one skin unit and when the half distance pastille reaches two skin units the full distance reads one and a quarter. The only exception to this is when 5, 6 and 7, mm. of aluminum are used. These register half the dose of full distance and formula. This agrees with the biological results.

We also wish to call attention to the fact that double the time required to produce one skin unit at half distance produces the same effect according to formula and pastille readings—at full distance. For instance, according to formula with four mm. of aluminum.

$$\frac{9 \times \frac{1}{2} \times \frac{1}{2}}{10} = 18 = 1 \text{ skin unit.}$$

$$\text{At twenty inch distance } \frac{9 \times \frac{1}{2} \times T}{20} = \frac{9}{4}$$

$$18 = \frac{9}{4} = 2 \frac{1}{2} \times \frac{4}{8} = 8 \text{ minutes required for one skin unit}$$

at twenty inches distance.

The pastille readings are as follows:

10 in. Distance		20 in. Distance
1 min.	= 1 skin unit	= 8 min.
8 min.	= 1 1/2 skin unit	= 16 min.
12 min.	= 2 skin unit	= 24 min.
16 min.	= 2 1/4 skin unit	= 32 min.
20 min.	= 2 1/2 skin unit	= 40 min.

Therefore, if the time required to produce a certain number of skin units at half distance is determined double that time produces the same effect at full distance.

In order to establish biological proof by doing away with the pastille and substituting the human skin, the following experiments were made:

A patient's wrists were placed beneath the tube with three mm. aluminum filter, one at six inches distance from the target and the other at twelve inches from the target, both wrists being exposed at the same time. The one at six inches distance was withdrawn at half time and the other continued to full time exposure to produce an erythema dose (2 1/2 skin H or 10 H) at twelve inches distance. Ten days after this exposure the erythema produced on both wrists were identical.

Another patient was given the same dose using two areas on the back. The area above was produced at full distance and the one below at half distance. The following factors were used with three mm. aluminum:

Sp. G.	M. A.	D.	T.	P.
9	5	6 inches	7 min. 42 sec.	= 2 1/2 skin H
9	5	12 inches	15 min. 24 sec.	= 2 1/2 skin H

From the foregoing experiments with pastille and skin, the filter apparently produces results strikingly different from the unfiltered x ray from the view-point of distance and amount.

The principle involved in this experiment apparently changes the classical law of light, namely, the amount of light varies from the source according to the inverse square of the distance. Filtered x ray produces double the amount at half distance instead of four times.

We understand that these results in no way conform to any existing laws of physics. We have

been unable thus far to explain the cause of the above phenomena and simply wish to report our findings. The following experiments using three mm. aluminum as a filter were made:

Gap.	M. A.	D.	T	P
6	5	10	3 min. 51 sec. = 1	skin H
6	5	10	7 min. 42 sec. = 1 1/2	" H
6	5	10	11 min. 33 sec. = 2	" H
6	5	10	15 min. 24 sec. = 2 1/2	" H
6	5	10	19 min. 15 sec. = 3	" H
6	5	10	23 min. 6 sec. = 3 1/2	" H
6	5	10	27 min. 57 sec. = 4	" H
7	5	10	3 min. 51 sec. = 1	" H
7	5	10	9 min. 34 sec. = 1 1/2	" H
7	5	10	13 min. 12 sec. = 2	" H
7	5	10	16 min. 30 sec. = 2 1/2	" H
7	5	10	19 min. 48 sec. = 3	" H
7	5	10	23 min. 6 sec. = 3 1/2	" H
7	5	10	26 min. 24 sec. = 4	" H
7	5	10	2 min. 51 sec. = 1	" H
7	5	10	5 min. 46 sec. = 1 1/2	" H
7	5	10	8 min. 39 sec. = 2	" H
7	5	10	11 min. 32 sec. = 2 1/2	" H
7	5	10	14 min. 24 sec. = 3	" H
7	5	10	17 min. 18 sec. = 3 1/2	" H
7	5	10	20 min. 11 sec. = 4	" H
7	5	10	2 min. 54 sec. = 1	" H
7	5	10	5 min. 48 sec. = 1 1/2	" H
7	5	10	7 min. 42 sec. = 2	" H
7	5	10	10 min. 36 sec. = 2 1/2	" H
7	5	10	12 min. 30 sec. = 3	" H
7	5	10	15 min. 24 sec. = 3 1/2	" H
7	5	10	17 min. 18 sec. = 4	" H
7	5	10	2 min. 19 sec. = 1	" H
7	5	10	4 min. 38 sec. = 1 1/2	" H
7	5	10	6 min. 57 sec. = 2	" H
7	5	10	9 min. 16 sec. = 2 1/2	" H

The time factor, as indicated in the filtered readings, differs in its results on the pastille reading on the 6, 7 and 8 inch gaps. With a six inch gap, employing the four factors that will produce one skin unit and then doubling the time, other factors remaining constant, a reading of $1\frac{1}{4}$ H will be obtained. For each time this process is repeated, the readings advance one quarter of a skin unit.

A seven inch gap gives one and a half skin units when double the time to produce one skin unit is used, and then begins to advance at the rate of one quarter a skin unit for each exposure time. The 8, 9, and 10 inch gaps, with three times the time exposure for one skin unit give two skin units and then begin to advance at the rate of one quarter skin unit for each exposure time.

The employment of a formula to determine the filtered dose is not so simple as in unfiltered doses owing to the different thickness of the filter employed, difference in character of material, and the difference in the time factor as pointed out above in the 6, 7, 8, 9, and 10 inch gap formulae.

However, where aluminum is used as a filter, if one knows the factors that produce one skin unit with for example three mm. aluminum, it is not difficult to determine any dose where three mm. aluminum is used. For example, we know that 9 sp. g. 5 ma. 2 minutes, 34 seconds at ten inches distance gives one skin H with three mm. aluminum. How much time, with these factors, will it take to produce an erythema dose, namely $2\frac{1}{2}$ skin H, using an eight inch gap, 5 ma. at ten inches distance with three mm. aluminum:

$$\frac{9 \times 5 \times 77}{10^2} (\text{sec.}) = 603 = 1 \text{ skin H or } 4\text{H}$$

$$\frac{4 \times 5 \times T}{10^2} = 4$$

$$9 \times 5 \times 4 = 1734 \text{ sec.} = 2 \text{ min. } 59 \text{ sec.} = 1 \text{ skin H or } 4\text{H}$$

If it takes 154 seconds with a nine inch gap to produce one skin H, it will take as many seconds to produce one skin H with an eight inch gap as four is contained in 693, or $17\frac{3}{4}$ seconds, which equals two minutes, fifty-three seconds. In order to determine the time necessary for an erythema dose ($2\frac{1}{2}$ skin H), we must know that the eight inch gap requires three times the exposure for one skin unit (two minutes, fifty-three seconds) to produce two skin H which would be eight minutes, thirty-nine seconds; and then it requires twice the time of one skin unit added to eight minutes, thirty-nine seconds to produce two and a half skin units or an erythema dose. Thus:

$$\left(\frac{2}{8 \text{ min. } 39 \text{ sec.}} + \frac{1}{5 \text{ min. } 46 \text{ sec.}} \right) = 14 \text{ min. } 25 \text{ sec.}$$

It therefore becomes necessary, in order to determine dosage of filtered rays, to know at least one complete set of factors that will produce one skin unit with each thickness of aluminum; also, to remember that six inch gap formulae begin quartering after one skin unit, seven inches after one and a half skin units, and eight inches, nine inches and ten inches after two skin units; also that nine inch gap using five and six mm. of aluminum double time for one skin unit equals two skin units and then it increases at the rate of one half skin unit.

If one will look over the list of pastille readings given with the factors for the various thicknesses of aluminum, it will be found that 5, 6, and 7 mm. of aluminum give the same readings when all the factors are constant. We, therefore, do not see the necessity of using more than five mm. of aluminum as a maximum without the addition of a piece of glass, leather, or wood.

A comparison of the effects produced by filtered and unfiltered ray in deep therapy and the reason for employing filtered instead of unfiltered may be explained by the fact that filtered ray gives only double the dose at half distance instead of four times. If then the skin were at half distance in filtered exposure, and the tumor at full distance, the skin could tolerate two skin units without injury and the tumor at the same time would receive one and a quarter skin units, whereas in the unfiltered treatment the skin would tolerate one skin unit without injury and the tumor at the same time would receive one quarter skin unit if filtration of intervening tissue were eliminated.

Thus the tumor would receive five times the effect with filtered dosage than it would with unfiltered as exemplified by filtered readings of half and full distance. If this were true, perhaps the results of a deep therapy and direct action would be more encouraging. Instead of the tumor receiving five times the dose with the filtered ray as with unfiltered, biologically and according to formula determinations it receives just double the effect.

This statement of double the dose to the tumor at full distance in filtered as against unfiltered is borne out by the following experiment:

Two areas of a patient's back were exposed. One of them received a filtered erythema dose measured by the pastille, namely two and a half skin units. The other area received an unfiltered dose measured by the pastille, namely one

and a quarter skin units. Both areas were identical in their appearance at the end of ten days after their exposure, thereby proving that the biological reaction of the skin in filtered and unfiltered x ray is in the ratio of two to one.

Although unable to explain the reason for the changes in the amount of ray delivered at half distance in filtered röntgenotherapy, from a practical viewpoint the results explain the practicability of filtered ray for producing the maximum effect on the parts beneath the skin when compared with unfiltered dosage.

REFLEX DISTURBANCES DUE TO EYESTRAIN.

By HOMER E. SMITH, M. D., F. A. C. S.,
New York,

Assistant Surgeon to the Knapp Memorial Eye Hospital; Visiting
Oculist to the New York Diagnostic Clinics.

The central nervous system may be likened unto a great reservoir out of which, to myriad points of distribution, radiate channels of supply. If through any channel flows an inordinate amount it needs must follow that others will be ill supplied and especially will the reservoir be the more quickly exhausted if the demand be made upon the largest of these emergent channels. Crile has shown by experiments upon the lower animals that what would happen under the conditions of this simile really does happen in the neural reservoir under excessive demands. To support my contentions it only remains to show how great is the flow of neuritic through the normal organs of vision and how excessive is this when there is an error of refraction.

In order that you may accept the indubitable verity of these premises and that the conclusions do not rest upon my unsupported assertions Cohen's system of *Physiological Therapeutics* is quoted as authority. He says: "As a causative factor in the production of headache eyestrain is most important. Anorexia, dyspepsia, constipation, heartburn, nausea, and repeated attacks of vomiting represent some of the gastric reflexes. Amenorrhea, and dysmenorrhea are menstrual anomalies sometimes caused by eyestrain. Insomnia, nightmare, chorea, nocturnal enuresis, and even epileptiform seizures have owed their existence or perpetuation to uncorrected eyestrain in some form." To realize fully the far-reaching effects of eyestrain one needs only to remember how vital is the function of vision to every act, emotion and thought. The eye is in closest connection with the brain and through the association tracts with the centres which preside over every bodily function. Not only is man's physical existence dependent upon seeing but intellect and all resultant civilization are literally products of vision. The individual who starts out in life handicapped by poor vision has a constant struggle to meet the exigencies of existence.

Statistics show that by far the larger proportion of truants, vagrants and the juvenile criminal classes have high hyperopic and astigmatic errors. Aside from these the number will probably never be known of those, in the higher walks of life, who have been made mental and physical

wrecks from the same cause. To protect the little ones and to raise efficiency in school work it should be impressed upon every parent, physician and teacher that the child, in the elementary grades, who falls below the standard set for such grades, does so from physical defects, mainly of sight or hearing, rather than from mental incapacity. Barring idiocy or other gross mental defect, all children, up to a certain point, are equally receptive and in the junior grades should be one hundred per cent. perfect in their classes. The hyperopic child uses so much neural energy in the physical act of study that there is little left to impress the subject matter upon his brain. The myopic child fails because illustrative work on the blackboard means nothing to him and when either of these ametropic conditions is complicated by astigmatism—as they are in almost every case—it makes worse an already serious matter. To interpolate, at this point, the remedy: No child should be permitted to take up school work until the eyes have been tested, under atropine and, when found necessary, the proper lenses prescribed. Under the artificial conditions in which we live the continual close contact of people and things, we open our eyes on a spatial environment which at once demands an effort of accommodation and which is persistent until we close our eyes in sleep. This is independent of what we may have to use at our working point which, for the most of us, means two or three units constantly applied. Of course it is possible but neither probable nor plausible that disorder in any organ of the body can disturb or alter the function of any other organ through their nervous connections and the eye may be included, in this broad generalization, as either the affected or the affecting organ. To the former may belong that type of strained eyes from genital, nasal, or dental origin and which is manifest as painful, ill-sustained, or photophobic vision. To classify a reflex neurosis as ocular we must show close connection between the two and properly evaluate other causal factors.

The clinician who takes a broad outlook over the field of medicine and who does not let his special view narrow the medical horizon will not extravagantly attribute to eyestrain all the ills that flesh is heir to but will base his assertions upon well proved instances. It is a clinical fact, that perhaps may be new to some of you, that to eyestrain is due by far the larger proportion of functional digestive disorders, not excluding appendicitis nor other intestinal disturbances. Incidental to the latter may arise an intestinal toxemia which may find expression in tinnitus aurium or vertigo and which may be the main factor in the presclerotic stage of vascular hypertension. These disorders have been mentioned first because they outrank in frequency headache which comes numerically second. To investigate every cause of headache would cover practically the entire field of medicine. To bring it into the domain of the ocular neuroses many things must be considered.

1. *Age*.—The very young or the very old do not suffer from this type. It begins with the incidence of school life, attains its maximal frequency and intensity during adolescence, diminishes in both re-

spects with advancing years, and finally disappears with the failure of accommodative power.

2. *Location.*—This is usually frontal or vertical nuchal pain, ocular in origin, but more frequently due to muscle imbalances than to errors of refraction.

3. *Type.*—Simple headache alone is not typical of eyestrain. The usual form is a sequence of headache, nausea, and often vomiting.

4. *Incidence.*—This is commonly matutinal, wearing off during the morning, to recur in the afternoon, and initiated or aggravated by much use of the eyes at close range. The so-called ophthalmic migraine, characterized by scotoma scintillans, transient hemianopsia, and violent unilateral pain in the head is not due to eyestrain and is rarely even ameliorated by the correction of any existing ametropia. Vertigo, occurring alone without previous headache or vomiting, is not usually a symptom of ametropia but of a disturbance of binocular single vision. Occurring suddenly, with diplopia and in a severe form, it is usually the expression of a lesion in the floor of the third ventricle or the aqueduct of Sylvius. The moderate and chronic type is a muscular insufficiency of a levator or depressor.

Neurasthenia is a convenient cloak behind which hides much diagnostic incapacity. It is not my contention that nervous exhaustion is due solely to eyestrain but most certainly is it true that this condition, arising from whatever cause, may be perpetuated from this source and that an uncorrected error of refraction may be an effectual bar to recovery. The same may be said of epilepsy and chorea. We do not know the pathology but we are dealing with the nervous mechanism in a state of unstable equilibrium and even a little extra stress imposed or relieved may serve to overturn or maintain the balance. None but the extremist asserts that epilepsy is due to eyestrain but in some cases a cure has been effected by correction of the refraction or the restoration of the muscle balance.

The foregoing covers the major and more common types of the reflex ocular neuroses. There are many others, rarer but equally important, but only one will be mentioned and this is done simply because the connection seems so irrelevant. There is a form of recurrent congestive rhinitis in which there are no visible intranasal disturbances except a reddened mucous membrane. It is not a vasomotor rhinitis nor is it hay fever, although it more closely resembles the latter in the paroxysms of sneezing and the watery eyes, but differs from it in the scanty secretion from the nose. Many times have such patients found prompt and permanent relief from the proper glasses.

The time has gone by when it is necessary to bring forward proof of the interrelation of such morbidities herein detailed. Why this has not received a larger recognition is because of the slipshod methods through which the only remedy—perfectly fitting glasses—has failed of application. To do accurate refraction work requires so large a mixture of brains, tact, time, and patience, and so meticulous an observance of the refinements of exactitude, that few men can qualify for the work—nothing short of perfection will attain results.

Glasses either fit or they do not. There is no middle ground and I can assure you that a lens which nearly but does not quite correct an ametropia not only fails to give relief but greatly aggravates the strain upon the nervous system.

Let me urge the routine examination of the eyes in all cases where organic lesions are lacking to account for the symptoms. If the test shows no ametropia or muscle imbalance you have eliminated the most important causal factors of the functional disorders. If, on the other hand, such errors are found and are properly corrected this may be to your patient a portal through which he shall pass out onto the road which leads to health and happiness.

276 MADISON AVENUE.

MALNUTRITION IN INFANCY AND CHILDHOOD*

By J. D. LEEBRON, M. D.,
Philadelphia,

Assistant Instructor in Pediatrics, Graduate School of the University of Pennsylvania; Instructor in Pediatrics at Temple University, etc.

The malnourished child has of late been the topic of great interest, especially since it was discovered that such a large proportion of children are affected. All over the country pediatricists and various agencies interested in child welfare are attempting to combat this condition by educational propaganda through social workers, teachers, and parents.

Malnutrition denotes imperfect nutritional development, said by Newman (1) to be a low condition of health and body substance which is not only measurable by height, weight, and robustness, but by many other signs and symptoms. These will be described elsewhere. It differs from infantile wasting because of the ready response to proper nutritious food. An unusual degree of malnutrition is termed inanition. Czerny and Keller describe another form of malnutrition found in infants raised on starchy foods. Emerson (2) holds that a child who is ten per cent. underweight for its height is undernourished. Holt (3) modifies this statement by asserting that the ten per cent. underweight for height rule should be applied only to children from six to ten years old, while children from eleven to sixteen should be classified as undernourished when underweight for height ratio is twelve per cent.

Attention has been called to the alarming annual increase in the proportion of malnutrition in school children in New York city (4). The figures gradually increased from five per cent. in 1914 to nineteen per cent. in 1918. A large increase in this condition all over the country in the last three years is said to be due to the changed economic conditions resulting from the war. At present about twenty to thirty per cent. of the school children—four to six million—in the United States are undernourished. Our sudden awakening to this appalling condition of our country's best resources—the children—was made possible by the inauguration of school inspection cooperating with children's bureaus and other child welfare agencies. This

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condition has no doubt been in existence for many years, but was not called to the attention by parents for two reasons: 1. Because there is no pain associated with it, and, 2, because of the common belief, especially among the ignorant classes, that a child becomes less delicate as it grows older. These have largely been overcome by educational propaganda.

To recognize this condition in infants, one has but to remember that the weight at birth, usually about seven and a half pounds, should be doubled in six months and tripled in one year, while during the second year there should be a gain of six pounds; that its height at birth is about twenty inches, with a gain of eight inches during the first year, making a total height of twenty-eight inches at the end of one year. At two years the infant should be thirty-two inches tall.

In the malnourished infant the growth of the body in weight or height is below normal. Its actions are weak, it has flabby muscles, cannot hold its head up at the proper age—about the third month—it cannot sit up at the usual period—between the sixth and eighth months—nor stand up with support at the normal period—about the tenth month. Usually there are gastrointestinal disturbances. Rickets is common in the milder cases, but may be absent in the severe forms. Often the assimilative and digestive powers are so impaired that it requires experienced attention to find a diet sufficiently nourishing and at the same time to prevent further digestive disturbances and loss in weight.

Frequently the condition becomes acute either from the onset or as the result of a milder degree of malnutrition. The symptoms are then aggravated and a subnormal temperature follows the rapid loss of weight, the fontanelles are sunken, and the hollowness about the eyes becomes marked. Other signs of great depression, such as feeble pulse, pallor, and weak cry suggesting infantile atrophy, present themselves.

The malnourished child does not possess all the characteristics of a normal child, these characteristics varying according to the degree of malnutrition present. Comparison between the two types of children is herewith given to assist in the classification to follow:

Healthy Well Nourished Child.

1. Measures up to family and racial standards of age in height and weight.

2. Gives no history of any chronic disease since birth.

3. The color is good, the hair smooth and glossy, there is no hollowness about the eyes.

Unhealthy Malnourished Child.

1. May have been a premature born baby, or possess a congenital constitutional debility. The parents may be diseased with tuberculosis or syphilis, or they may be just delicate. From infancy the growth of the body in weight or height has been below normal.

2. May give a history of chronic disturbances or even repeated acute disorders usually gastroenteric.

3. The color is that of anemia, varying from a pale, waxy, muddy, sallow, or even pasty or earthy appearance. The hair is rough. Blue circles or dark hollows are usually seen under the eyes.

Healthy Well Nourished Child.

4. The eyes are bright; the mucous membranes of the eyelids and mouth show a good healthy color.

5. It has good carriage, elastic step, firm flesh and well developed muscles; and is constantly physically and mentally active, and full of interest, attention, and vigor.

6. It usually has a strong voice, and a goodnatured disposition; and is a sound sleeper.

7. The appetite, bowel movements, and digestion are regular and good.

8. The chest is well developed; the shoulders properly held; there is an absence of decayed teeth, diseased or enlarged tonsils, and adenoids.

Unhealthy Malnourished Child.

4. The eyes are dull; and the mucous membranes of the eyelids and mouth are pale and often colorless.

5. The skin is loose, the flesh flabby, the muscles undeveloped, the carriage poor. Frequently such a child is found leaning against the school wall or fence, inactive, listless, and inattentive, while other children are hard at play.

6. It usually has a feeble voice, an irritable disposition, and is a disturbed sleeper.

7. The tongue is coated, the bowels constipated, and there is a lack of appetite.

8. It is usually round shouldered, and when extremely so, has a deformity known as "wings"; as a rule there are present decayed teeth, enlarged or diseased tonsils with adenoids.

Various scales have been devised for the guidance of the pediatricist who wishes to make thorough physical examinations of children, all of which are useful. Personally, I prefer the Dunfermline scale suggested by McKenzie, which is widely used in this country. It divides children into four classes:

1. Excellent. The state of nutrition of a child of superior healthy condition, and who is usually a perfect, well nourished child.

2. Passable. Those children not reaching quite up to excellent, often termed fair, normal or good.

3. Poor. Where supervision is required.

4. Very poor. Where actual medical attention is needed.

Children graded in class three and four are usually suffering from malnutrition.

The majority of children are born healthy, and when proper nutrition, surroundings, and management are supplied, develop into healthy, normal, foundations of manhood. It is not my intention at this time to enter into a lengthy discussion of the causes, but the mention of the etiological factors is necessary to help out in the management.

There may be a congenital constitutional debility (5)—here may be included many cases of premature births. A congenital excessively nervous development is the forerunner of many cases of malnutrition in childhood, as is the offspring of diseased or delicate parents. In most cases, malnutrition is developed after birth. It may appear after the existence of any of the chronic diseases such as chronic gastrointestinal disturbances, syphilis, tuberculosis, diabetes, malignant growths, or rickets; it may often follow acute systemic disturbances especially of the digestive tract. Ignorance, as well as poverty and lack of intelligent parental control, is in my mind responsible for the majority of cases of malnutrition in infancy and in the growing child, as these lead up to the almost specific causes, which are improper or insufficient diet, rest, and sleep. Fatigue has recently been shown by Emerson to be

a chief cause, as many school children who have been encouraged to rest flat on their backs in the afternoon for about thirty minutes, increased their weight and height curve more rapidly than those who did not undergo such treatment. Unhygienic surroundings, lack of fresh air, and physical defects, such as bad teeth, eye strain, enlarged tonsils, and adenoids are also important causes.

As there are so many causes of malnutrition, it is impossible to go into all the details of correction in a short paper, and only the chief factors will be discussed. In the management of malnutrition in infancy, prophylaxis is an important factor and it is carried out in the way of breast feeding continued in whole or in part for at least nine months. Should artificial feeding have to be resorted to, then the careful selection of milk modifications is necessary. Certified milk, when obtainable, is best for this purpose. A plentiful supply of fresh air and at the same time avoidance of excessive summer heat, and gastrointestinal disturbances, are good preventive measures.

The results of the treatment depend upon ascertaining the cause. If the condition occurs in the breast fed, two things must be looked into: 1. That the chemistry of the breast milk is of normal consistency. 2. That if normal the infant is strong enough to suck a sufficient quantity to nourish it. If the infant is too weak and the milk normal, proper nourishing may be accomplished by withdrawing the milk with the breast pump, and feeding from a dropper or bottle in small quantities frequently repeated. Gavage may be resorted to in the bottle fed as well as in the breast fed babies who are too weak, and may be given in larger quantities and at longer intervals. Best results have been obtained with high protein foods such as buttermilk and Eiweiss or albumen milk. Malt soups are recommended, but must not be given exclusively, as this would tend to bring on a scurbitic condition. Where there is intolerance to cow's milk, whey or albumen water are of temporary value. Where there is an excess of starch feeding, the correction of that kind of diet is unquestionably the remedy, and is accomplished by the reduction in starchy foods and the addition of fat and proteids.

The early introduction of the infant to fresh air is often neglected by the rich as well as the poor. An infant may be taken out into the fresh air, when properly dressed, after it is two weeks old for fifteen to twenty minutes a day at first, prolonging its outdoor time as it grows older, extremes of temperature and stormy days being the only contraindication. Where this is impossible, plenty of fresh air should be admitted into the room. If the current comes in too strong it may be modified by a screen or board. In atrophic infants, where fluid is badly needed but not retained because of vomiting, enterocolitis or hypodermoclysis may be resorted to. A daily gentle rub down of cod liver oil by the mother is valuable, as the skin absorbs this oil readily without aggravating gastrointestinal disturbances. Whisky, digalen, and tincture of strophanthus are best employed when stimulation is needed.

The management in the older child is more difficult because of the many causes operative. Im-

proper diet or the partaking of unnecessary foods, such as cake and candy between meals, is often to blame for the condition. Children frequently refuse substantial, nourishing foods because of a craving for undesirable articles, and it requires patience as well as knowledge of handling the child to train and gradually induce it to accept the foods necessary to its growth and development. Regulation of meals is another difficult problem in children. They often refuse to eat when it is meal time, or may take a small portion of food and claim either absence of appetite or a satisfied hunger. In such cases forcing the child does good at times, but it is best to skip a meal so that there may be a good appetite at the next meal. Lunches at public schools are furnished in many cities and as the food is carefully selected and prepared, it is an experiment that has brought excellent results. The hygienic management must be carefully supervised, for children are confined too long indoors. There are too many school hours, especially for the young child who is just starting. Even worse than this is the constant insistence of the parents to overburden the child's mind early with music and religious training, which cause an additional confinement indoors, so much so that many such children become indoor fiends.

While outdoor activity must be encouraged, regulation and proper supervision are essential because a child as a rule does not know when to stop—it will play until fatigued. This often causes nervousness and irritability, which leads up to insomnia and precipitates malnutrition. Fresh air classes in public schools prove their benefit to such children. Overexcitement, late hours, moving picture shows, and irritable and high strung parents are factors favoring this condition.

Physical defects should be corrected, especially the removal of diseased and hypertrophied tonsils and adenoids. Attention to the eyes and teeth and the regulation of bowel movements are equally important. Drug therapy is of little use in this condition, except symptomatically. The various malts and cod liver oil preparations are very useful. Proper dietetic measures with regulated exercises and periods of rest, with massage and hydrotherapy are of great value. The biggest thing at present in prevention as well as treatment is the development of the nutrition clinic which is rapidly spreading throughout the entire country. This step is a movement toward diminishing the high percentage of malnutrition in this country which if unchecked does not only retard the normal development of the children, but reduces their resisting power of infection, causing a higher disease and death rate.

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1402 SPRUCE STREET.

THE TUBERCULOUS VETERANS.*

By JOHN L. MANDRACCHIA, M. D.,
Brooklyn, N. Y.

Assistant Surgeon, U. S. Public Health Service, reserve; Tuberculosis Expert, Federal Board for Vocational Education.

One of the principal problems, and probably one of the most important, of the reconstruction work of the Federal Board for Vocational Education, is the rehabilitation of tuberculous exsoldiers, sailors, and marines. While a great deal has been accomplished in this work by the organization of special schools or centres in properly selected sections of the country, the central office has recently gone one step further and established the Tuberculosis Institute in which the National Tuberculosis Association helped us. At these institute conferences, which were held in this city last month, the tuberculosis experts of the various districts were summoned together and many important plans, ideas, and suggestions were exchanged. Being the representative at these conferences for the district of New York, I shall consider it my duty at all times to give any information which was acquired at the meetings.

We know that a soldier with partial destruction of limbs can be rehabilitated to a great extent by intensive training, after furnishing him with a suitable prosthesis, and perhaps he may become one hundred per cent. efficient, but it is not so with the man "wounded by tuberculosis"—the man who harbors tubercle bacilli. That man is probably mutilated for the rest of his life. Hence the gravity of this phase of the rehabilitation work.

The medical officers of the Federal board can help the tuberculous exservice man a great deal by giving him a good medical report. Such a medical report requires time, but the time is not wasted in making a complete medical examination, because that examination never comes back marked "I b." which means that the medical is doubtful. In order to facilitate the medical examination reports, I have drawn up a circular containing instructions for tuberculosis examinations which it is believed includes the essentials that a tuberculosis report should have. These instructions are to be mimeographed in due time and copies will be distributed to medical officers. Let me enumerate a few of the essential features in these instructions.

In the military history you are to include such facts as duration of service, the hospitals the subject has been in, how long, and when. If the man asserts that he has tuberculosis, inquire as to when he first found this out and who told him. Was he exposed to war gasses? Did he receive hospital treatment for this? Inquire also as to pleurisy, influenza, pneumonia, and any trauma of the chest. Under past symptoms, note such cardinal symptoms as hemoptysis, lack of endurance, loss of weight, and night sweats. Under the subsidiary symptoms, note the history of chills, cough and expectoration.

Under present complaint, state just what the man is suffering from now. Whenever possible use the man's words. There is nothing more just than the man's exact words. Don't use direct questions. Don't give the diagnosis. Give the symptoms.

Under physical examination have your man stripped to the waist and facing the window; that is the only way to examine a chest. Don't raise the man's shirt to his shoulders and then go over his chest; that is always the prelude to a second examination. Be just to the man. By inspection note the appearance and general makeup of the individual, and also the respiratory movement. Inspection can show a great deal if we use our perceiving apparatus. Then go on to palpation. The value of palpation depends on the examiner's sensitiveness. In percussion, note especially the apex and basis of the lungs and also the cardiac topography. On auscultation, state the accurate location and type of the râles, and whether they are elicited on inspiration, expiration, or both, or after coughing. The râles which are heard only on inspiration are not tuberculous. If the râles are heard on both inspiration and expiration, anteriorly above the level of the third rib and posteriorly above the level of the fifth dorsal spine, you can safely consider that case tuberculous until proved otherwise.

Of course no chest is completely auscultated without a heart examination. Record the man's temperature and his pulse. Don't forget to weigh him and ask what his greatest weight has been, his lowest, and his normal. If the man has a productive cough, examine the sputum whether you suspect tuberculosis or not. Make it a routine measure. You would be surprised what discoveries I have made with this procedure. In regard to the x ray, do not use it for diagnostic purposes, use it only for corroborative evidence. If you are to send your patient to the roentgenologist find out whether that man's lesion is active or arrested, recent or old.

Under paragraph eight the diagnosis is to be clearly stated. If the man has pulmonary tuberculosis, it is essential that you should state whether the condition is active or arrested. If arrested, don't just say chronic pulmonary tuberculosis, but say chronic pulmonary tuberculosis, arrested. In these instructions the following groups are explained:

1. *Apparently cured*.—All constitutional symptoms and expectoration with bacilli absent for a period of two years under ordinary conditions of life.

2. *Arrested*.—All constitutional symptoms and expectoration with bacilli absent for a period of six months, the physical signs to be those of a healed lesion.

3. *Apparently arrested*.—All constitutional symptoms and expectoration with bacilli absent for a period of three months, the physical signs to be those of a healed lesion.

4. *Quiescent*.—Absence of all constitutional symptoms, expectoration and bacilli negative, physical signs stationary or retrogressive, the foregoing condition to have existed for at least two months.

Quiescent cases of pulmonary tuberculosis with negative sputum should not be recommended for training unless upon special recommendation of the district medical officer and should remain under expert medical supervision while in training. Cases not coming under one of those groups are to be considered as active and absolutely not feasible for

* Read at meeting of the medical officers of the New York District of the Federal Board for Vocational Education.

training. By including these essentials in a medical report, I believe we can arrive at a diagnosis.

A word about rating a case. Always bear in mind that a patient with tuberculosis is a potential invalid and in rating a case this fact is to be given thorough consideration. The examiner who rates a case of tuberculosis incurred in service a negligible handicap has a great deal to learn about tuberculosis.

Under former instructions, any case of tuberculosis traceable to service was considered a major vocational handicap. Instructions which supplemented these instructions read: "Every man who has once manifested active pulmonary tuberculosis shall be regarded as having sustained a physical disability of at least twenty-five per cent. (major) for a period of two years." With such a ruling all cases whether they had a vocational handicap or not were considered major cases for two years. Just imagine a soldier having tuberculosis fifteen or twenty years ago—he could then come to the board and be considered a major case for two years!

It did not take the central office very long to correct this with Information No. 43 which is now in force and reads as follows: "It seems to be the impression that a man who has manifested tuberculosis or has been a tuberculosis suspect is eligible for training regardless of the vocational handicap. A great many approvals have been received where a soldier has merely been a tuberculosis suspect. He is clearly not eligible for training unless it is proved conclusively that he has manifested active tuberculosis either in the service or subsequent to his discharge. When a man has manifested active tuberculosis subsequent to discharge proof must be established that it is traceable to service. The question of vocational handicap enters into these cases the same as it does in any other disability case, except as especially stated for major amputations, loss of one eye, and bad facial disfigurement."

This shows conclusively how a tuberculosis disability is rated at present. If a man is compensable by the Bureau of War Risk Insurance, he is at least a minor case. If, on the other hand, a soldier cannot carry on his former vocation, he is then a major case. At any rate the two year proposition is now extinct.¹

I wish to emphasize in closing these remarks that many an arrested case in which there has not been a previous hardening process of the weak muscles and which appears to the examiner as a negligible or minor disability, sometimes develops into an activity which makes that soldier a total handicap as far as his former vocation is concerned. The prevention of relapses in these cases to some extent depends on us and it is not only our duty to give the soldier what is due him but it is also our task to see that he is given the proper vocational guidance. It is up to us to rehabilitate successfully these exservice men.

¹Recent instructions state that "All persons who have manifested active pulmonary tuberculosis while in service or who have, after discharge, manifested active pulmonary tuberculosis which is traceable to service, shall be considered to have a major vocational handicap. This is to be applied irrespective of vocation." Therefore, unless a lesion has become active during service or within a reasonable period after discharge and found traceable to service, a man is ineligible for training.

THE PROBLEM OF THE MALINGERER.

By JUDSON C. FISHER, M. D.,
New York.

No state or government has discussed working-men's compensation acts unless at some time during the discussion someone has raised the problem of the malingerer. Persons who have not spent a great deal of time in study, or who lack experience in the practical workings of industry will magnify the problem to a great extent. Others, presumably well informed, will minimize the problem even to the degree of calling it, as did the Hon. Royal Meeker, "a figment of the overheated imagination." Suffice it to say, however, that there is a real problem as every industrial surgeon recognizes.

As long as there is human nature so long will there be malingerers. As long as red blooded men exist they will decry and seek to eliminate the man who lacks moral backbone and prefers to live at the expense of society. The problem is his detection and eradication. Malingerers were a problem in biblical history and they are a problem today.

The weakness which leads a workman to take advantage of benefits to which he is not rightly entitled is seen in the business and professional life also. The accident and health business could be conducted at much lower rates if professional business men demanded only what the policies intended they should receive. Even the clergy are not above demanding disabilities longer and greater than the facts warrant. Our application will likewise be confined to industry.

THE MALINGERER HIMSELF.

There are two classes of malingerers—real and exaggerators. A real malingerer is a real crook and should be condemned as such—that is the result of the survival of the fittest instinct. The real malingerers are about one in a hundred, in my experience, among all classes, and thirty per cent. among Italian and Polish longshoremen. Most of their attending doctors are unscrupulous.

The exaggerators are those who have a legitimate accident. After deriving benefits for a legitimate period for their types of accidents they mangle and prolong disability so as to get all they can. This class consists of about twenty-five per cent. of all accidents and seventy per cent. of longshore cases, in my experience. Strictly speaking, only about one man in a hundred will tell the accident board: "I was able to work three weeks ago, or on such and such a date, but my old job wasn't available or suitable and I had to find another." From this viewpoint ninety-nine per cent. of the men are out to get all they can get. The workmen's compensation laws contemplate disability only and not insurance of a job. In this class alone, if ninety-nine received an average of one week more than they were entitled to receive at an average of ten dollars a week, every hundred accidents reported would cost approximately one thousand dollars. Three hundred thousand accidents would mean practically three million dollars. This is a low estimate because the malingerer is not usually noticed until after several weeks at least when the man's cases is heard on the calendar. He may even then

be advised to return to work and his case continued. He may not appear at the next hearing or two and then return to work the day before the final hearing. His disability should not be measured by the date of return to work, but by the termination of disability. However, there are various other causes for malingering which throw some light on these moral cowards.

Malingering is common in the Italian and Polish races. Someone has said that elimination of foreigners will go far toward solving the problem. My study of this phase has convinced me that it is not necessarily the foreigner, but the vultures who prey upon them. By this I mean the unscrupulous men who coach the real or fake injured men, appear with them before accident boards, assist in making fake claims for compensation, give them a course under unscrupulous doctors in the school for claimants intended to fool the examining doctors, and then regardless of the honesty of the claim cash the awards and deprive the man of part of that which the State said he should have.

The age of malingerers is dependent upon local conditions. The amount of money coming into the family from other members, lodges, sickness, insurance, etc., plus perhaps rents or dividends from building and loan associations, often determine the length of disability at all ages. In general, however, more malingerers are found from thirty-five to sixty-five than among the younger ages. The younger the injured, the less prolonged the disability. It may be argued that that is because of the greater healing powers, but it is mostly because of the more need for money and the ambition of youth.

Mentally I class malingerers as abnormal—they are out of touch, as it were. Revenge, ambition for sympathy and alms, mimicism, fanaticism or manic depressive psychosis, combined with cunning, is the final diagnosis in nearly every case. The greater number of malingerers are among the less educated—we might say, the less civilized. There are cases where a doctor has actually made a man believe he is unable to work. Here may be a truly unconscious malingering whose family suffers and the guilty doctor goes unpunished.

The employer may give benefits in addition to the legal benefits. This aids malingering because the workman sometimes is making as much while idle as when working. Delays in hearing cases, indiscriminate benefits for trivial injuries, allowing politics to interfere with business, lack of trained medical commissioners and freedom from prosecution are all causes contributed by the State. Sentiment, loyalty to family on account of practice, lodge doctors, unscrupulous and incompetent doctors all contribute their mite in unduly prolonging the disability. Much credit is due the workman whose moral stability is weakened, but who rises above the various factors—solving his own problem. He becomes an example for good and not for evil.

THE EMPLOYER'S PROBLEM.

Malingerers tend to lower the moral atmosphere. While examining a claimant I remarked as to his ability to return to work. He replied, "Don't I

need a brace?" Persistent questioning brought out the information that he knew a Mr. X who had suffered a contusion to his leg, had been given a brace, which he wore at hearings before the industrial commission. He discarded the brace after each hearing and would work as a bartender in the meantime at increased wages over former employment. He would repeat the performance at each hearing, bragging to those waiting for their cases to be called as to his system. He thus drew unjust compensation for a year and a half. Such a man is a moral leper in a group of workmen.

A malingering in a group of workmen means that he will do haphazard work. He will by his example lower the standard of efficiency among those about him. There are always those who imitate the man who seems to be getting away with something. This results in a lowering of production and increased cost of production. The cost of claim department expense, medical expense, compensation benefits and loss of production in any one case of malingering is considerable. Let us conservatively estimate this at two hundred dollars a case. If ten per cent. of employees malingering and an industry has two thousand men (not including turnover) the cost would be forty thousand dollars to that one plant alone. To detect malingerers will be one method in the groping around for methods to reduce the high cost of living. Malingerers who are working are classed as lazy, but in fact they are afflicted with ergophobia as long as they can receive enough to exist upon. Every large employer should have a competent investigator (who may be a surgeon), but a man in sympathy with those whose mental strength is not as great as their physical strength. All cases of continued inattention or laziness should be reported and the man not discharged until the investigation proved him unfitted for the job. If malingering about his work is as apparent as malingering about his injuries, he should then be refused association with those whose motto may be industry and efficiency.

Local benefit societies and bonus systems go a great way toward solving the problem as far as the employer is concerned. Stability of labor, that is, the least possible labor turnover, means loyalty of labor. Labor asks no charity, but recognizes assistance and interest of the employer. Faithful employees will practically eliminate the malingering by the application of the square deal principle. Workmen are quick to detect slackers, and by their insisting that the slackers quit or work they aid in the solution of the problem.

THE INDUSTRIAL SURGEON'S PROBLEM.

When in 1916 in Pittsburgh I said that the surgeons of Pennsylvania would be launched into a new specialty—industrial surgery. I did not have in mind the usual advances in the science of surgery to which they all subscribe, or that injuries would be cured any quicker. I had in mind the viewpoint which passes from the pathological to the vocational. Under the liability law, when a man was injured he usually settled and the surgeon or the employer didn't have much concern as to the length of disability; workmen's compensation, however, has brought the new viewpoint, that of returning the

injured employee to work in the shortest time with the best possible surgical results, but in addition having in mind the ability of the injured to resume work. It is no longer proper to say at the end of two months: "Go back to work. Use will loosen up the joints." Now it is: "You are able to resume your usual vocation." To be able to say the latter has resulted in longer disability, but better function. It has entailed more medical expense, but better high medical cost than high cost in permanent disabilities. This viewpoint tends to spot the malingerer. The employer depends upon the surgeon to protect his interests. The malingerer rubs salt in his skin, makes false bruises, ties tight bandages above to cause innocent edema of the arms and legs, puts plasters on his back, and uses hundreds of schemes for the simulation of injury taught by the cunning of unscrupulous doctors to fool the industrial surgeons. All real surgeons have the human element in mind and do not desire to be wrapped up in the medical problem as to forget the other points of view. Hence we have the malingerer trying to outwit the doctor in his honesty to the trust of the employer and faithful employee.

To detect the malingerer is to be of service to both the employer and the rank and file. Detection is a matter of study. Complaints of subjective symptoms only make a good case for the neurologist, and every industrial surgeon should have neurological training. If careless in examination or termination of disability the surgeon may do an injustice. The man may have a stronger body for his later years if he is now allowed sufficient rest and recuperation, instead of being plunged into industry and trusting to nature. Improperly to brand an honestly injured man as a fakir is one of the most serious of errors. A surgeon can put on the wrong medicine and rectify it, but a wound in the heart of a sincere workman is a wound hard to heal. On the other hand the surgeon should detect the fakir because it is essential that the doctor himself be not imposed upon. The curse of too much work for the surgeon allows many a malingerer to go by unnoticed. The surgeon hasn't time to detect him and he continues to enjoy his unearned money.

Every industrial surgeon should leave the technical side of surgery as soon as possible. His assistants can do the operative work unless it is out of the ordinary, and thus give him time for study and supervision. Industry should furnish the chief surgeon with social investigators and a proper system of reporting accidents. There should be careful medical and social examinations of the employees at the time of hiring and every six months thereafter. Then the surgeons can tell how many hernias, varicose ulcers, and other lesions have actually arisen out of and in the course of employment. Objection to this will be made, of course, in that the men who are rejected altogether are thrown on the industrial scrap heap. In one industry one hundred and twenty thousand applicants were examined; twelve thousand, or ten per cent., were rejected altogether, sixty-six thousand had no disability, and the rest were accepted with the

defects noted. Had the compensation laws allowed the employer credit for disabilities existing at time of hiring it would have cut down malingering and the twelve thousand need not have been rejected.

One cannot blame an employer for not taking substandard men when the accident boards in most states continue to rule that aggravation of a former condition entitles a man to full benefits under the compensation law. A ruling by the boards as to a definite term of disability for definite injuries in the complicated cases would encourage employers to hire the substandard men, would keep them from malingering, and, better yet, would save them from the so-called industrial scrap heap.

The science of detection of malingers is a study for doctors in executive session. The schools supported with the sole idea of fooling the medical examiners by simulation of injury, know too much now. During the last month a liability claimant bragged that he had three houses worth thirty thousand dollars. When asked how he did it, he said by faked claims, adding that he had claims pending in New York, Allentown, Philadelphia and Washington, and that he had settled a claim against one insurance company for eight hundred dollars the day before. The detection and prosecution of this man would save other employers lots of money and bother, but best of all it would aid society and would help brand the meanest of all crooks. The detection of malingers is a science in itself and should be studied as such. Research laboratories should be conducted for the best methods and sure methods. Postgraduate courses should be given so that the industrial surgeon will be of benefit in curing all the ills of industry as the name implies.

THE PROBLEM OF THE INDUSTRIAL BOARD.

The industrial board is just a synonym in our form of government for justice. No one branch of government, unless it be the courts, has such responsibility. In court the cases are decided upon points of law almost entirely. In workmen's compensation the cases are not bound by rules of evidence, and justice is administered in proportion to the amount of human understanding and common sense of the members of the board unfettered by political affiliations. A serious problem is one of the malingering.

It is interesting to note the attitude of various industrial boards as to malingers. In every discussion as to the waiting periods there sometimes comes the argument, reduction of the waiting period before compensation starts increases the malingering. My belief is that the reduction of the waiting period from fourteen to seven days has no connection with malingering—a crook is a crook. The attitude of some of the various boards in this particular may be summed up in a reply dated February 2, 1920, from the New Jersey Workmen's Compensation Bureau: "We do not find any additional tendency to malingering as a result of the reduction of our waiting period." Similar replies to the same question were received from Pennsylvania, Massachusetts, Illinois, Kentucky, Wisconsin and California, where the waiting periods had been reduced. These boards admit the problem but not the waiting period as a cause.

Failure to detect the malingerer is unjust both to the employer and to the honest workman. It is unjust to the employer in that it compels him to pay unjust benefits and lowers the morale of the workmen with whom the malingerer associates. It is unjust to the honest workman because labor is entitled to every cent the injury calls for. If the malingerer is detected and dealt with, then without increasing the yearly cost to society the workman can receive increased benefits. The problem of the boards is to detect the fraud. Unduly prolonged disabilities are passed every day by the boards, trumped up claims are allowed also. Why is this? There are two explanations. The first is that the boards are not allowed by law the services of industrial surgeons skilled to detect malingerers. They have to depend upon the employer's surgeon or the family doctor, or surgeons who fail to grasp the vocational viewpoint. They look with a certain amount of suspicion on the medical reports, as was done in the old liability days when the injuries were minimized or magnified in order to obtain a less or greater amount of money. In these days of industrial medicine we hear less of this suspicion because the boards now realize that the employer's surgeons are endeavoring to restore the injured to productive industry, and that their ideas as to the compensation cases are governed by the new viewpoint. Where there is little labor turnover there is little malingering.

The second explanation is that the accident boards fear to offend the labor men and their unions. They may lose sight of the fact that malingerers impose on labor unions as well. They also must realize that the best element in labor circles demands that labor receive all the benefits to which it is justly entitled, but it decries the slackers. Malingerers should be exposed by the workmen and expelled by their employers.

The boards would detect more malingering if they had emergency calendars presided over by a competent medical commissioner. Then suspected cases could be immediately heard and investigated. If the claim were meritorious well and good; if the claim were fraudulent then there should be immediate prosecution. Every board has had cases where perjury was openly committed and proved, but how many perjurers have ever been punished? As custodians of millions of dollars and charged with a duty to be fair to all, the boards are entitled to proper medical advisors whose word shall be unquestioned in the matter of malingering. Then only will they be faithful in protecting the interests of society as a whole.

SOCIETY ITSELF.

No one objects to assuming his just burden of cost or taxes; likewise no American desires to assume the burdens imposed by a malingerer. He sees no reason why the malingerer at the expense of society should draw benefits to which he isn't entitled. Society knows that one element contributing to malingering has been the laxity of the employers, industrial boards and fellow workmen to weed out the malingerer. Society knows that in the early days of compensation malingering was not common. It knows that the methods of per-

forming the work have not changed; the type of the workman has not changed; the types of injuries have not changed; the wages are higher and theoretically there should be less malingering on account of small benefits. It also knows that there are a greater number of reportable accidents in proportion to wage earners than there were in the early days. It demands an answer and I think there are two reasons:

First.—The encouragement to defraud. There has been high pressure due to war and a carelessness in the detection and punishment of malingerers, lack of time on the part of examining doctors to study the cases, lowering of morale by the bad examples set and the general unrest in regard to easy money.

Second.—The legal reconstruction and education. Each state continues to attempt to perfect its laws and to give the workman a better understanding of his rights under the law. The reduction of the waiting period alone in twenty-seven states has caused an increase of fifty per cent. in compensable cases. The credit rating system plus safety first movements have resulted in the employee becoming educated in reporting at once the least scratch or injury.

Each malingerer is a dead weight on society. His proportionate cost is passed on to the consumer and the workman has to pay his share of the increased cost. Society demands then as one means of decreasing the high cost of living that labor assist the employer to purge his ranks of those morally unworthy. Society desires to preserve its ideals and anything which aims to destroy the moral fibre must be eliminated. When this has been accomplished we can unite in promoting comfort and happiness for all.

CONCLUSIONS.

The malingerer we have with us. My statistics are not in shape for publication yet, but in any event he is in the minority. To detect him we need the cooperation of:

1. The able industrial surgeon.
2. The employer.
3. The honest employees.
4. The industrial accident boards.
5. Society as a whole.

Then we shall give increased benefits to workmen without increased cost to the employer, and return to productive industry those who have fought a good fight and kept the faith. The slackers have no place in society. They have no right to attempt to lower the morals of the ninety and nine, or to take from the families of the worthy in order to feed the unworthy.

It is our duty not to forget, and only fair to emphasize, that the majority of the wage earners of this country desire to do the right thing, and that the bulk of the workmen's compensation problem has not to deal with fakirs and malingerers, but with self respecting, self reliant American citizens, whose rights should be protected against the demoralizing and socially wasteful curse of malingering.

905 WEST END AVENUE.

GROUP STUDY IN THE SURGERY OF THE HEAD.*

By SEYMOUR OPPENHEIMER, M. D., F. A. C. S.,
New York.

Otolaryngologist and Laryngologist to the Willard Parker Hospital, Associate Otolaryngologist, Mt. Sinai Hospital; Otolaryngologist to the Gouverneur Hospital.

Diagnosis is the fundamental part of any branch of medicine, and with the remarkable and ever increasing advances in medical science, the classic dictum *Qui bene diagnosticit, bene curat*, holds true more than ever. Given the *Plasmodium malariae* in the blood film, the *Treponema pallidum* in the dark field, or the Klebs-Loeffler bacillus in culture, the therapeutic indication is then clearcut.

So tremendous has been the increase of information and literature in the various special fields of medical practice, however, that it is no more possible to be a thorough general practitioner, that is, to be thoroughly trained and posted in all the branches of medicine. To overcome this seeming paradox, diagnostic groups or clinics have, of recent years, come into vogue, the object of these has been primarily to relieve the physician of his perplexities in the diagnosis and treatment of cases of an obscure or difficult nature. The demand then for a more comprehensive view of each patient is one of the reasons for this increasing vogue of group practice. It must be conceded that even group practice often leaves the patient a dividual (as old scholastics said) rather than an individual—and the studies made are likely to remain on an analytical basis rather than to aspire to the higher terrace of synthetic work. Otherwise stated, the dividual is considered to have *pes planus* for the orthopedist; astigmatism for the ophthalmologist; gastroptosis for the surgeon, and so on. The dividual patient remains a congeries rather than a collection of symptoms.

To those then who read the signs of the times, it must be evident that the practice of medicine is in a state of transition—that it is being slowly but surely revolutionized—that the individualistic is being superseded by the combined or group method of practice.

"The *raison d'être* for the lack of unifying influence which has existed heretofore between the several specialties in medicine, is not far to seek; the several branches have grown independent of the plant; individual departments and specialties have developed with remarkable rapidity with the resultant institution of a diversity of methods, required in different regions, and the control of variable technics. Unfortunately, there has been a lamentable lack of coordination and synchronization in the development and growth of the several specialties. In practice the work of the ophthalmologist, for example, has been definitely and specifically limited; it is circumscribed by the orbit; with the conditions outside of the bony cavity in which the eyeball and its adnexa are contained, the ophthalmologist is assumed, arbitrarily it seems, to have nothing to do; and yet, with few exceptions, the most serious inflammatory and degenerative in-

traocular diseases take origin outside the eye, and in the majority of cases in tissues that do not come within the field of ophthalmic exploration. Likewise in the field of otolaryngology investigation and clinical study have shown that the otolaryngologist cannot limit himself to the narrow confines of the ear, the nose and the throat; that these organs cannot be considered as independent of the rest of the human economy, when evidence of ear disease, of nasal disease, of throat disease so often manifests itself by symptoms which appear in other regions of the body."

"Patients come to us because they are sick, and they expect us to locate the source of their disease or disorder. They are justly impatient and dissatisfied then, when after the completion of an eye or an ear examination, or a nose and a throat examination, we consider our particular work completed whether or not it has aided them toward such an understanding of their condition as will again restore them to bodily health. The average man or woman is not satisfied to make the rounds of a circle of specialists, with the ever mounting expense, unless he can be made to see the bearing which each of these separate examinations has on their malady." In no field is this demand more urgent than in the highly complex region of the head and neck.

With reference to the special field of head and neck surgery, it may be of value at this point to outline, in a general way, the fields in which the constituent members of such a group may best correlate and coordinate their diagnostic and therapeutic measures, so that treatment may be prescribed with confidence and with accuracy of result. Given the combined diagnostic and therapeutic endeavors of the ophthalmologist, the otolaryngologist, the cranial surgeon, the neurologist, the dentist, the internist, the roentgenologist, and the laboratory worker, for example, it is manifest that the diagnosis of an obscure symptom complex referable to head or neck structures, is far more likely to be accurately forthcoming than it is where some individual physician essays the same task.

In ophthalmology, for example, it is not always an easy matter for the ophthalmologist to determine from subjective symptoms alone whether a given ocular symptom complex has its origin in the eye, the nose, the sinuses or whether it merely reflects some systemic condition. For example, the mere fact that an eye lesion coexists with a sinus infection is not evidence enough *per se* to establish a causal relation. A case of tobacco-alcohol amblyopia may present all the classical symptoms of retrobulbar neuritis and occur with a chronic sinus involvement. Frequently the most careful diagnostic group study is a necessity in the differentiation of a sinusitis from an intracranial lesion, as both may give rise to similar symptoms, notably headache and eye changes. So closely does the optic nerve lie to the sphenoid cavity that it may become involved in an inflammatory process of the sinus, with serious consequences to vision. Because of the proximity of the sinuses to the orbit, a general toxemia may be overlooked in our desire to establish a direct communication as the course of the infection, and

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here the laboratory may be required to clear up the picture. There is scarcely any visual field variation that may not be produced by accessory sinus infection, and in his perimetric studies the ophthalmologist may receive valuable assistance from the rhinologist. In some cases ocular symptoms may be the only demonstrable manifestation of the sinus involvement, the nasal examination being negative, as well as transillumination and röntgenography. Affections of the ear, especially middle ear diseases, have long been known as capable of giving rise to ocular paralyses. Von Hippel's disease affords another example of the intimate connection between the eye and ear. Choked disc and congestion of the papillæ are frequently observed in sinus thrombosis complicating mastoiditis. Nystagmus is common and of great diagnostic import in affections of the auditory labyrinth.

Perimetric work done in the study of diseases of the pituitary body has made it possible to diagnose accurately many cases, and thus pave the way for surgical intervention with brilliant results. Brain tumors, brain abscesses discovered, and meningitis diagnosed with the assistance of the ophthalmologist, have then been successfully operated upon by the otolaryngologist or cranial surgeon. In tabes dorsalis and general paresis discovery of the Argyll Robertson pupil, pupillary inequalities, ocular paralyses, visual field changes, and optic atrophy often enable the ophthalmologist to point out the onset of these grave maladies at a comparatively early stage. Hysteria is sometimes responsible for a variety of ocular symptoms, and these taken in conjunction with others may indicate to the neurologist the true nature of the condition. Brain tumor and abscess in the majority of cases give rise to choked disc, and here the ophthalmologist can co-operate most effectively with the neurologist and otolaryngologist, and with this finding of choked disc by the ophthalmologist presumptive indication for a decompression operation presents, regardless of the underlying pathological cause. The choked disc due to syphilis and that due to brain tumor are often indistinguishable ophthalmoscopically, and even the changes due to nephritis, at their inception, may be quite similar. In cooperation with the neurologist, the serologist and the internist, however, the picture may usually be easily and accurately clarified. In one and the same patient we may have ethmoiditis, refractive errors of a high grade and muscular insufficiencies. Aside from the assistance rendered to him, the ophthalmologist is often able to render valuable assistance to his confrères in a diagnostic group. The lagophthalmos or papilledema, associated with mastoid abscess, may be a deciding symptom in diagnosing obscure cases.

Tuberculous uveitis may point the way for the control of a case of pulmonary tuberculosis. The fundus may suggest mitral regurgitation, aortic stenosis, and embolism of the arteria centralis retinæ suggests endocarditis. Vitreous opacities point to a study of the gastrointestinal condition. Parasites occurring in the eye make necessary an investigation of the intestinal tract, and the eye shows early jaundice in the disease.

A violent iritis, without other demonstrable etio-

logical factor, may point the way for an attack upon a dental focus of infection, while obscure iritic attacks may readily be disclosed and cleared up by the Neisserian complement fixation tests in the hands of the laboratory worker.

In otolaryngology it may be in order to point out in a general way conditions wherein group study gives diagnostic data demonstrable in hardly any other way. As with the eye, investigation and clinical study have made it known that the ear could not be considered as an independent organ, when evidence of ear disease so often manifests itself by symptoms which appear in remote regions of the body.

Cough, spasm of the glottis, aphonia and asthma, in some instances, were relieved by aural treatment. Faintness, instead of being regarded as of necessity a cardiac lesion, was discovered at times to be simply reflex irritation due to an aural lesion, and likewise with nausea and vomiting. Vertigo, visual disturbance, and headache, have all been found to be fairly common in association with disorders of the ear. Brain complications, such as abscess of the brain, meningitis, phlebitis, sinus thrombosis, epilepsy and facial paralysis have been referred to the ear as their primary origin by clinical experience and postmortem examination.

Lesions of the ear are as common as lesions of the eye with nephritic inflammations. In Bright's disease a change in the tension of the labyrinth may be brought about by interference with the general venous circulation. Given a case of brain abscess or meningitis, the original focus, like the mastoid or nasal accessory sinuses, must receive either simultaneous or subsequent attention from the otolaryngologist, even where the primary operative intervention is made by the cranial surgeon. The aural surgeon is encroaching more and more upon the domain of cranial surgery. With cases of brain tumor, particularly of the pontine cerebellar variety, the auditory nerve or hypophyseal gland present conditions which closely relate to the work of the otolaryngologist, and present a field where the cranial surgeon and neurologist can cooperate to good advantage.

So intimate is the relationship between the eye and ear and the central nervous system, that it would seem no wellbalanced diagnostic group in head surgery would be complete without the neurologist. For example, nystagmus and vertigo with loss of equilibrium associated perhaps with nausea and vomiting, may be produced by a disturbance in the internal ear, or by an intracranial lesion, and it is in the diagnostic study of conditions like these that the otologist and neurologist can so effectively coordinate their endeavors. The ear tests are of particular value in differential diagnosis between labyrinth and intracranial lesions, and in furnishing additional data in intracranial localization. In obscure cases, with meagre neurological data, the ear tests may be the only means of furnishing information from which a diagnosis can be made. While often unrecognized, hysteria is frequently at the bottom of the cases we see, and in those patients with affections of the ears, nose, throat and eyes reflex neuroses are particularly prone to develop.

Laryngeal manifestations of hysteria are too well known to require more than passing comment.

Borderline conditions, where the otolaryngologist must be a well trained neurologist or else have the association of a neurologist in his diagnostic work, may be briefly outlined as general paresis, tabes dorsalis, paranoia, dementia præcox, the various types of psychoneuroses, brain lesions, tumors, specific or otherwise, hemorrhages and intracranial abscesses, cysts and meningitides, cranial nerve involvement and those of the cervical region, and finally the great sympathetic nervous system with its ganglia. As has been pointed out, many of these nervous diseases have symptoms directly referable to the ear, nose and throat.

It not rarely happens that a careful neurological study indicates a lesion of the cerebellum, whereas the ear examination, by giving additional data to the neurologist, conclusively demonstrates that he is dealing with a lesion of the labyrinth. Differential diagnosis between a peripheral and a central nerve lesion is made by the ear tests. It is the additional data furnished the neurologist by the ear tests that determines whether he is dealing with a lesion of the internal ear, or of the brain stem or cerebellum. In order to obtain reliable data from an ear examination, it is essential that the technic of examination should be accurate and painstaking, and it is here that the otologist is peculiarly equipped for such work.

There are, of course, many cases in which the neurologist, without the aid of the ear, eye, blood or other examinations, finds no difficulty in arriving at a satisfactory diagnosis; even in these cases, however, it is useful to have the additional evidence, obtained from the ear tests, corroborative of the neurological and other findings.

Many obscure nervous affections are promptly appreciated by the finding of a paralyzed vocal band. Aneurysm of the aorta is often diagnosed by a recognition of the same condition, and laryngology has taught us to appreciate the laryngeal crises of tabes dorsalis, and in this disease laryngeal examination is of especial value since laryngeal paralysis is one of the earliest symptoms, appearing often before others that are more classical.

In the study of chorea, tabes, and other nervous affections, not to speak of the value of laryngoscopic observations in pressure on the recurrent nerve and other conditions involving the nerve supply of the laryngeal muscles, the otolaryngologist and neurologist can well make common cause. And in the large number of patients showing symptoms referable to distinct nervous anatomical structures, such as in the trigeminal neuralgias, the neurologist and otolaryngologist can cooperate to excellent advantage.

With rhinology, it will be readily conceded that the careful study of the ocular symptomatology, either associated with or directly caused by disease of the sinuses accessory to the nose, constitutes the focal point to which converge the two important specialties of ophthalmology and rhinology. To elucidate the etiology of the often complex symptomatology of this anatomical and clinical borderland, it may require not only study by the ophthal-

mologist and rhinologist, but it may require the co-operation of the internist, the laboratory worker and the röntgenologist. Not infrequently the sinuses give rise to symptoms similar to those due to intracranial lesions, notably headache and eye changes, and it may require careful group study to elucidate the true etiological factor or factors.

Cleft palate, harelip, surgical diseases of the jaws and the salivary apparatus are conditions now recognized as well within the province of the rhinologist, but here as in other borderline fields co-operative study with the dental surgeon is of decided value.

In days gone by the dentist was as summarily and as arbitrarily limited in his field of work as was the ophthalmologist—the teeth and maxillæ were his sphere, and with other conditions and regions of the body he was assumed to have no interest. Today all this is in rapid process of change and we look upon the dentist today as simply another specialist in the broad field of medicine, not merely as a skilled mechanical worker who can ply his calling without the aid and cooperation of other specialists. The matter of chronic focal infection from apical areas is one which commands the attention not only of the ophthalmologist and otolaryngologist on the one side and the dentist on the other, but one where practically all branches of medicine meet. With the close relationship between eye, ear, nose and throat structures, and the now well recognized frequency with which the oral cavity acts as a primary focus, to the dentist falls the necessity for careful examination and study of the oral cavity. Serious complications from dental infection, such as iritis, keratitis, cyclitis, and choroiditis may be dependent upon dental disease giving rise to oral sepsis. There are numerous instances where the teeth are the primary cause of maxillary sinus disease. Ordinarily, pain at a distance, such as headache or neuralgia due to the teeth, though well known, is commonly disregarded. Even the various reflex phenomena in children—convulsions, fretfulness and fever—are not often ascribed to irritation, either of teething or of dental caries, but to digestive disorders.

Of particular interest to the otolaryngologist in the work of the orthodontist, is the change in the nasal cavity by the mechanical rearrangement of the teeth. The close neurological connections between the teeth and ears may be illustrated by the toothache or pain in the jaw often produced by impacted cerumen in the external auditory canal, by the pain produced in the ears by ulcers of the tongue or abscessed condition in the region of the third upper molar, or tonsil. As is well known a carious tooth will produce a severe earache, and the otalgia is often so predominant in its severity as to induce the patient to seek relief from the otologist in the belief that the primary trouble is aural. In malocclusion of the teeth, those who practice the specialty of orthodontia have long ago recognized the almost universal etiological influence of adenoids, and here again the dentist and the otolaryngologist are dependent upon each other for the best results.

The development of röntgenography has opened a new world to us in the field of diagnosis, and no

group is complete without its skilled röntgenologist. By a skilled röntgenologist we mean not only one who possesses the mechanical skill and training to take röntgenograms properly, but one who by experience and study is qualified to interpret and to evaluate his röntgenographic findings. Aside from the given benefit in trachoma, vernal catarrh and epithelioma of the eyelid, the röntgen ray offers us invaluable aid in localization of intraocular foreign bodies. Syphilitic necrosis of the cranial bones or sinus walls, can almost positively be diagnosed from the röntgenogram—in most cases the worm eaten erosion is absolutely pathognomonic. In the differential diagnosis of the presence or absence of pathological secretions within the sinuses, the x ray is valuable.

Aside for corroborative aid to transillumination, the x ray offers valuable aid in the study of maxillary antral disease, especially as regards differentiation between cases of nasal infection and those dental in origin. Carefully made films of the tooth roots adjacent to an infected antrum will often tell whether the operative route should be intranasal, or whether the area about the diseased root should be attacked. Manifestly it is of little avail to drain an antrum through the nose if there is a constant focus of infection in an adjacent tooth root. The presence or absence of ethmoidal disease may often be determined by the x ray plate. The x ray may be of some value in the diagnosis of sphenoidal disease and the shape and depths of the sinus can be shown with comparative ease.

In operation on the pituitary body by the intranasal route, it is often important to know the anatomical measurements calculated by the study of the x ray plate, the distance of the anterior sphenoidal wall from a selected point at the tip of the nose, and also the distance of the anterior from the posterior sphenoidal wall, through use of the x ray, can be calculated with considerable accuracy.

In the study of acromegaly, the x ray aids in the diagnosis of the condition of the sella turcica, and the establishment of the integrity of the anterior and posterior clinoid processes. The anatomy of the mastoid can be studied by the x ray and the size and position of the lateral sinus can usually be definitely shown as well as the size and extent of the pneumatic cells. In the diagnosis of pathological conditions of the mastoid, the x ray often offers decided aid in addition to the more classic diagnostic measures. In children with congenital atresia of the canal, the x ray may be of value in determining the presence of an internal ear and auditory canal. With such authoritative knowledge, the question as to operation can be easily decided.

In considering the rôle of the x ray in otolaryngology we must remember that we are dealing with a diagnostic agent which should always be considered as an adjunct, and one which should not be used or relied upon entirely to the exclusion of other diagnostic measures, but negative x ray findings may often be of considerable import in diagnosis, and in consideration of the question of operative intervention.

The x ray offers a certain and definite means of locating any trouble within the maxillary bone, and

it is not too much to say that the impetus given by x ray localization and diagnosis of foreign bodies in the upper air passages, is largely responsible for the remarkable development of bronchoscopy as an advanced subspecialty of laryngology proper. Without the röntgenogram and the fluoroscopic screen it is indeed doubtful if this highly specialized mechanical technic could have been brought to its present remarkable state of achievement. In certain types of vertebral caries, or injury in the cervical region, conditions well within the sphere of the head and neck surgery group, the röntgenogram affords accurate diagnosis. Under the influence of radium or the röntgen ray of an appropriate dose, benign and malignant dermatological lesions of the face, head and neck and certain glandular swellings in and about the neck respond most kindly.

The internist, however, may well be regarded as the keystone of any diagnostic group, whether for surgery of the head, or for study in other regions. There is hardly a condition in these highly complex regions wherein the symptomatology is not reflected to other parts of the body in a more or less general way. In a paper of this scope, however, the connection can only be touched upon in the most superficial fashion.

The systemic diseases which give rise to ocular symptoms and diseases most frequently are syphilis, tuberculosis, rheumatism, nephritis, diabetes, arteriosclerosis, cardiac affections, diseases of metabolism, chronic intoxications, infective diseases, and affections of the nervous system. In all of these conditions the ophthalmologist may cooperate with the internist most effectively both in diagnosis and in therapeutic measures.

Intestinal parasites occurring in the eye make necessary an investigation of the intestinal tract. On the other hand the internist must come to the ophthalmologist for cooperation in the study of the internal secretory glands, for the eye early manifests functional disturbance. Slight disturbances of the pituitary may only be determined by a careful and complete physical examination, with x ray studies of the skull and long bones, and metabolic studies. Albuminuric retinitis, diabetic cataract, choked disc in meningitis, optic atrophy as a sequel of tabes or of toxemia, are all conditions where the cooperative study of the internist is invaluable. While headache has often been relieved by the simple correction of some error of refraction, usually the internist is a valuable aid in clearing the clinical picture by way of other conditions frequently responsible. Exophthalmic goitre presents classical ocular symptoms, and yet is largely a disease for the internist to diagnose and treat.

The occasional involvement of the internal ear in mumps is as little understood as the more common complications, orchitis, epididymitis and mastitis. Frequently ear involvement takes place in typhoid fever, but suppurative is often unobserved on account of the somnolent condition of the patient. Secondary infection of the middle ear occurs with considerable frequency in patients suffering from pulmonary or general tuberculosis, and the recent epidemic of influenza gives evidence of the frequency with which ear complications arise.

Pain in the ears is a symptom commonly observed in various diseased conditions of the pharynx and larynx. Malignant disease of the tonsils gives rise to aural pain, as does malignant disease of the larynx, and tuberculosis of the larynx is a very common source of otalgia.

Tinnitus aurium is a frequent symptom of disease of the heart and blood vessels, and of anemia or hyperemia of the vascular system within the ear. Vertigo and tinnitus are frequently complained of by patients suffering from arteriosclerosis, and these symptoms, not to be lightly regarded as from the ear alone, frequently require close study. Dizziness is often complained of in disorders of the digestive tract.

Among the more important serious affections in which the throat is a factor may be enumerated rheumatism, tuberculosis, meningitis, and endocarditis. It may be stated that the vast majority of tuberculous lesions in the ear, nose and throat, barring the local lesions induced by lupus, are secondary to pulmonary involvement, and in the prevention or treatment of these complications the internist can cooperate with the otolaryngologist. In the attack upon that protean disease, syphilis, when it invades the structures of the head, neck and throat the internist can render valuable assistance.

It is needless to say that in work of this nature we must have the laboratory at our disposal; only unsatisfactory results could be expected without the aid of the pathologist and bacteriologist, and happily the not so ancient method of making one's own uranalysis or having simply a specimen of tissue examined for diagnosis of cancer or the sputum for tuberculosis, is mostly a thing of the past. Today the scientific worker demands as a matter of routine the Wassermann reaction, complete blood and urine examinations, sputum and feces study, gastric analyses and the like. Where group study is employed the value of the laboratory becomes more and more evident.

In a study of eye conditions the laboratory tells us whether we are dealing with a simple anemia or whether the retinal hemorrhage is leucemic in origin, and likewise confirms our suspicion that a retinal detachment is specific in origin. Serological tests and study of the cerebrospinal fluid tend to confirm our ocular findings in tabes dorsalis and general paralysis, and that often early enough to save some vision at any rate. Often the specific bacterial nature of conjunctival affections are disclosed for us, and with a study of orbital new growths, the laboratory gives us the clue as to their nature. In iritis again the Wassermann test may improve our medication, or a complement fixation test clear up an otherwise obscure gonorrheal iritis or choroiditis. The laboratory again comes to our aid in the case of albuminuric retinitis and of diabetic cataract, or perhaps clears up a puzzling case of malarial optic neuritis or keratitis.

In the ear and mastoid, the laboratory, through blood culture and bacteriological study of aural supuration, often gives us the clue to the condition, and the indication for operative intervention.

In children with suppurative otitic diseases, urine

examination may disclose a pyelitis as the causative factor of a high temperature, and not a pathological mastoid extension. Likewise the detection of acetonaemia may defer operative intervention against an acidosis sufficient to account for symptoms.

Determination of coagulation and bleeding time are simple procedures from the laboratory viewpoint, but their determination is of great importance in the question of any operative procedure. Hemophilia and purpuric conditions thus disclosed by the laboratory prior to operation may prove to be life-saving, or at least save us many anxious postoperative hours. Blood examination is of more or less value in every case, and a rising polynuclear count may determine an early operation. In the throat or larynx, a sputum examination may promptly demonstrate whether the condition is one of carcinoma, tuberculosis or syphilis—and if not, the Wassermann test and pathological section examinations are laboratory procedures that definitely prove our guide.

Lumbar puncture is of definite value, and while not without danger, it is certainly indicated in cases where doubt exists as to the process taking place. Localized meningitis or abscess may give a negative finding, but with a positive spinal fluid the intracranial and intraspinal condition can be determined with rapidity, and the question of operative intervention the more accurately and earlier determined. An increased lymphocyte count in the spinal fluid may suggest tuberculosis, poliomyelitis or lues in otherwise puzzling cerebrospinal conditions.

The bacteriological slide may clear up as a Vincent's angina some otherwise puzzling pharyngeal condition, and the value of bacteriological study in Klebs-Loeffler infection has placed treatment on an established basis, while the Schick reaction in its field promises to be equally valuable.

Examination of the material from mastoid operation is of value, and bacteriological study of the same may prove important both in prognosis and as an index toward further operative procedure.

The various cutaneous tests are more or less still in process of development and appraisal, but at times may prove of value in our field, and the recently developed renal functional tests promise valuable assistance as a guide in all contemplated surgical procedures under general anesthesia, both in the domain of general surgery and in the field of head and neck procedures as well.

The laboratory confirms or alleviates our suspicions as to this or that new growth on the skin of the face or neck, or clears up the etiology of some sluggish ulcerative condition of the nasal, buccal or pharyngeal mucous membranes. In some instances polypoid masses have been removed from the nose, and it has been the laboratory that has shown that instead of simple polypoid tissue, it was in reality a portion of an adenoma of the pituitary body.

In ulcerative conditions of the throat the laboratory tells us whether we are dealing with syphilis, with a Vincent's angina or with a tuberculous condition, and the true nature of a glossitis is readily shown us in many instances. Invasion of the upper air passages by the Klebs-Loeffler bacillus is con-

clusively revealed only by the laboratory culture, and sputum examination may clear up the case with obscure pulmonary symptoms, or give us a clue to study of a case of bronchial asthma. Bacteriological study of the tonsils may offer us positive indication for enucleation in cases clinically borderline, and coagulation and bleeding time tests may prevent us from rash operation upon the hemophilic and the purpuric patient. In the diagnosis and treatment of our asthmatics and hay fever sufferers, the laboratory gives us invaluable aid and comfort in cutaneous testing in relation to specific sensitizations.

From this brief outline, it must be evident that only by means of laboratory tests, close clinical observation and correlation of findings by the component members of the group, and aided further by careful studies of the body metabolism, can we hope to elucidate the complex and often all too obscure symptomatology of head and neck lesions, and if it is admitted that the individual physician cannot specialize in all branches of medicine and surgery. Then it must follow that to secure those results, diagnostic and therapeutic, to which our patients are justly entitled, we must revolutionize the practice of medicine, we must come to group practice as the medical practice of today and of tomorrow. Nowhere is the indication more urgent than in the realm of head and neck surgery.

45 EAST SIXTIETH STREET.

THE COIN TEST AS AN AID IN THE DIAGNOSIS OF A BRONCHIECTATIC CAVITY.

By SAMUEL A. LOEWENBERG, M. D.,
Philadelphia.

Bronchiectasis is, practically speaking, a dilated end of a bronchus. The dilatation may be large or small, cylindrical or sacculated. No matter what its size and shape, it is a continuation of a bronchus, and, therefore, in direct communication with the trachea. When a bronchiectasis is free from secretion, it gives rise to a tympanitic percussion sound. When several bronchiectatic cavities exist in close proximity and communicate with one another indirectly, a cracked pot sound is often elicited. However, similar signs are obtainable over pulmonary cavities.

The fact that a bronchiectatic cavity may give rise to tympany when free from secretion, and to dullness when filled, is a strong diagnostic point in the differentiation between it and a pulmonary cavity. But often a diagnosis is required before such change can be demonstrated. I employ the coin percussion test which is generally used to demonstrate a pneumothorax for determining the presence of a bronchiectasis.

TECHNIC.

A silver coin is placed flat over the suspected area and is tapped with the edge of another coin by an assistant, the examiner listens with the stethoscope or unaided ear to the open mouth of the patient. The presence of a bronchiectasis is evidenced by a loud metallic sound, which gives the impression of nearness. The metallic sound produced by strik-

ing one coin upon another is somewhat intensified by the bronchiectatic cavity. This intensified sound is transmitted through its direct opening to the listener's ear. This sign is absent in other pulmonary cavities, unless they are situated at the apex of the lung and communicate with a large bronchus through a very large opening.

This sign can be checked up by reversing the position of the coins and the listener; thus, a coin is placed over the upper end of the trachea (immediately below the cricoid cartilage) and is tapped continuously by an assistant with the edge of another coin, the examiner listens carefully over various parts of the chest. The portion of the chest which transmits the metallic sound the loudest, indicates a direct transmitting medium, such as bronchiectasis or a cavity communicating directly through a large opening with a bronchus. It should be emphasized that the intensified note elicited by the coin percussion test over a bronchiectatic cavity has not that clear metallic ringing note which is elicited over a pneumothorax. The intensity of the note is greater, the quality being but slightly altered.

1626 SPRUCE STREET.

CLINICAL NOTES FROM FRANCE.

By CHARLES GREENE CUMSTON, M. D.,
Geneva, Switzerland.

PARAMASTOIDITIS.

I present herewith the views of Dr. Mouret, professor of otology at the University of Montpellier, on the subject of paramastoiditis. He believes that temporozygomatic paramastoiditis comprises the ensemble of lesions which, starting from a tympanoantral focus, invade the temporal zone both above and in front of the upper and anterior limits of what is usually regarded as the surgical mastoiditis. Temporozygomatic paramastoid bone lesions may consequently involve the entire squamous portion of the temporal bone and the longitudinal root of the zygoma (the upper wall of the external auditory canal and upper wall of the glenoid cavity). The manner of development of these complications can be understood only by showing how the bacteria, starting from the tympanoantral cavity, invade this bone area and how the infective process later on becomes exteriorized on each side of this osseous lamina. But as Mouret says anatomy furnishes the necessary data for the explanation.

The temporozygomatic region has as centre a bony lamina, the squamous portion of the temporal, with a slightly enlarged base, the longitudinal root of the zygoma. This base is contiguous to the mastoid at the level of the supraantral and retroantral regions and it also is in contact with the cavity of the tympanum by forming the upper wall of the canal as well as a portion of the recessus epitympanicus. The bacteria starting from the tympanic cavity, the aditus or antrum, or from the posterosuperior mastoid cellular group are absolutely obliged to pass through a portion of this lamina in order to give rise to an intracranial or extracranial temporal abscess—a temporozygomatic paramastoiditis. They become diffused within this lamina

to a lesser or greater extent and this is a diffusion from intraosseous lesions—cellular or bony lesions of all degrees. Let us suppose that the bacteria have become diffused. If their virulence becomes progressively attenuated by defensive reactions of the organism, spontaneous recovery results. If, on the contrary, they cause such lesions that the internal or external bony cortex is broken through, the inflammatory process makes its exit from the bone extending to the meninges or to the temporal cavities. This is what Mouret calls exteriorization following intraosseous lesions from diffusion.

A third alternative may present itself. Exteriorization of the infectious bacteria from the tympano-antral cavity toward the meninges or the temporal fossæ may occur without any previous intraosseous lesions. The infection may pass through the bony wall without producing either cellulitis or osteitis. A dehiscence, the track of a vessel or nerve, produces a similar process, but in these circumstances the exteriorization is effected directly and this is what Mouret calls exteriorization by preformed tracks without intraosseous lesions of diffusion.

Let us now consider in more detail these different ways of extension of the tympanoantroradicular infection, beginning with that of diffusion by intraosseous lesions. The simplest process is that which develops along the Haversian canals, progressively invading them and setting up reactions which end in osteitis. The osteitis will vary in degree according to the virulence of the infectious agent, its nature and the soil. All forms may be encountered, from simple congestion to necrosis producing an erosion or fistula.

Diffusion is still more favored when the cells or cellular groups enter into the anatomical makeup of the squamozygomatic lamella. Their importance, in paramastoiditis, is quite as considerable as in mastoiditis. In the latter process, these cells thin the bone and diminish its resistance; while in these small cavities the pus stagnates and is less quickly absorbed, which increases the effects of the infection.

When Mouret completes a mastoidectomy, he always explores the supraantral region, the upper wall of the auditory canal. Even when no temporal abscess exists, he has frequently found fungous or suppurating cells as far as one centimetre or even more above the linea temporalis, in the upper wall of the canal and into the recessus epitympanicus. In patients operated upon he has found cellular formations particularly localized in the portion of the squamous lamina suprajacent to the linea temporalis of the mastoid, in the upper wall of the auditory canal, in the bony wall forming the apex of the glenoid cavity in the longitudinal root of zygomatic apophysis, submatic or subglenoid or along the temporozygomatic sulcus. These cells may be encountered much farther up in the squamous portion. Their reaction is more or less marked. Sometimes they are purulent, at others they are fungous or simply in a state of congestion and filled with a sticky clera fluid. To the Haversian canals, isolated cells and cellular groups, still another route of diffusion from intraosseous lesions must be noted, namely, the diploic veins. Their rôle is not to be

underestimated, although, extending upward toward the upper part of the squamous portion, they become rarefied. Their innumerable branches facilitate extension of the inflammation in the cranial bones, so that one half of the skull can be invaded by auricular suppuration, as in the case reported by Laurens. Consequently, the auricular infectious agents, transported or favored in their migration by the Haversian canals, bone cellules and diploic veins become diffused more or less throughout the temporozygomatic lamina. The reaction set up may become localized, but frequently it does not stop here and the bacteria make their exit from their intraosseous nidus.

The inflammatory process, having invaded the squamozygomatic lamina, finds a well prepared route for its exit along certain canals in the external cortex. Everyone knows of the retromental cribiform area described long since by Chipault and all operators have seen the red dotted lines which are present in even the simplest cases of mastoiditis. These lines indicate a congestive process due to an inflammation of the underlying bone.

Two similar cribrose zones are frequently perceptible in this region, namely, the suprameatal and the deep temporal (Mouret); their denomination indicates their anatomical situation. It should be remarked, however, that the latter mentioned zone is rather more frequently located in the temporozygomatic sulcus than above the squamous portion. Their development varies from one subject to another, but it is by the openings in the cribrose zones that the intraosseous infection sometimes breaks through the external cortex.

The degree of the reaction varies. It may merely manifest itself by edema, a forerunner of more important lesions if operation is not resorted to without delay. In one case the deep temporal cribrose zone and suprameatal cribrose zone were very marked; drops of blood were at once seen scattered over the surface as soon as the bone had been denuded and the temporal muscle retracted. There were superficial and deep edematous reactions and the early operation probably prevented the formation of a focus of suppuration. In another case the deep temporal cribrose zone had facilitated exteriorization of the bacteria contained in the suppurating cells of the temporozygomatic sulcus and produced a very marked deep temporal edema. The suprameatal cribrose zone may likewise give rise to a superficial temporal edema. An explanation of these edemas will be given further on.

Although the presence of these cribrose areas is almost constant and their rôle in exteriorization of the intraosseous infection is evident, Mouret has always found other more serious lesions of the cortices when a purulent focus was present. Usually it is a fistula, a kind of fungous and purulent hole in the bone produced by a local melting of the bone, either opposite a fungous or purulent cell or in the midst of spongy tissue the seat of necrosing osteitis. At other times there is a superficial necrotic erosion; some softening takes place on the surface of the internal or external cortex and over the area of softening the diseased periosteum gives way and thus

eliminates the barrier which protected the adjacent structures.

Mouret has never met with a case of exteriorization by way of reformed channels without osseous lesions, but he has done an autopsy on a subject in whom a cerebral abscess had resulted from an infection starting in the tympanic cavity. The infection had extended along the external wall of a fairly well developed vein (there was no thrombosis) which passed through the superoexternal wall of the tympanic cavity and emptied into a vestige of the internal petrosquamous sinus. These cases are uncommon because few vessels and nerves go from the tympanoantral cavity through the bony temporozygomatic lamina.

Dehiscences are not frequent in the region under consideration. However, in Mouret's fine collection there are some quite remarkable examples of dehiscence either above the zygoma in the midst of the squamous lamina or at the internal petrosquamous fissure. As to Glaser's fissure, it may carry the infection both to the proximity of the temporomaxillary joint and to the superoanterior wall of the external auditory canal. Thus much light has been thrown on the pathogenesis of these extramastoid complications in middle ear infection—the temporozygomatic paramastoiditis. It can be inferred that it is most uncommon to meet with a temporozygomatic paramastoiditis without any intraosseous lesion of the temporozygomatic region. An infection coming directly from the tympanic cavity by way of a preformed route is most exceptional. Simple osteitis or a cellulitis complicated by osteitis of the internal or external cortices is the obligatory intermediary between tympanoantral inflammation and the external temporal or cerebral manifestations.

The aspects of the ultimate evolution of the exteriorized inflammatory process vary and nothing can lead to their comprehension better than the anatomy of the areas which line the internal and external cortices of the temporozygomatic osseous lamina of Mouret or squamozygomatic lamina. This lamina separates two regions; the meningocerebral temporal area is in contact with its internal aspect, while the temporal cavities with their contents are in contact with its external aspect. The infection, starting from the tympanoantral focus and having invaded the osseous lamina, will provoke pathological reactions either on the internal or the external aspects or on both at the same time.

The mechanism of exteriorization on the meningocerebral side is known. A simple meningeal irritation may only arise if the osteitis does not go as far as necrosis or suppuration. But if necrosis occurs and the dura lends itself to the process by becoming decorticated, an extradural abscess will result as happened in one of Mouret's cases. These complications are not uncommon and are favored by the anatomical makeup of the region which must be referred to here.

Mouret has often noted during his operations that the internal cortex of his lamina was weaker than the external cortex. He also observed that when cells existed they were separated from the dura by bone whose thickness was much less than the bony layer interposed between these cells and external

periosteum. It should be recalled that here one is face to face with Gérard, Marchant and Ferré's zone of decortication whose lower limit is at the upper border of the petrous portion of the temporal bone and whose upper limit extends as far as the falx cerebelli. Thus it is to be found a sufficient explanation for the tendency of extradural abscesses to extend to the middle region of the squamous lamina.

A more serious evolution may occur. The infection may be of such severe grade that instead of producing a suppurating focus which decorticates the dura, the latter becomes glued to the bony structures involved and allows the bacteria to pass through it, the result being the development of a frank meningitis.

If we follow the infective agents in their passage through the perivascular connective spaces which will conduct them to the sylvian valley we have the explanation of the localization of cerebral abscesses at the anterior extremity of the temporal lobe or even beyond, at the foot of the third frontal or ascending frontal lobes. Mouret has met with a case.

The effects of exteriorization of the infectious agents through the external table of Mouret's squamozygomatic lamina can also only be explained by anatomy. The external aspect of this lamina comprises two parts: above, the squamous portion; below, the longitudinal root of the zygomatic apophysis. These two portions are separated by a very resisting aponeurotic septum—the temporal aponeurosis—which is inserted on the upper border of the zygomatic crest. The squamous upper part is the ground of the tent which is formed by the temporal aponeurosis from its insertion all around the squamous portion. One can enter this tent only below and in front at the level of the zygomatic region. The interior of this tent is the deep temporal zone occupied by the temporal muscle. The squamous portion, therefore, forms the base which commands, from the viewpoint of infection, the very isolated deep temporal cavity.

That portion of the zygoma situated below the lower insertion of the temporal aponeurosis is, on the contrary, outside of the deep temporal cavity. It includes the region of the supramastoid crest (linea temporalis), the submeatal and subgenoid regions. It commands only from the viewpoint of exteriorization of the intraosseous lesions arising in the points mentioned above, the space situated above the temporal aponeurosis, between this aponeurosis and the epicranial aponeurosis. And since the latter becomes more lax as the zygoma is approached, it can be more exactly said that this superficial temporal cavity is situated between the temporal aponeurosis and the integument. These anatomical data having been stated, let us turn to the tympanoantral focus of infection and suppose that it extends through the squamous portion and breaks through the external cortex corresponding to the deep temporal cavity.

In these circumstances a mild congestive osteitis will be met with, complicated or not by cellulitis with edema of the temporal muscle if operation is done early. Or there may be an osteitis with necrosis of

the external table, a suppurating collection of the deep temporal cavity, and a more or less lardaceous edema of the temporal muscle. Lastly, there may be a cellulitis with bone necrosis resulting in the formation of a fistula.

In these cases, the external symptoms of the onset are little marked, because the inflammation is walled off by the temporal aponeurosis. The tumefaction is slight, there is no distinct fluctuation, and the superficial structures are hardly changed. Only the temperature, a painful tension and sensitiveness on deep pressure attract the patient's attention to the region. But a sign of highest importance, namely, trismus, indicates that the temporal muscle suffers and at the same time indicates that the infection is undergoing its evolution in the deep temporal cavity.

Now, if this pus focus is left alone, not only will it distend the cavity, setting up a more marked edematous tumefaction, but it will attempt to leave the cavity. Anatomy teaches us that this deep temporal cavity communicates freely, in front and below, with two important regions. As soon as the squamozygomatic groove cases, that is to say, in front of the transverse root of the zygoma, the floor of the temporal fossa is only represented by an orifice, which varies in size in different individuals, formed by the zygomatic arch as it spreads from the lateral wall of the skull. By the zygomatic orifice the deep temporal fossa is in free communication with the genian region in front and the region of the temporal fossa behind.

There is also a more superficial infection. It is the extension of the pathological process to the superficial temporal zone. If one starts with the infectious bacteria in the tympanoantral focus and if we suppose that their diffusion has taken place in the osseous base of Mouroet's superficial zone, that is to say, all of the longitudinal root of the zygoma forming the supramastoid crest or linea temporalis, the upper wall of the external auditory canal and the supraglenoid region, the symptoms met with will be quite different from those just outlined.

The first to appear is a painful tumefaction with a change in the aspect of the integument. The tumefaction indicates an edema localized not only in the space separating the temporal from the epicranial aponeuroses, but also in the subcutaneous cellular tissues, because we know that the epicranial aponeurosis at this point forms an incomplete barrier. This edema rapidly attains the eyelids and cheeks on account of the great laxity of the connective tissue. Behind, on the contrary, the edema has little tendency to progress because the subcutaneous connective tissue is tighter. Painful tumefaction and early temporopalpebral edema are the two first symptoms of superficial temporozygomatic mastoiditis. If infection becomes marked and a pus focus forms the symptoms also become accentuated. The tumefaction becomes more colored and painful, the edema more extensive and marked, while what is most important of all fluctuation over the point of the bone lesion can be detected. The pus has a tendency to fuse over the deep temporal aponeurosis and occasionally it reaches the mastoid region on account of the disconnected insertions of the epicranial aponeurosis at the level of Henle's spine;

it generally progresses more to the front. Let it also be recalled that the extension of the infection is favored by the superficial temporal lymphatics which communicate with both the mastoid and parotid lymph nodes.

The two infectious processes described by Mouroet offer each a very special physiognomy. Besides the ordinary general symptoms, the deep one by trismus and late swelling of the region; the superficial by early swelling of the temporal and temporoantral regions, fluctuation over this swelling and palpebral edema. Do not let it be supposed that the cases met with in practice are always so clean cut symptomatologically, because there are mixed cases, deep and superficial at the same time. It can be readily understood that an inflammatory process starting from the tympanic cavity or antrum and no matter in which fossa it may become localized, will of necessity react on the *ensemble* of the region. The bacteria issuing from the retromental cribose zone of Chipault and the supramental cribose zone may have determined, before the appearance of the deep temporal symptoms, a reaction in the superficial tissues of the posteroinferior portion of Mouroet's temporozygomatic region. In this case there will be a deep temporal abscess covered by a superficial temporal edema. These mixed cases represent the mixed temporozygomatic paramastoiditis.

Instead of resorting to symptomatic surgery, that is to say to open the abscess, it is essential to attack the source, and the source of these temporozygomatic paramastoiditis is the middle ear—the antrum. Therefore the antrum should be attacked no matter what may be the condition of the tympanic cavity. Some surgeons may not admit Mouroet's method, because they probably have cured cases by merely incising the local temporal collection, just as some mastoid abscesses may be recovered from by Wilde's incision. But as the latter incision rarely cures a true mastoiditis, so the temporal incision will rarely be the true remedy for the squamozygomatic bone lesions, no matter what drainage may accomplish.

It may be asked if the middle ear and antrum do not appear to be diseased why should the mastoid be excavated? To this Prof. Mouroet replies that supposing that the anatomical and functional state of the middle ear are normal, this is not a sufficient reason to suppose that the antrum is free of disease, of the patient's history shows that at some time a mild affection of the middle ear has been complained of although it passed off spontaneously. Cases of antral inflammation persisting without any apparent trouble of the middle ear are too well known to require mention. A trepanation of the antrum will cicatrize without complications and then Mouroet points out with justice that this trepanation is as necessary for his method of intratympanic exploration as the shaft of a mine is indispensable for reaching the mineral.

Mouroet's technic is briefly: a mastoidectomy or semiévidement as the first step; partial squamozygomatic resection as a second step; complete drainage as a third and as a last, complete suture of the incision excepting at the points where the drains pass out.

Editorial Notes and Comments

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NOTICE TO OUR READERS.

The index to Volume CXI of the New York Medical Journal will be printed separately. Copies of this index can be obtained by writing to the editorial department.

SPECIALISTS AND CASES.

Upon investigation each specialty seems more worthy of special study than the other. With the broadening of the scope of medicine, with the divisions and subdivisions which grow out of this process, it will be some time before an equilibrium is reached. By striving and endeavor the workers in one special field will go beyond the findings of their colleagues in other branches of medicine. War and the demands of certain industrial occupational diseases will force more concentration on certain ailments. Work in the majority of specialties is still in an embryonal state, for it is only in recent years that the domain of medicine has been invaded by the specialist and the field divided.

With the growth of specialties, the division of the human body into segments, each assigned to a group of men for further subdivision, and the striving for a balance so that no one specialty will outstrip the others, what will happen to the patient as a whole? Specialists have been known to boast of ignorance upon medical subjects aside from their own narrow field. Vain boasting. The less they know of the human organism as an entity the less capable will they be to give deductions of value in their own

specialty. It is often necessary for the specialist to go beyond the domain of his own narrow field and consider his patient as an entity, as an entire human being. At times he must go beyond the area of tissue circumscribed by his special field and he is obliged to realize that the pathological condition is the result of some disorder in a remote part of the body or of a general systemic infection which has attacked the inferior organ, the point of lessened resistance. Not infrequently the somatic manifestations in the same circumscribed area may result from a purely psychic condition, the result in these instances of the patient's inability to handle a problem which presents itself and through a suppression of the normal outlet finds an escape in an inflamed tonsil or disordered digestion. All local medication or the most skillful surgery will not remove the cause in these instances. In order to benefit or cure the patient the specialist must go to the source of the difficulty. Can he do it in these cases? How far beyond the circumscribed area can he go? How far is he capable of reaching out? Is he capable of delving into the unconscious of the patient and shedding light upon the cause of the trouble?

Environmental factors due to social conditions, faulty surroundings at work or in the home, often cause disease and disability. We must have a thorough knowledge of these if we are going to treat our patients in a sensible fashion, if we are going to treat the patient and not merely treat his disease. How far must we go in order to get to the root of the disturbance? We are only limited by the activities of man and nature. The world is ours to explore. We must seek to the ends of the earth if we are to bring the maximum good to the maximum number. Let us not be bound by our specialties even though we are obliged to specialize. Let us not forget to consider our patient as a human being, not merely as a case.

MINER'S NYSTAGMUS.

In an address delivered recently at a meeting of the North Staffordshire Institute of Mining Engineers on nystagmus, an affection of the eyes peculiar to miners, Dr. Lister Llewellyn stated that it was the cause of great suffering and estimated the annual loss caused by this affection to be one million pounds sterling. The subject is not new. The lecturer, who was the first Tyndall Mining Research Student of the Royal Society, investigated and reported on the disease many months ago. Dr. Frank Shufflebotham, a physician with special

knowledge of diseases peculiar to miners, has repeatedly drawn attention to it, and estimates the economic loss at an even higher figure than Dr. Llewellyn. Dr. J. S. Haldane has emphasized the fact that the etiological factors of, and the remedy for, miner's nystagmus are unknown. At the miner's conference at Keswick in July, 1919, the subject was discussed and referred to the executive committee. The affection begins by twitching movements of the eyes, gives rise to headache, and, more gradually, to real defects of vision which may culminate in blindness. In the great majority of cases it is due simply to defective lighting in the mines.

The scientific staff of the American Bureau of Mines has, we are glad to say, thoroughly investigated the comfort and efficiency of an electric headlamp charged from a battery carried by the miner. It has been alleged that these lamps might be dangerous in mines with gas. But all mines do not present this danger, and simple experiments would determine the degree of the risk and would probably suggest means of avoiding it. Efficient lighting would at least prevent a very large proportion of these cases of nystagmus, would relieve suffering and add to the efficiency of any coal mining nation. From a factor that can be eliminated many miners have their sight dimmed long before their strength has abated. This subject requires the attention of all thinking men in the medical profession.

CARDIAC ADYNAMIA IN INFECTIOUS DISEASES.

It is a well founded fact that when dealing with any of the infectious diseases, we are witnessing a fight of the organism, reacting by every means in its power, against the morbid invasion of which it is the object. From time to time the physician will be able to reinforce the natural defenses of the body, notably by serotherapy and colloidal therapy, but most of the time the principal part played by the physician is to sustain the organism in the fight in which its very existence is often threatened.

The process of natural defense invariably ends in the elimination of the bacterial toxins, so that the cardiovascular and renal systems, and the heart in particular, are generally overworked. For this reason the foremost and most important duty of the doctor is to give the most powerful aid to the struggling heart, because, should it become weak and functionally worn out, the infective process would gain the upper hand and the most energetic drugs at our disposal would fail to give results.

When cardiac adynamia is very acute it is necessary to prescribe the well known cardiac tonics, es-

pecially digitalis, but this is an eventuality that should be avoided at all costs. For this reason, therefore, at the first sign of the heart flagging, drugs should be resorted to which will help the heart through the crises and also give to the organism the necessary strength to pay the costs of the disease. In these circumstances kola is distinctly indicated, because it is a marvelous food, a heart tonic of value, and a fairly good diuretic, and it is known that it will support the heart with sufficient energy without causing it to overwork. The latter possibility is the real danger; the use of too powerful therapeutic agents at a time when no real danger has developed. It is even good practice not to await the first danger signals but prescribe some preparation of kola as a prophylactic measure against such accidents.

There is much more to do, however. Cardiac asthenia occasionally persists for a long time after the patient has entered upon convalescence and the general vitality is greatly below par from the effects of the infection. Consequently, these patients must be carefully watched for some time after they have recovered from their illness.

MIND AND BODY.

A soldier is in the front line trenches in France. He is wet and cold. The mud, the stench, the vermin and the danger of instantaneous annihilation create for him an intolerable situation from which there is no escape. The grip of circumstance is such that his body cannot seek safety in flight. His more or less unstable mind, on the contrary, is bound by no such fetters and it flees along the path of least resistance to the point most remote from that of horror, discomfort and danger at which his body is located. The return of that vagrant mind to its proper body may, in many cases, be accomplished by the proper application of the scientific principles of psychoanalysis. If that mind is allowed to take firm root at that far distant point, its return will be extremely difficult, if not impossible.

A schoolboy eats his breakfast. He is about to start for school. His home-work is lost and the entire family joins in the mad search before it is discovered. His cap cannot be found, but at last some one picks it up and puts it on his head and hurries him off. He is scarcely in the vestibule of the house before he is seized with a violent attack of vomiting. He is taken in undressed, put to bed and coddled until the physician can arrive. Fortunately, this is a wise physician. He carefully examines this little boy, who is not a conscious malingerer, and finally tells him that there is nothing the

matter with his body but that his mind has run away and that he must tell his physician the cause. After some coaxing, it develops that he and another boy broke some windows in the basement of the school the day before and that on this particular morning he and his comrade were to have been brought before the principal. The physician carefully explains to the little boy the tricks which our minds sometimes play upon us, when we are in almost intolerable situations, and left his patient entirely recovered and with a strong reinforcement of character which would help him all his life. Had he been an unwise and unthinking or a careless physician, he would have warned the mother in the child's presence of a weak stomach, would have advised special diet, and taken such other measures as would forever have crystallized in that childish brain the impression of a bodily ailment.

How many of us in our daily contact with our patients recognize the deep and widespread influence of the runaway mind? How many of us really try not only to return the truant, but to take those simple measures which will prevent its running away again?

CATARACT.

The diagnosis of cataract is relatively easy, but it is more difficult to ascertain whether or not some contraindication exists for removing the opaque crystalline lens, an operation which in principle should remedy the condition of vision when proper glasses are afterward worn. Among the reasons which may militate against the operation is a bad condition of the retina, so that it is necessary to ascertain the state of the retina behind a crystalline lens which no longer gives passage to the rays of light, so that the ophthalmoscope is consequently useless for this purpose. Therefore, in order to make a diagnosis one must be guided by signs of certainty and those of probability, such as have been recently put forward by Cantonnet.

The signs indicating a probability of retinal changes should be first considered. Therefore it should be known that a change in the retina has probably taken place when the cataract is unilateral and there is no onset of the process in the opposite eye, when the subject is young, when the iris is discolored, and if the pupil is deformed by synechiæ. If the opacity of the crystalline lens is a light white or yellowish white or if the cataract is the outcome of a traumatism acting on the globe itself, or on the edge of the orbit, the retina will probably be pathologically changed. In the case of trauma detachment of the retina may result. Other probabilities of morbid retinal changes will be likely if the involved eye

presents an external strabismus, in which case there is a lowered visual acuity or functional torpor of the retina, while an increase of the ocular tension indicates chronic glaucoma, or if diminished may be an indication of detached retina.

The signs of certitude which should be looked for, when those of probability have been ascertained, are first the pupil reflexes which must be examined. If the involved eye is lighted, preferably in a dark room, and the pupil does not react although no synechiæ are present, it is evident that vision is abolished. To make certain that the defect in the reflexes is due to this cause, the healthy eye should be lighted. In the affirmative, the reaction of the pupil of the diseased eye should, from consensual reflex, follow that of the healthy eye. Secondly, it should be remembered that it is inexact to say that an eye with cataract cannot distinguish light, because in reality it can distinguish it like the normal eye when the lids are closed. When a dull light, that of a candle, for example, is held at the distance of two metres in front of the patient with the healthy eye closed, the patient should be able to indicate with the finger where the light is and to follow it when it is moved about. It should be noted that detachment of the retina—the most important diagnostic problem in the circumstances—is seated at the lower portion of the eye and corresponds to a vision of light in the upper part of the space.

PSYCHOLOGY AND TRADEMARKS.

The yearly additions to trademarks number some seven thousand, but medical journals are chiefly concerned with those things purchasable at the druggists. In the *Archives of Psychology*, January, 1920, Richard H. Paynter studies the mental condition of a customer when confronted with two labels—say, a patent medicine or drug—with similarity in appearance, sound, and meaning. The buyer would note similarities quicker than differences. He would doubt his own memory as to the trademark, and, most probably, be persuaded into taking something just as good, but in reality of less therapeutic value. Many a doctor finds in a patient's house a cleverly labeled imitation of that which he had ordered. Psychology hopes, by examining the methods used in counterfeiting, to formulate several principles as aids in detecting dangerous imitations. People unaware of the presence of imitations confuse on the average forty-four per cent., and it is on the liability to deceive that most judgments are given. The buyer finds it difficult to remember whether he was to get dyspepticiure or dyspepticide, and the preparations look the same. It is not a question of money's worth, but a possibility of using a harmful instead of a harmless preparation.

It is hoped that the shallow judgment of the law courts will be eradicated by a psychological study of intentional deceivers and the mind of those likely to be deceived.

News Items.

New York State Health Officers' Congress.—The annual Conference of Health Officers of New York State will be held September 7th to 9th in Saratoga Springs, with headquarters at the Grand Union Hotel.

Dr. Guilfoyle to Study Census Returns.—Dr. William J. Guilfoyle, registrar of statistics of the New York City Health Department, has gone to Washington to study the federal census figures for the purpose of determining the accuracy of the count in New York and Manhattan in particular.

Surgical Congress.—The American Surgical Association held a meeting May 3rd to 5th in St. Louis, under the presidency of Dr. George E. Brewer, of New York. Dr. John D. Roberts, of Philadelphia, was elected president and Dr. H. G. Mudd, of St. Louis, one of the vice-presidents. The next meeting will be held in Toronto.

New Hospital for New York.—Plans have been completed for the new Fifth Avenue Hospital, a consolidation of the Hahnemann and Laura Franklin Hospitals, which is soon to be built on Fifth Avenue between 105th and 106th Streets, New York. The building, which will cost approximately \$3,000,000, will be an eleven story structure containing 320 rooms.

Fort McHenry Hospital.—Dr. Thomas R. Payne has been put in charge of Fort McHenry Hospital, Md., since its taking over by the U. S. Public Health Service. Government patients in various hospitals about Baltimore, including the Marine Hospital, are being transferred there. Dr. Charles W. Vogel, superintendent of the Marine Hospital, will be transferred to a post in Detroit.

Major General Gorgas Honored.—A press dispatch from London states that during a visit to Millbank Hospital King George bestowed on Major General William C. Gorgas the insignia of Knight Commander of the Order of St. Michael and St. George. General Gorgas is said to be a patient in Queen Alexandra's Nursing Home for Senior Officers. He was on his way to Africa to engage in research on the subject of yellow fever.

Pennsylvania Medical Meetings.—A joint meeting of the National Anesthesia Research Society, the Interstate Association of Anesthetists, the Pennsylvania State Medical Association, and the Western Pennsylvania Odontological Society will be held in Pittsburgh, October 4th to 7th, with headquarters at the William Penn and Fort Pitt hotels. Prizes will be awarded by the National Anesthesia Research Society for the three best papers submitted on this occasion.

American Public Health Association.—The forty-ninth annual meeting of the American Public Health Association will be held September 13th to 17th in San Francisco. Preceding this meeting there will be gatherings of the California Tuberculosis Association and the Southwestern Tuberculosis Conference, while for the week following the meeting of the Public Health Association there is to be a meeting of the International Association of Industrial Accident Boards and Commissions.

Infantile Paralysis Patients on Staten Island.—The Post Graduate Hospital is maintaining two bungalows at South Beach, Staten Island, for infantile paralysis patients. The children are survivors of the epidemic of 1916.

International Sanitary Conference.—The Sixth International Sanitary Conference of the American Republics will be held in Montevideo, Uruguay, December 12th to 20th, under the presidency of Dr. E. Fernandez Espiro and the auspices of the government of Uruguay.

Licensed Arspenamine Manufacturers.—On account of the large number of arsenic preparations which are being exploited for the treatment of syphilis, the United States Public Health Service has considered it desirable to issue a circular letter discouraging the indiscriminate use of untried preparations. The following firms are now licensed by the Public Health Service for the manufacture of arspenamine and nearsphenamine: Dermatological Research Laboratories, Philadelphia, Pa.; H. A. Metz Laboratories, New York, N. Y.; Diarsenol Co., Inc., Buffalo, N. Y.; Takamine Laboratories, Clifton, N. J. The Lowy Laboratory, of Newark, N. J., has been granted a license to prepare a stable solution of arspenamine.

Model Maternity Hospital for France.—Work has been begun on the model maternity hospital at Chalons, France, which is being financed by the Friends' Unit of the American Red Cross and also by English Quakers, at a cost of one million francs. The hospital, designed to take the place of the temporary dispensaries, hospitals and babies' clinics that have sprung up throughout the devastated regions in wooden barracks will be the most complete and modern institution of its sort in France. Two American and two English nurses will ensure a permanent coordination of the clinical methods of their countries with those of France. About sixty endowed beds will be set aside for the free use of the people of Chalons and neighboring villages.

Death of Dr. Fullarton.—Many medical men in the United States and Canada will learn with regret of the death in London after a short illness of Dr. John Hamilton Fullarton. Dr. Fullarton was born in 1856 at Brodick in the Isle of Arran. He was of the family of Fullartons of White Farland and Kilmichel which they have held since the time of King Robert the Bruce. The progenitor of the family is mentioned in Sir Walter Scott's *Lord of the Isles* as Fitz Louis. On entering the University of Glasgow he had a most distinguished course and there and at Leipzig, where he went later, he won bursaries to the value of £1500. He took his M. A. degree with highest honors in natural science in 1881, and his D.Sc. in 1891. He was L. R. C. P. L. R. C. S. (Edin.), and L. R. F. P. S. (Glas.). For some time he was a lecturer at Glasgow University. Many scientific distinctions were conferred upon him. He was a member of several European scientific societies and was recognized as an outstanding authority and writer on fishery questions. For many years he was a member of the Scottish Fishery Board and for some time was superintendent of the Scottish Fishery Board Laboratory.

Book Reviews

GENITOURINARY SURGERY.

Chirurgie de l'appareil urinaire et de l'appareil genital de l'homme. Précis de technique opératoire. Par PIERRE DUVAL. Cinquième Edition. Avec 234 figures dans le texte. Paris: Masson et Cie, 1920. Pp. vi-227.

A book that has gone through five editions must have some unusual merit. This little book on the surgery of the urinary and male genital system may with propriety lay claim to having distinctly unusual merit. The larger part of the work is devoted to the urinary organs, and includes most, if not all, of the usual surgical measures which these organs require in disease. The text is remarkably brief and clear. The illustrations are profuse and really explanatory of the text; in fact, the text seems quite superfluous in view of the abundance of excellent drawings.

The teachings are those of Guyon as practised in the Necker Clinic, and may be described as conservatively radical. While the book presents nothing that is strikingly new, it is one well worth the reading. For students and urologists who understand French, this work is a most valuable asset. Other books in this series are by Lenormant, on the head; A. Schwartz, on the thorax; G. Labey, lower extremities; M. Guibé, abdomen; Robert Proust, gynecology; and Victor Veau, urgent surgery. We believe a translation of these excellent little works into English would find quite a ready and well deserved sale.

PSYCHIATRY.

Manual of Psychiatry. Edited by AARON J. ROSANOFF, M.D., Clinical Director, Kings Park State Hospital, N. Y., Lieutenant Colonel, Officers' Section, Medical Reserve Corps, U. S. Army. Illustrated. Fifth Edition. Revised and Enlarged. New York: John Wiley & Sons, Inc., 1920. Pp. iii-684.

It is with a feeling of distress that one takes up a fifth edition of so important and full a work as this manual to find still a close attachment to the old voluminous descriptive method of dealing with the problems of psychiatry. The mere multiplication of classifications also, which reduces hallucinations of hearing, for example, to such fine distinctions as "akoasms" and "phonemes," helps but little in the actual understanding of mental diseases and in setting the patient upon his feet in his own victory over his diseased condition. The chapters are full, well arranged, abundant in information regarding external symptoms, and the material is well grounded in the work of various authorities who have laid these solid foundation stones in the study of mental disease. These psychiatrists have provided, however, for a later development, into which for the most part they failed to penetrate, the recognition of the dynamic structure and functional activity of the material with which psychiatry has to do. Therefore, even in the psychological discussion which is introduced in its relation to mental development and to the more strictly considered disease manifestations, the book still reveals a lack of appreciation of the thorough dynamism of the psychic nature and the tremendous and all pervading significance of this in every possible considera-

tion of mental disease and approach to it. It is true that the editor manifests a growing interest in such a unifying and vitalizing conception of psychiatry, of its material, which is the human personality, and of all its method and understanding.

But it is the failure to grasp this more fully and push its application that brings a sense of disappointment and of the failure of such a book to reach psychopathic need. There is a chapter on psychoanalysis, a method which utilizes such a vitalizing method of approach. This is given prominent place, but the principles for which it stands are left unrelated to the rest of the work. Something of this sort, something to give greater interpretation and actual curative and prophylactic force to psychiatry in its relation to intensely human problems, is needed in all the books of today. "What man is there of you, whom if his son ask bread, will he give him a stone?"

THE NERVOUS SYSTEM.

Kompendium des topischen Gehirn und Rückenmark-diagnostik. Kurzgefasste Anleitung zur klinischen Lokalisation der Erkrankungen und Verletzungen des Nervenzentren. By ROBERT BING. Fourth Edition, Revised. Berlin and Vienna: Urban and Schwarzenberg, 1919. Pp. viii-235.

The rapid appearance of successive editions of this work are indicative of its importance in more than one way. The field of investigation in neurology is so large and so full of detail and the science of neuropathology still so young a specialty, that progress is continually being made into the rich material to be found there and publications must be alert to record and report new discovery and change of hypothesis or of conviction from new investigation. The period of the great war, moreover, has brought much added material to light and stimulated thought and study, and quickened the vital interest which lies behind the actual work done in neurology. No worker can less afford not to be swept along by the spirit of progress and continual renovation and correction of conceptions and methods than one engaged upon work associated with the nervous system.

The book is so arranged in topical brevity and clearness that it offers itself as a convenient compendium of knowledge of the nervous system and of the methods of approach to its pathology. It is, moreover, alive with this active interest in the dynamic functional bearing of anatomical and physiological facts. This vital interrelation of the various parts of the nervous system inspires the plan of presentation and the brief discussions which link the topics together. The writer takes up first the lesions of the spinal cord considering the diagnosis from the point of view of the transverse section and from the segmental position. There is a brief review of the structure of the various elements of the spinal cord which provide for spinal sensibility, motility, vasomotor and trophic relations. In each case clinical manifestations of sensory and motor disturbances are discussed in their relation to location. For the author bases all his work upon the principle that physiology and anatomy must be em-

ployed to supplement one another in deducing and establishing the site of the lesion and its character. Special attention is given to the distinction between radicular and peripheral paralyses in motor disturbances and to radicular and peripheral sensory disturbances. Reflex disturbances are also considered from the viewpoints of segmental and sectional diagnosis.

The same system of presentation of structure and localization of lesion is utilized for the various portions of the brain. This study of anatomical position in relation to physiological function and clinical manifestations leads into the higher intellectual functions. Thus the book offers a very complete compendium for reference and because of its broad and flexible background it enables one to comprehend the fundamental unity of structure and function and to approach the treatment of lesions and clinical disturbances from this viewpoint. It is of particular value, as the author intends, in the field of surgery of the central nervous system. The chapters on the cerebellum and the disturbances of vision have received particular attention. There are very full illustrations and many tables, the latter having been revised. Many new symptoms have also been added to the discussion.

CLINICAL PSYCHIATRY.

Report from the Departments of Pathology and Clinical Psychiatry, Central Indiana Hospital for the Insane. Volume VII. Indianapolis, 1919.

The presentation of this report from the department of pathology and clinical psychiatry shows an earnest endeavor on the part of the men who have been doing the work at the Central Indiana Hospital for the Insane to work out their case reports in a manner to render them of practical value. The individual records are carefully arranged and are interesting. Most of the reports are thorough and by the corroboration of the final pathological changes as recorded, it is possible to correlate the diagnoses, and errors which have been made. While some of the clinical observations are not as profound as they might be from the psychological point of view, nevertheless this is a question dealing with the skill and capabilities of the individual physician who presents the report. On the whole the manner in which the entire book is compiled could well be copied by many institutions.

DISEASES OF THE RECTUM.

Handbook of Diseases of the Rectum. By LOUIS J. HIRSCHMAN, M. D., F. A. C. S., Vice-Chairman, Section in Gastroenterology and Proctology, A. M. A. Third Edition, Revised and Rewritten. Illustrated. St. Louis: C. V. Mosby Company, 1920. Pp. vii-378.

This book has for some time filled a great need in the field of anorectal surgery, an important topic which has received comparatively little consideration in the medical curricula of the medical colleges. Considering the number of pathological conditions encountered in this region this has hardly been fair. Frequently a patient will go along for years with some supposedly minor complaint of the lower bowel and it will receive scant consideration from the practicing physician; then the time will come when a more serious malady will be engrafted which will finally cause chronic invalidism or worse.

The technic of proctoscopic examination, which is so well described, is of prime importance. More examinations should be made in everyday practice. In this way small ills could be remedied and the more harmful aftereffects prevented.

A word about the illustrations would not be amiss. They convey many stories with more clarity than would the text alone, no matter how fully amplified. They have been selected with great care and reproduced splendidly. They include technic of examination, x ray plates, and operative procedures. Especial attention has been given to local anesthesia, the merits and limitations being set forth. On the whole the general topics of constipation, fecal impaction, pruritis ani, abscess of the anorectal region, hemorrhoids and prolapse of the rectum are encountered in practice with great frequency. Often these common conditions are carelessly handled; more care should be given to their treatment. The book is of value in the light it sheds upon these subjects.

THE PROBLEM OF WORK.

The History of Trade Unionism. By SIDNEY and BEATRICE WEBB. Revised Edition. New York: Longmans, Green & Co., 1920. Pp. v-784.

The Six Hour Shift and Industrial Efficiency. By LORD LEVERHULME. Introduction by HENRY R. SEAGER. New York: H. Holt & Co., 1920. Pp. v-261.

Industrial Administration. By A. E. BERRIMAN, ST. GEORGE HEATH, LEONARD HILL, T. B. JOHNSTON, A. F. STANLEY KENT, T. M. LEGGE, T. H. PEAR, E. SEEBOHM ROWNTREE. Manchester: Longmans, Green & Co., 1920. Pp. vii-203.

TRADE UNION HISTORY IN GREAT BRITAIN.

Scientific men have usually looked upon industrial warfare as an eruption which menaced the remote calm of the laboratory but which after all was of little importance. Today they know differently. Doctors in some localities are organizing for their very existence; in others they are protesting against the encroachment of the State on their individual practice; the most detached of medical journals give hints of strikes and unions and nationalization. Those who want more light on present problems would do well to read *Webb's History of Trade Unionism*. They will find here an illuminating account of the bitter struggle of those early workers to make life bearable, of persecution and prosecution, of legal injustice and long hours, a poverty so hopeless that there seemed no rising above it. As late as 1886 the investigations of Charles Booth revealed that thirty-two per cent. of the whole population of London (in some large districts over sixty per cent.) were found to be living in a state of chronic poverty which precluded not only the elementary conditions of civilization and citizenship but was incompatible with physical health and industrial efficiency. In the precarious period of trade union organization the employer group felt that there was something disreputable in the attempts of the workmen to better themselves, something that smacked of conspiracy, and the courts proceeded accordingly.

When the first edition of this book was published, in 1894, the trade union movement in Great Britain was still an adventure, without definite legal status,

and the writers of this history were daring innovators. Much water has flowed under the bridge since then; the trade unions and Mr. and Mrs. Webb have both become respectable to the point of prosiness, and labor has achieved the dignity of an opposition party. The difference between the first and second editions of this history is a matter of 345 pages, for the last thirty years have seen such important developments as the spread of syndicalism, the shop stewards movement, the use of ca' canny or the go slow policy, the growth of the Triple Alliance and of the three great unions composing it, the unions of the "black coated proletariat," and the insistent demands for nationalization.

Mr. and Mrs. Webb's book has become a classic, and like most classics it has its disparagers, chiefly among the advocates of the more radical economic theories. They say that the Webbs show more industry than selectiveness, that they deal with labor politics instead of the more fundamental topic of labor economics, and that the chapters designed to bring the book up to date are not as full as might be desired. However, the medical man will doubtless prefer to begin his study of the labor movement with a classic, particularly when it is as complete and authoritative as the present work.

THE SIX HOUR SHIFT.

Lord Leverhulme, the English capitalist who has caused consternation among the lords of industry by introducing the six hour shift into his factories and paying dividends with it, has written a book full of contradictions. In the *Six Hour Shift* he is deeply concerned about the empire and he talks with utter seriousness about the "Creator's intentions," but he quotes Norman Angell with approval and makes statements which our department of justice would put men in jail for. He believes that a six hour day will enable us to produce everything necessary and produce it without fatigue; that there should be no overfed rich nor underfed poor; that everybody should produce, women as well as men; and that the ideal to be striven for is "a better life for each of us, more equal distribution of wealth, higher wages in order to attain to a better living, more plentiful supply of all that we require in the way of boots, shoes, and clothing, better homes—homes with gardens, homes that are really places in which a soul can expand, and not caves in which we can crouch out of the light." Most revolutionary of all, he appreciates the spiritual importance of work.

It would be interesting if Lord Leverhulme would tell us more directly just what he has done at Port Sunlight. As it is, we gather that he has solved the problem of the worker's "indifference" by his scheme of "copartnership," by which the men receive shares in the business in proportion to their ability, interest and length of service, but having contributed no capital they receive five per cent. less than the ordinary shareholders. Children from fourteen up who work in his factories continue their education, and not in the evening after they are exhausted by the day's work but in alternate morning and afternoon periods. Of particular importance is his chapter on Health and Housing, in which he gives his solution of the housing question—garden

suburbs, thus relieving pressure at the centre; cheap transportation, and lowering of rents near the centre so that those who are obliged to remain there can have proper accommodation. Of course these things have been said by others before Lord Leverhulme, but not by others as powerful in the industrial world.

The conservative employer is likely to find these suggestions lacking in paternalism, and the author's declaration that there must be no philanthropy will not appeal to benevolent gentlemen of the old school. Radical unionists, on the other hand, will demand a more direct participation of the worker in the management of industry. Lord Leverhulme, however, has done these last more service than they appreciate, for he has proved one of their dearest assertions—that cutting down the hours of work does not necessarily decrease production.

INDUSTRIAL ADMINISTRATION.

This book consists of lectures delivered in the department of industrial administration in the Manchester College of Technology, England. They are both more elementary and more concrete than the books mentioned before. Their general tenor is along the line of the most enlightened industrial management—the application of psychology to industry, prevention of fatigue, care for occupational diseases, and thought of the social obligations of industry to labor. While the book is of interest primarily to factory managers, the chapters on health should prove of value to industrial physicians.

PENSIONS.

Pensions and the Principles of Their Evaluation. By LLEWELLYN J. LLEWELLYN, M. B., Lond., Senior Physician and Governor, Royal Mineral Water Hospital, Bath. (Attached to Second Southern General Hospital). and A. BASSETT JONES, M. B., Lond., Military Orthopedic Hospital (Whitechurch, Cardiff, Late Temp. Hon. Lieut. R. A. M. C., Welsh Hospital, Netley, Late Senior Surgeon, Cardiganshire General Hospital. With a Section on *Pensions in Relation to the Eye*, by W. M. BEAUMONT, Acting Ophthalmic Surgeon to the Bath War Hospital, author of *Injuries of the Eyes of the Employed*, *Problems in Prognosis*, etc. St. Louis, C. V. Mosby Co., 1919. Pp. v-702.

The authors of this extensive volume, covering 700 pages, have succeeded in the difficult task of the classification and analysis of pensions. The historical aspect is discussed, beginning with the initial grants of land to soldiers. In every case, the shortcomings as well as the beneficial aspects of the various pension laws, down through the feudal system and the Elizabethan statutes, have been frankly portrayed. The growth of the pension system, the reforms which have taken place, the interrelationship which they bear to the various departments of state are analyzed. In addition to this, the provisions for treatment and training and the description of the various hospitals and the work which they accomplished is taken up with the bearing they have on the pension system. A minute analysis is made of the various relations of the functions which are caused by the numberless injuries which have been the effect of the war. These are systematized and schematized with carefully explained charts. A special section on pensions in relation to the eye, written by W. M. Beaumont, has been incorporated into the volume. With the close

of the war, it is appropriate that we have a scientific analytical classification of the approximate values of the various parts of the human being. It may seem heartless to adopt a classification based upon the percentage grades of incapacity or the more intricate grades of sensibility, but we are confronted with the economic hopelessness of our returned warriors and so have no alternative. We must face this obligation and the aid that can be derived from a work compiled by these eminent physicians should be indeed welcomed. The earning capacity of an individual has not been the basis of grading pensions; a physiological standard has been adopted. In certain chapters, tables have been appended giving the average assessment for particular regions as laid down by French, German, Austrian, and other Continental tribunals. This volume should prove to be extremely helpful to medical referees, people interested in insurance, pensions, and workman's compensation, as well as to members of the legal profession, and to political and social students.

THE FEAR OF LIVING.

The Fear of Living. (La Peur de vivre.) By HENRY BORDEAUX. Authorized English Version by RUTH HELEN DAVIS. New York: E. P. Dutton & Co. Pp. 384.

This story stands at a transition point between the older idealized type of fiction and the more recent analytical realism. It manifests an honest and vigorous realism on the part of the author in which he attacks boldly the unhappiness and dissatisfaction and selfdeception of life which tries to satiate itself in external escapes of various sorts. Much of life as it is lived he finds only such a falseness to self and to real pursuits based upon a fear of living because there is no real knowledge of what living might be. Over against a typical social group thus vainly bent on selfish gratification, external display, and superficial valuation, he depicts a family of sterling worth, of simplicity of aims, but of a practised understanding of genuine values. They devote themselves each in his or her own manner to the realization and service of such values. There is no intricate subtlety of character analysis but there is true rendering of character in more than the manifest outward traits which win the reader's attention. The contrasts are made somewhat obviously but even this less subtle treatment gives the work a peculiar charm of the fresh open air, of frank and wholesome sojourn in the upper reaches of character and human attainment. The deeper underlying causes of personal joy and pain, defeat and victory, are suggested only remotely rather than revealed. Part of this charm of the openness and of the recognition of genuine everyday worth lies in the setting given to the actions of the persons of the story, in the graceful and free descriptions of nature in the frequent reference to the Savoy country in which the scenes are laid.

The lessons to be drawn in this contrast of character and attitude are pointed with fearless hand and understanding mind. They are those which have to be learned often only through the awakening of hard experience but they are not artificially forced in the mouths of the strong, simple, and truly courageous mother, the faded old lady who has

learned to have no fear of living or of dying. She has lived through sorrow or through joy in genuine giving of herself into every experience. Offset against her is the child Alice, no less a child when grown to womanhood, who lost the opportunity of love because she had never learned to make a choice and to try her own strength regardless of cost. The forcibly expressed teachings of the book, worked out in a manner to hold the reader's interest from beginning to end, are given further weight and applied more definitely to individual and social awakening in the long introduction written by the author at the republication of the book.

New Publications Received

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

A CRITIC IN PALE MALL. Reviews and Miscellanies. By OSCAR WILDE. New York: G. P. Putnam's Sons. Pp. vi-290.

NEITHER DEAD NOR SLEEPING. By MAY WRIGHT SEWALL. With an Introduction by BOOTH TARKINGTON. Indianapolis: The Bobbs-Merrill Company. Pp. i-320.

HOW DID ILLUSION OF PHENOMENAL UNIVERSE ARISE? OR LORD RONALDSHAY'S PUZZLE IN THE INDIAN PHILOSOPHY. A Solution by the Author of *The Dream Problem*. Delhi, India: Practical Medicine, 1919. Pp. iii-37.

LETTERS FROM CHINA AND JAPAN. By JOHN DEWEY Ph.D., LL.D., Professor of Philosophy in Columbia University, and ALICE CHIPMAN DEWEY. Edited by EVELYN DEWEY. New York: E. P. Dutton & Co. Pp. v-311.

WHEELER'S HANDBOOK OF MEDICINE. By WILLIAM R. JACK, B.Sc., M.D., F.R.E.P.S.G., Physician to the Glasgow Royal Infirmary; Lecturer in Clinical Medicine in the University, Glasgow. Illustrated. Sixth Edition. New York: William Wood & Co., 1920. Pp. v-551.

HERMAN'S DIFFICULT LABOR. Sixth Edition, Revised and Enlarged by CARLTON OLDFIELD, M.D. (Lond.), F.R.C.S. (Eng.); Hon. Obstetric Surgeon to the General Infirmary, Leeds, etc. Illustrated. New York: William Wood & Co., 1920. Pp. ix-573.

PSYCHOANALYSIS. By BARBARA LOW, B.A., Member of the British Psychoanalytical Society; Formerly Training College Lecturer. Introduction by ERNEST JONES, M.D., M.R.C.P. (London), President of the British Psychoanalytical Society, etc. New York: Harcourt, Brace & Howe, 1920. Pp. v-199.

A TEXTBOOK OF OPHTHALMIC OPERATIONS. By HAROLD GRIMSDALE, M.B., F.R.C.S., Ophthalmic Surgeon and Lecturer on Ophthalmic Surgery to St. George's Hospital; Surgeon to the Royal Westminster Ophthalmic Hospital, and ELMORE BREWERTON, F.R.C.S., Consulting Ophthalmic Surgeon to the Metropolitan Hospital; Surgeon to the Royal Westminster Ophthalmic Hospital. Illustrated. Second Edition. New York: William Wood & Co., 1920. Pp. v-438.

SCIENTIFIC AND APPLIED PHARMACOLOGY. Intended for the Use of Students in Pharmacy, as a Handbook for Pharmacists, and as a Reference Book for Food and Drug Analysts and Pharmacologists. By HENRY KRAEMER, Ph.B. (in Chemistry), Ph.M. (in Pharmacy), Ph.D. (in Botany), Dean of the College of Pharmacy and Professor of Pharmacology in the University of Michigan College of Pharmacy; Member of the Executive Committee of Revision of the Pharmacopoeia of the United States of America; Corresponding Member of the Société de Pharmacie de Paris, etc. Second Edition. Revised. Illustrated. New York: John Wiley & Sons, 1920. Pp. iii-741.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

THE TREATMENT OF PATIENTS WITH SLIGHT CARDIAC FAILURE.

By HAROLD E. B. PARDEE, M. D.,
New York.

Assistant Attending Physician, New York Hospital; Instructor in Medicine, Cornell University Medical School.

(Concluded from page 1049)

AURICULAR FIBRILLATION.

All patients who have the irregularity of the heart which is known as auricular fibrillation and whose heart rate is continually above eighty-five or ninety to the minute should receive digitalis in a sufficient daily dose to keep the heart rate below this figure when they are at rest, except that it should be given with great caution and a clear indication of necessity to those who show the combination of beats coming in pairs, the so-called coupled beats, and a relatively slow heart rate, e. g., less than one hundred a minute. In these patients the coupling of beats is due to the occurrence of ventricular premature beats, and this should be taken to indicate an irritability of the ventricular muscle which it is always undesirable to increase by digitalis administration. The words heart rate are used here with emphasis, for the pulse rate is always a misleading standard and especially so with auricular fibrillation. Many heart beats will entirely fail to cause a pulse.

The need to keep the heart rate down within normal limits is usually very great in these patients. They tend to have rapid rates without treatment, and even though nothing else were wrong with the heart, a constantly rapid rate will lead to relative undernourishment of the heart muscle and consequent heart failure.

REGULAR HEARTS.

In patients with regular hearts there is no such definite sign that digitalis is needed and no definite sign, such as the rate affords in auricular fibrillation, that it is acting upon the heart. We know that digitalis acts upon the regular heart for the electrical record of the heart will show signs of its action. This is often not available, however, and after all it is really unnecessary to demonstrate that digitalis is acting upon the heart if only it can be shown that it is acting on the patient in some other way; if in other words the early signs of poisoning have been observed and if subsequent medication has been conducted as described. When digitalis is present in the body in sufficient amount it cannot fail to act upon the heart, though, if necessary, as has been said, its action can be demonstrated by the electrocardiogram.

Since we have no such definite sign as the rate gives us in auricular fibrillation, we must test the value of the drug by giving it properly as has been described for a period of two weeks or so, and carefully note the effect upon the symptoms of which the patient complains, and whether during this time the patient's ability to perform exercise without distress has shown any increase. These

statements as to the effect of digitalis with regular heart rate, hold true no matter what the underlying pathological condition, whether it is valvular disease or myocarditis.

Do not feel that high blood pressure, chronic myocardial degeneration or the presence of fever is a contraindication for the administration of digitalis. Most excellent results can be obtained with digitalis in patients with high blood pressure who show symptoms or signs of a failing heart. The increase in blood pressure which is given as the theoretical contraindication does not occur, and in fact we often see a slight fall in the blood pressure as the patient's circulation improves. In chronic myocarditis or in fevers we are not so expectant of definite beneficial results from the drug for the muscle is seriously diseased, but there is no danger peculiar to these conditions which is likely to come from using it for these patients.

SYMPTOMS.

Before leaving the subject of chronic heart failure of lesser degree a word must be said about the treatment of certain special symptoms which may be so prominent or so annoying to the patient that they call for special symptomatic treatment in addition to the treatment of the heart failure. These symptoms are attacks of shortness of breath which come on especially at night, palpitation which comes especially on exertion but which is often felt almost constantly, precordial pain coming on exertion, edema of the lower extremities, and cough.

The shortness of breath at night is most frequently due to the occurrence of the Cheyne-Stokes type of respiration. The patient will breathe very deeply for a minute or so and then will gradually cease to make any inspiratory effort. After he has not breathed for a time he begins to feel short of breath and this feeling increases until he begins to breathe again and has ventilated the lungs sufficiently to wash out the carbon dioxide which has accumulated in the blood during the period of apnea. This is, of course, a dysfunction of the respiratory centre, but it is dependent, in cardiac cases at least, on an improper circulation of blood through the medulla. It will sometimes be prevented by having the patient sleep with the head well raised, on two or three pillows, but often this is of no benefit. The only medication which has any effect in a symptomatic way is one of the mild hypnotics, such as veronal or sodium bromide; which merely makes the patient sleep more soundly so that he is not awakened by the sense of dyspnea. In patients who show this symptom along with high blood pressure I have thought that the administration of bicarbonate of soda thirty grains three times daily has had some effect. It is given with the object of relieving the acidosis which is often present in these patients, for it is known that the respiratory centre is sensitive to changes in the relative acidity of the blood. Morphine through its depressant effect on

the respiratory centre will often increase this Cheyne-Stokes respiration, or bring it on in a patient who does not otherwise show it.

Palpitation on exertion is sometimes very distressing to the patient, but is so evidently a symptom of heart failure at large, that like dyspnea it can scarcely be treated symptomatically. Palpitation is sometimes felt when the patient is not exerting himself and when he does not show marked signs of failure. It is very often due to the occurrence of premature beats but may be present even when these are not, especially often perhaps in the presence of aortic regurgitation. The patient who complains of feeling the premature beats or of a continual sense of palpitation is nearly always a more or less neurotic person, so that reassuring him as to the relative harmlessness of the cause of the sensation may help greatly. The use of sodium bromide in rather large doses will often help greatly and is about the only remedy which does.

The precordial pain which comes on exertion is a signal that the heart is being called on for more than it can perform, and when it comes after relatively slight exertion is due to either aortic disease or to disease of the coronary arteries with narrowing. It is best treated in either case by simply stopping the exertion and resting a minute or so, but in some cases the use of nitroglycerine in the dose of one hundredth or one two hundredths of a grain by mouth will ward off the pain and allow the patient to continue his efforts. This is more likely to be effectual in the case of coronary disease than with aortic disease.

A great deal can be done to make these pains less frequent by keeping the bowels as free from constipation as possible through regulation of the diet and the habits, and by preventing the patient from indulging in large meals or from exercising directly after meals while much of the food is yet in the stomach. The administration of iodides, even when persisted in for a long time, does not seem to lessen the pain, but small doses of bromides do in some cases. Five or ten grains three times daily will sometimes have an evident beneficial effect.

Even in patients who have only lesser grades of heart failure, edema of the legs will sometimes be persistent and annoying. It usually disappears after a night's rest in bed, but reappears during the day and may cause the legs to feel very heavy and tired, especially if the patient must stand much on the feet. It will be benefited at times by the proper administration of digitalis, but if this fails theobromine sodium salicylate (diuretin) should be tried in doses of from fifteen to twenty-five grains three or four times daily starting with the smaller dose and increasing if necessary. If it is given with four ounces of water or in milk it will usually not cause unpleasant gastric symptoms. Potassium acetate in thirty grain doses every four hours, dissolved in about four ounces of water, may be tried but is less likely to be successful than the diuretin, and calomel in a daily dose of one or two grains, given in four or five parts, may at times help to remove the edema. Calomel should not be con-

tinued for long because it is primarily a renal irritant, and may lead to the appearance of casts and albumin in the urine after several days.

Restriction of the fluid intake to less than 1000 c.c. a day is a helpful measure as an adjuvant to the treatment of edema by drugs, as is the limitation of the use of sodium chloride, keeping the patient on a salt free or salt poor diet. In some patients the use of a combination of restricted fluids and salt free diet will suffice to cause an evident improvement in the edema, though these measures are more especially indicated in the more marked edema of more marked heart failure, where the nephritic element in the edema is more predominant than it is usually in the lesser grades of failure.

Sometimes a cough will result from the chronic pulmonary congestion which is present with even slight heart failure, and there is often hemoptysis from this cause, and at times a chronic bronchitis because the congested bronchial mucosa is less resistant to infection than normal. Measures to restore the circulation will help to get rid of the cough but the usual drugs for bronchial infection will probably be needed as well. Ammonium chloride, potassium iodide, terpine hydrate, creosote, and if necessary codeine or heroin are the most useful drugs for this purpose, the indications for the special drug will be evident to the physician who sees the case.

The question of the treatment of high blood pressure is one which often comes up, when this condition is present along with some degree of heart failure. Shall we attempt to reduce the blood pressure, and if so by what measure? The answer to the first part of this question is most difficult and calls for considerable judgment on the part of the physician. The thing to be determined is whether the high blood pressure is a major cause for the failure or is merely contributing a small part by giving a weakened heart more work to do than it would otherwise have. A very careful estimate of the integrity of the heart muscle is necessary for proper treatment.

The contribution of the blood pressure in overworking a heart is probably never very great unless the systolic blood pressure is at least 190 mm. or unless the myocardium is more than ordinarily diseased. In these cases the electrocardiographic record is of great assistance in giving us an indication of the amount of myocardial disease. The level of the diastolic blood pressure is also a clue which helps us in our conception of the myocardial strength. A small pulse pressure, the diastolic and systolic levels being relatively close together, shows that the heart is being taxed to capacity to maintain its output against the high peripheral resistance. Do not avoid digitalis in high pressure cases on the theory that it will raise blood pressure. It usually does not do this, but even if it does it will strengthen the heart beat more proportionately than is necessary to carry the increased pressure. Theoretical considerations aside, digitalis usually improves these patients with high blood pressure and slight signs of failing heart.

If we feel that the blood pressure is so high that it seriously overtaxes the heart muscle, then we

should use measures which would tend to reduce it, in addition to the other lines of treatment which are being followed. Chloral hydrate in the dose of five grains every four hours, or perhaps ten grains, may be used but without much hope I believe, of relieving the patient's symptoms. Potassium iodide ten grains three times daily may also be tried but with the same expectations as chloral. These drugs are very useful in relieving some of the symptoms which may arise from high blood pressure, but they do not usually result in a relief of the symptoms of heart failure which arise from this cause, though they may cause a temporary fall of moderate degree in the pressure. The nitrate series of drugs will produce a fall in blood pressure which lasts perhaps an hour or so in the case of sodium nitrate. If this fall is not accompanied by unpleasant sensations on the part of the patient it may be maintained by repeated doses but a tolerance for this drug soon becomes established so that the dose must be increased. All of these drugs are best used as adjuvants to general hygienic measures which even alone will often be remarkably effective in lowering the blood pressure. The patient's work should be diminished in amount and the element of mental strain, of strenuousness, removed as much as is feasible. Constipation is a serious factor often, and the pressure will at times fall remarkably when this is relieved. The importance of restful sleep at night is very great. At least ten hours should be spent in bed and if much of this is spent in restless wakefulness, then mild sedatives should be used. Restriction of fluid will be of great use in many cases. Reduction of obesity is always necessary.

If digitalis and the combined hygienic and drug treatment which have been outlined above do not relieve the patient of his symptoms of heart failure, then rest in bed will be necessary for a sufficient time to allow the blood pressure to fall which it will surely do with rest in bed, and to allow the heart to regain control of the circulation. Phlebotomy or the nitrites or chloral or bromides should be used as adjuvants, as has been indicated, together with a reduced diet and reduced fluids and probably digitalis. When it is necessary for these patients to go to bed their treatment more nearly resembles that of severe heart failure as it will be described later than it does that of the lesser grades which are found in the ambulatory patients, which we are at present considering.

RESORT TREATMENT.

The question of sending patients to a resort where they will undergo a course of treatment once or twice a year is often brought up but seems to be with certain reservations a quite unnecessary procedure. If the patient can be at home and yet not be worried by any feature of his surroundings, if he is willing to consider his treatment before his business or any social requirements, and if he can be sure of obtaining the same careful and individualized consideration from his physician at home as he would at a resort, then he need not be advised to go. The reason the resorts are valuable is that they take the patient quite away from his home problems both social and business, they place him in congenial and pleasant surroundings and they carefully super-

vise his diet, bowels, rest, exercise and medication.

The value of the various carbonated and brine baths seems to be that they act as gentle and easily graduated stimulants to the circulation, and it is hard to see why they should have any advantage over other forms of equally mild exercise, except that they are more diverting than some of them.

Many patients who are kept on a proper régime of hygiene and medication continue to do very well for long periods, so with these the resort question never comes up. Others are continually on the verge of such a degree of failure that they should rest much of the day, and these are too sick for the resort. For the majority of patients the resort will find its chief use in warding off the blues which may descend upon them at the time when for one reason or another the heart's efficiency becomes reduced temporarily. These remissions tend to occur at times even with the best of care and are apt to be very discouraging to the patient. It is likely that they represent an extension of the disease within the heart muscle rather than a changing condition in the valves. They probably mean that the original cause of the disease is still operative, so that a remission should always start the physician upon a fresh search for the source of entry for the infection after which the patient may be allowed a vacation at the resort if it is thought worth while.

74 WEST FORTY-EIGHTH STREET.

Modification of the Action of Adrenalin on the Heart by Morphine.—W. J. R. Heinekamp (*Journal of Pharmacology and Experimental Therapeutics*, December, 1919), in a series of seventeen dogs to which therapeutic doses of adrenalin were administered intravenously, found that cardiac inhibition and slowing of the heart rate were produced in fourteen, or eighty-two per cent. Previous administration of morphine was found to increase the amount of inhibition produced by adrenalin. The experiments led to the further conclusion that adrenalin has a direct central action and is synergistic with morphine. Morphine to a degree sensitizes the vagus centre. The increased inhibitory action of adrenalin following morphine is due to the morphine sensitization together with the adrenalin-morphine synergism. The increased blood pressure caused by adrenalin plays but a slight part in inducing the inhibitory slowing of the heart rate.

Therapeutic Use of Radium in Diseases of the Eye.—Henry H. Janeway (*Archives of Ophthalmology*, March 1920) concludes from his experience with three sarcomata of the choroid and four within the orbit that radium will produce a temporary improvement in cases of sarcoma, though not a complete retrogression in advanced lesions. About the same conclusions are drawn concerning the effect of radium on glioma of the retina, with perhaps a little greater leaning toward the treatment by radium as opposed to operation. No improvement resulted from seven treatments in a case of old interstitial keratitis. On the other hand, excellent results were obtained in the treatment of naevi of the lids, vernal catarrh, and epitheliomata, both of the conjunctiva and of the lids.

Miscellany from Home and Foreign Journals

Postmortem Transformation of Hydrocyanic Acid in Cases of Poisoning.—Chelle (*Journal de médecine de Bordeaux*, January 10, 1920) ascertained through experiments in dogs that in the presence of putrefactive changes, hydrocyanic acid and the alkaline cyanides are destroyed or transformed. This transformation is partially reversible, i. e., by treatment with chromic acid or chromates in an acid medium the hydrocyanic acid can be regenerated. In cadavers after poisoning by hydrocyanic acid, this acid disappears soon after death. Under the influence of the sulphur products formed during putrefaction it fixes sulphur and passes into sulphocyanic acid, which is absolutely resistant to putrefaction. Upon treatment with an oxidizer, the previous condition is restored and the hydrocyanic acid reappears. According to this, it is no longer impossible for an expert called in for late examination of a case of prussic acid poisoning to conclude definitely that such poisoning has occurred, for there is now available a means of regenerating the hydrocyanic acid previously hidden in the form of sulphocyanic acid. The normal presence of sulphocyanic acid in the system does not invalidate this conclusion. The view hitherto held that hydrocyanic acid is changed into formic acid in the dead body is disproved by the author's investigations. Such transformation, even *in vitro*, occurs but very slowly, while the transformation into sulphocyanic acid is very rapid.

Sarcoma of the Stomach.—John Douglas (*Annals of Surgery*, May, 1920) states that sarcoma of the stomach occurs in one per cent. of all stomach tumors. The average age of incidence is forty-one and six tenths in contrast with an average age of sixty-one and two tenths for carcinoma. The average age for lymphosarcoma is earlier than in the other forms. Round cell and lymphosarcoma are the most frequent forms found. They are more apt to be infiltrating, but the round cell may project into the stomach or form pedunculated tumors. They result in ulceration oftener than in other sarcomata, but not as frequently as in carcinoma. Spindle cell and myosarcoma are likely to form large exogastric tumors. While statistics show that the most common site is in the region of the pylorus, especially in the infiltrating form, other portions of the stomach are more frequently involved, and the pylorus itself is less often attacked or obstructed than in carcinoma. Metastasis also occurs less rapidly than in the latter, and the operative prognosis should therefore be better.

The diagnosis can rarely be made with certainty; the x ray examination furnishes the most useful evidence. When in the presence of a tumor in a patient younger than those in which cancer is usual a short history of gastric disturbance, absence of blood in the gastric contents and stool, and the presence of free hydrochloric acid, the absence of cachexia, and the presence of anemia, while not ruling out cancer, ulcer or syphilis of the stomach, may cause the diagnosis of sarcoma to be considered.

Hemorrhagic Foci in Bone.—George Barrie (*Annals of Surgery*, May, 1920) states that:

1. Hemorrhagic foci in bone should not be considered as neoplasia, producing bone destruction, but rather as regenerative granulation tissue masses whose end effort is restoration of areas already destroyed by some injurious agent.
2. The etiological or exciting factors in destruction observed in the multiple processes are not yet fully determined. Endocrinal glandular disturbance, poor lime salt nutrition, the spirochete, and other bacterial infections seem to partake in the etiology of such lesions.
3. The solitary lesions presenting a similar gross and microscopic pathological picture, in a great majority of instances, give a history of bone trauma.
4. The affections responsible for the production of processes of the multiple type are low grade chronic systemic diseases that apparently do not definitely shorten the life of the individual to any demonstrable degree. The cases noted in literature have all given histories of many years' duration.
5. The arrest of repair in which the granulation tissue remains as such without progressive metaplastic change into fibrosis, or the end product bone, is apparently partly due to insufficient formation of fibrogen, thus preventing chemotactic balance.
6. These lesions, because of their primitive structure, may be regarded as possessing potentialities for neoplastic change, but malignant transformation must be very rare; when such does occur, the scavenger giant cells apparently take no part and are frequently greatly lessened in number.
7. That lesions of this character should be regarded as low grade inflammatory reparative processes and classified accordingly among the regenerative inflammations in bone.
8. Delay or arrest of repair in these processes, as evidenced by the continuous presence of highly vascular structure, seems to be due to a lack of chemotactic balance, local or general.

Coagulation in Embryonic Blood.—V. E. Emmel, S. A. Levinson, and M. E. Fisch (*Journal of Experimental Medicine*, February, 1920) studied the coagulation time of pig embryos of 100 to 270 mm. The average time was twenty-three minutes, which was six to eight times that of adult blood. The first sign of coagulation was small masses of fibrin collected almost invariably at the side of the test tube, and the clot usually was a sliding one. In an analysis of the factors which might have a bearing on this long coagulation time, it was found that the platelet count did not differ greatly from that of the normal adult. The coagulation time was much reduced by the addition of the following: Platelet material obtained from adult pig blood, two drops of 0.5 per cent. calcium chloride, and tissue extracts. The calcium content of embryonic blood is greater than that of the adult, in the proportion of seven to five. The fibrinogen content apparently plays no important part in the coagulation time. Bile was found to be present in the blood of the embryos, and this bile content is considered to be the primary factor in their greater coagulation time.

Hemoglobin Determination.—In a comparative study of hemoglobin determination by various methods, Frieda S. Robscheit (*Journal of Biological Chemistry*, February, 1920) found that in using the Palmer method very accurate results were obtained if the standard solutions were prepared fresh once a month. The Sahli hemoglobin method, when using the color tubes accompanying the instrument, is inaccurate because of the variation in color density of the standard tubes, due to fading. Using the glass 0.96 mm. in thickness recommended by Newcomer the results were good. A glass 1.02 mm. thick gave only an approximate color match, and not such satisfactory results. A method is described which applies Palmer's procedure to Sahli's principle. This has given satisfactory results and has obviated the difficulty in Palmer's method—the instability of color in the standard solutions, as the standards prepared have remained unchanged for eleven months. For routine hospital work an acid hematin standard prepared in the way described is recommended. From the standard concentrated solution one per cent. solutions may be prepared from time to time, and these are used to fill the standard tube of the common Sahli hemoglobinometer. This will give an accurate base line for hemoglobin determinations, and if the Sahli tubes are refilled once a month accurate clinical determinations may be obtained.

Fractures of the Lower End of the Radius.—James H. Stevens (*Annals of Surgery*, May, 1920) asserts that fractures of the lower end of the radius (so-called Colles's fracture) are always compression fractures, the compressive side breaking first, literally collapsing. The first point of fracture is the point of greatest compression upon the cortical surface of the bone because the stress increases both in compression and tension the further away from the neutral axis. It breaks in compression because the compression is much greater than the tension. Green bone reacts to strain like wet timber. It breaks at the lower end of the radius because there are several forces, and the resultant is on the lower end of the radius posteriorly. This is due to direct compression from above, the hammer blow from below, the resistance both to compression and to blow being not in the centre of gravity, but eccentric to it and, therefore, increasing the strain. It is also due in part to the velocity of stress and the molecular inertia of material. These compressive fractures of the lower end of the radius show the evidence of compression. There is actual loss of substance, but no impaction. Breaking up the impaction (so-called) cannot restore the planes of the articulation, nor does it do so. It might be possible by traction over a long period of time to separate this crushed surface and permit its being filled in by new bone, thus restoring the planes of the articulation, but to do this would be to sacrifice some of our chances of securing a freely movable wrist joint. Early reduction followed by early passive and active motion will return all or nearly all compressive fractures of the radius to useful light occupation within twenty days. Any retentive apparatus other than a leather wrist strap after ten to twelve days is contraindicated except in a very rare instance.

Vascular Reactions in Vascular Hypertension.—James P. O'Hare (*American Journal of the Medical Sciences*, March, 1920) concludes from his studies that the vasomotor system in vascular hypertension is extremely labile and sensitive; that mental and physical rest causes a marked fall in pressure; that excitation causes a more marked abrupt rise; that exercise usually causes a similar rise; that nitroglycerine produces practically no fall in pressure and there is often a primary rise following its absorption, and that the vessels are especially sensitive to the intramuscular injection of adrenalin, a marked rise in pressure taking place after its injection.

Further Observations on Kala Azar.—Sarat-sasi Kundu (*Indian Medical Gazette*, February, 1920) says that the intravenous use of tartar emetic is the best form of treatment for kala azar in any stage, but that the use of this drug needs careful watching and attention, while the patient requires special and proper care throughout the whole course of treatment. The drug should not be pushed to a dangerous extent, and a careful watch should be kept to avoid the danger of going on too long with too large doses of antimony tartrate, once the disappearance of the parasite has become evident.

Toxicity of the Toadstool, *Tricholoma Tigrinum*.—A. Sartory (*Bulletin de l'Académie de médecine*, January 20, 1920) states that this toadstool is easily mistaken for a number of allied but edible species belonging to the *Tricholoma terreum* group. In recent years a number of cases of poisoning from it have been recorded. He describes the differentiating botanical features of the toadstool, and reports experiments on animals demonstrating its toxicity. Clinically, symptoms appear one or two hours after ingestion of the fungus, and consist of gastric pain, nausea, and chills, followed by copious, repeated vomiting, fetid diarrhea with abdominal pain, headache, cramps in the calves, and pronounced weakness. The patient vomits all drugs or food taken. The symptoms last from two to six days, and complete recovery follows.

Fatigue of Hepatic Origin.—Roger Glénard (*Presse médicale*, March 27, 1920) refers to attacks of lassitude as the symptom most frequently met with during temporary slight congestion of the liver. Hepatic fatigue occurs typically in periodical seizures, usually in the morning upon awakening and after the heavier meals. The onset of the attack is rapid, the patient suddenly complaining of extreme lassitude and heaviness of the limbs, and becoming somnolent. These attacks, which are evanescent, are directly related to the causes of hepatic overwork and are accompanied by the characteristic manifestations of this condition, the liver being generally tense and tender. Hepatic fatigue is due to an autointoxication arising through functional insufficiency of the organ, and its treatment comprises sodium sulphate, sodium bicarbonate, thermal cures, strict dieting, hydrotherapy, moderate exercise, and enforced rest of the nervous system, which tend to prevent the disturbance of the liver from passing into a chronic state, with the usual attendant risk as regards the patient's subsequent health.

Proceedings of National and Local Societies

ASSOCIATION OF AMERICAN PERORAL ENDOSCOPISTS.

*Second Annual Meeting Held in Brooklyn, N. Y.,
June 5, 1919.*

The President, Dr. HUBERT ARROWSMITH, of Brooklyn, in
the Chair.

(Concluded from page 1100)

Foreign Body in the Food and Air Passages.—

Dr. H. H. FORBES, of New York, said that many of those who went overseas took with them their bronchoscopic outfits and lugged them around but few had the opportunity of using them. In his own case he used it only four times, once in removing a paper clip from a man's larynx, the others for diagnoses. There were practically no demands for bronchoscopic or esophagoscopic work. He said that he had been trying to follow the lead of Dr. Jackson, especially the work with a local anesthetic, and it was surprising to find in how many cases operation could be performed in this way where it was formerly thought necessary to give a general anesthetic. On the other hand, in a recent case where the patient was an adult he had been unable to cocaineize the patient sufficiently, whereas under general anesthesia the foreign body was easily removed. Another point was the tracheotomy to which Sir St. Clair Thomson had referred, the open way. There should always be a tracheotomy set on hand. In a recent case it was found necessary to do a rapid tracheotomy; owing to the overenthusiasm of an assistant in trying to provide more illumination, both lamps were burned out. In the meantime the patient, a child who had inhaled a jordan almond, was about to suffocate owing to change of position of the foreign body. It was evident that it would take several minutes to replace the illumination, so a rapid tracheotomy was performed and the foreign body removed, the child making an uneventful recovery.

Dr. Forbes said that in New York the general surgeons were giving the laryngologists a little more leeway now than they appeared to be doing in Cleveland, and were showing more interest in the work being done with these foreign bodies in the lung. Some time ago a medical man stated that he hated to refer esophagoscopic cases to the bronchoscopist for the mortality was so great. He actually had the idea that the percentage of mortality was something like twenty-six per cent. The successful work that had been done along those lines should draw more cases to those specializing in this work. Hospital team work was quite essential in this department. Dr. Mosher was doing this work in Boston and there were others in New York; but this team work was more important in bronchoscopy than in any other line. When one's attention was rivetted to the tube in looking at something at the other end, it was imperative that those around should understand the work that was being done. It was astonishing, however, what good work was being done by men who had not these facilities.

Another point was the washing out and treating of bronchial and lung cavities. Nature took care of many of them, and patients did cough up foreign bodies. In a recent case a patient had been given a bad prognosis by her medical attendant and some one got hold of her and said she had a lung abscess, caused by the inhalation of some particles of teeth, at the time of removal under ether. Dr. Forbes said that this was one of the first cases he had had and he started in with treatment but the prognosis was not good. The patient was brought in on a stretcher, but in short time she was up and about and in six weeks was able to leave the hospital and come back for the washings. To begin with, while they were washing out and cleansing the cavity, the patient herself expectorated three or four little particles of the root of the tooth and some of the solid portion of the crown. Dr. John F. Erdmann who had referred this patient to Dr. Forbes, was surprised at her recovery.

Dr. W. H. MCKINNEY, of Memphis, referring to Dr. Forbes's case of emergency tracheotomy, told of an interesting experience of his own which occurred recently. The patient, a child three years of age, had inhaled a grain of corn. Under light anesthesia he passed a Jackson speculum, but after one or two futile attempts, the grain of corn was blown up by an expiratory blast, caught between the vocal cords, and the child was in danger of total asphyxiation. He therefore quickly put his mouth over the child's mouth, and blew the grain back into the trachea, and the next morning easily removed it without anesthesia.

Bronchoscopic Side Lights on Bronchoscopic Cases.—Dr. J. W. JERVEY, of Greenville, S. C., presented brief reports of several cases that had occurred in his practice, which he believed threw interesting side lights upon the practice of peroral endoscopy.

CASE I.—Several years ago he had been called to assist a colleague in the removal of a foreign body from the air passages of a child two or three years of age. A careful search had been made for the foreign body, but it had not been located. A few minutes' examination sufficed to show Dr. Jervy that the passage of a tube of even the smallest calibre below the glottis was physically impossible on account of the marked swelling of the mucous lining and the narrowing of the lumen of the natural passageway. His colleague did not agree with him, stating that he had had the tube in place not five minutes before. On being asked if he was sure he had the tube in the air passages he replied that he was, because he had seen the tracheal rings, and furthermore, his glasses had become obscured by a gust of air blown out by the child.

He was asked how he could be sure that it was not a blast of gas from the esophagus which he had encountered. He immediately undertook to pass the tube again into the trachea, but was unable to do so, and after some minutes of vain endeavor,

gave it up. Dr. Jervey then inquired upon what ground the diagnosis had been made, and was informed that the child had been playing with some buttons on the floor in the afternoon and was suddenly seized with an attack of coughing and pain in the chest—no more—no less. There appeared to be no record of pulse, temperature, chest sounds, general bodily functions, x ray examination or other aids to diagnosis. He mildly expressed his astonishment and ventured a guess that something like bronchopneumonia would be found. It was, and the child died within thirty-six hours.

CASE II.—In January, 1919, a little girl about twelve years old was brought to the hospital in an almost cyanotic condition, by her attending physician, who informed Dr. Jervey that the child had one or more cottonseeds in the left bronchus, which condition he had reasoned out from the reduced respiration on that side. Upon investigation, clearly enough, there was very limited respiratory movement in the left side of the chest. The history was clear, the child with others had been playing the afternoon before in a pile of cottonseed. This little girl had been covered up with the seeds in play, and suddenly emerged from her covering choking and gasping, unable to get her breath. The attack subsided but she was brought for bronchoscopic examination. Realizing that it was useless to try to locate a cottonseed by means of an x ray examination, Dr. Jervey proceeded at once to do a bronchoscopy. This was very easily accomplished, but while the tube readily passed into the right bronchus, the lumen of the left bronchus was so narrowed by evident inflammatory edema, that it was wholly impossible to enter it. The right bronchus was free of any obstruction or pathology so far as could be determined, and suddenly the truth dawned upon him and he promptly withdrew the tube and requested the physician present to auscultate and percuss the chest. This was done, and Dr. Jervey was advised that the entire left lung was consolidated. The child made a good recovery from lobar pneumonia in the usual way and time.

CASE III.—To illustrate another point Dr. Jervey recounted the following experience: One day on entering the City Hospital he was requested to assist a colleague, who had been working for about three quarters of an hour with a bronchoscopy in the case of a child about five years old, for a foreign body in the bronchus. The foreign body was a blue glass bead about seven or eight mm. in diameter. After looking at it for a moment, he selected the instrument he wished to use for its removal, and was about to use it when the gentleman who had been working on the case remarked that it was useless to try removal with that particular instrument, as he had just tried it. He politely persisted in his course, and with good luck, for in a very few seconds the foreign body was lying on the table. This incident led him to throw out another sidelight for contemplation, viz.:

Don't decline to use a certain mechanical principle or a certain instrument just because a colleague had previously tried it in the same case and failed. Difficulty for one man was opportunity for another.

CASE IV.—In May, 1918, Dr. Jervey said that he had been called upon to do a bronchoscopy in the case of a boy eight years of age, who had had a tack in the air passages for more than two years. X ray examinations and clinical evidence definitely located the tack in the right bronchus, surrounded by an abscess. On passing the tube into the right bronchus, these findings were verified. There was in addition a marked stenosis above the tack in the neighborhood of the upper lobe bronchus. Without going into details, suffice it to say that after forty minutes' effort, during all of which time he could readily grasp the tack with hook or forceps, he found it impossible to dislodge the tack from its anchorage. Believing the case to be one of extreme difficulty he had referred it to Dr. Chevalier Jackson for operation, sending Dr. Jackson a note, mentioning the location of the tack in the right bronchus and briefly outlining the difficulties which had been encountered. In a prompt reply Dr. Jackson replied that he had easily located it by x ray in the left bronchus and that he anticipated an easy extraction on the following day. Two days later another communication from Dr. Jackson was received stating that he had entered the left bronchus with the tube and to his surprise could not find the tack. He then had additional x ray pictures made and finally located the tack in the intestinal tract, from whence it issued *per vias naturales*.

Dr. Jervey in commenting on the case said that what had happened was that his interference with the tack in the location which it had occupied for two years or more had had the effect of loosening it in its bed, and between the time that the patient left him and was first seen by Dr. Jackson, he had coughed the tack up to the bifurcation and it had dropped over into the left bronchus. Then between the time that Dr. Jackson's x ray pictures had been made and the bronchoscopy the child again had coughed the tack out of place and got it as far as the introitus of the esophagus from where it was then swallowed. Dr. Jervey said that such a case might be termed a migrating foreign body, and in connection therewith presented the report of another case, as follows:

CASE V.—In March, 1919, a man of fifty-two years inspired a wire staple with double sharp points slightly spreading apart. He was brought to Dr. Jervey's hospital for relief. He brought a sample with him just like the one he had swallowed and it measured seven eighths of an inch in length, three eighths of an inch spread of point and the shank something over one sixteenth of an inch thick. X ray examination with fluoroscope and plates done twice at an interval of two days, positively demonstrated the staple in the left lower lobe bronchus, lying horizontally and pointing medially. No difficulty was experienced in performing bronchoscopy under cocaine anesthesia. The tube had to be passed practically its entire length to reach the location of the foreign body. The staple was so placed in the bronchial ramus that it was not visible on direct inspection of this neighborhood, except when the patient was in the act of coughing; in other words, the foreign body was so far in the branch bronchus that with the parts at rest, it did not

present itself to view in the line of the main bronchus. No accuracy could therefore be had in grasping the staple. The physical difficulties were such that after a reasonable effort, it was decided to postpone further operation in order to think out and perfect some plan of attack. Instead of returning to Dr. Jervey, however, the patient sought the help of Dr. Jackson, who sent Dr. Jervey a report of the case, detailing the operative procedures which were adopted, stating that the staple was readily located and easily withdrawn from the right bronchus and that the time of operation forty seconds.

Dr. Jervey said that these two cases threw side lights upon the knowledge of peroral endoscopy, as follows:

Don't forget that sometimes foreign bodies do move.

Don't forget that the second peroral endoscopy performed on the same patient is likely to be easier than the first and the third easier than the second. You owe it to your patient and to yourself to prove it. Therefore:

Don't be in too great a hurry to refer your patient to a colleague for operation, even though you know he is a better man than yourself.

Don't, when a colleague refers a case to you, explaining that he has sweated over it at least forty minutes unsuccessfully, and you send him a neatly prepared formula of your findings and operation, and everything, casually mentioning that the thing was easily located and removed by peroral endoscopy—don't, oh don't then be tempted to pile Pelion upon Ossa, with the following interesting information: "Time of operation, forty seconds"!

Dr. D. J. GIBB WISHART, of Toronto, mentioned one of his own cases where a brass tack was located by the x ray in the left main bronchus. The x ray operator appended a note in his report of the case and the shadow cast below the site of the tack was such as to suggest that secondary changes were taking place in the lung and that speedy removal was necessary. The right bronchial tube was examined first through the bronchoscope before entering the left and the tack was made out in the latter without difficulty. It was seized with a pair of forceps and refused to yield. Thinking that the reason for this immobility was that the membrane of the lateral wall had inadvertently been seized, the forceps were disengaged. This was immediately followed by a rush of fluid and when the latter had been cleared out by suction and sponging, the tack had disappeared; although the left bronchus was explored much further down than the original location it could not be discovered, and as the right bronchus had been previously examined, it was not looked into again. An x ray plate taken the following morning revealed the tack in the right bronchus, having been washed there by the rush of fluid.

Dr. THOMAS HUBBARD, of Toledo, said that it was very important that every complete endoscopic operating room should have an x ray outfit, so that in the event of failing to find a foreign body the surgeon could promptly have another examination made. He told of a case in point, in which the x ray outfit was not available in the hospital, and in the interval between the taking of the plate and

the operation the foreign body had shifted. At the operation the tack was not found where it had been shown in the plate (right lower main bronchus) so it was decided to have another examination the next day, and the same thing occurred. No tack was to be seen by bronchoscope in either bronchus. The next day a third examination was made with fluoroscope and the tack was again found in the lower right bronchus. By the time the anesthesia had been given, it had shifted again and was not visible in the right nor on the left bronchus. With the fluoroscope it was located in the right upper lobe bronchus, out of the line of vision of the tube. The third operation was done with low tracheotomy as it seemed easier to straighten the angle. There were two planes of examination by fluoroscope, anteroposteriorly and laterally, and it was possible thus to place the end of the bronchoscopic tube exactly opposite the right lobe orifice, and by manipulation reduce the angle. With right angle forceps it was possible to grasp the point of the tack through the tube. It was all done with the aid of the fluoroscope. The tack was finally extracted from the right upper bronchus. The point to be emphasized was the necessity of having a fluoroscopic apparatus present to locate a shifting foreign body and aid in extraction.

Dr. SIDNEY YANKAUER, of New York, said that Dr. Hubbard's case recalled to his mind an interesting one observed a couple of years ago. A child two years of age was referred to him with the statement that it had had a sore throat and had been treated by another physician. There was nothing said about an examination for diphtheria nor any antitoxin administration at the time of the sore throat, but when he examined the child he found in the throat a flat piece of brass—the color clearly distinguishable—situated anteroposteriorly between the vocal cords. It was so tempting that he could not resist trying to extract it with a pair of forceps, but although he got hold of it, he could not dislodge it; it was tightly fixed in the larynx. This attempt at removal caused a slight bleeding in the larynx, and as further evidence was needed as to the shape of the piece of brass, the child was sent to the hospital to have an x ray taken, and the house surgeon was instructed to do a tracheotomy if dyspnea should supervene. By the time the child got to the hospital it was so dyspneic that the surgeon performed the tracheotomy, and an x ray picture was made. When Dr. Yankauer reached the hospital in the afternoon he was told that there was no foreign body in the larynx. They had x rayed it anteroposteriorly and laterally and no foreign body could be seen. Being positive that he had seen the brass in the larynx, he ordered an examination of the child's stools, and an x ray examination of the child again from the top of the head to the lower part of the torso, thinking that the object might have been expelled and swallowed. These x rays were made, and nowhere in the child's body was the piece of brass found. A piece of brass would show very clearly with a fluoroscope, but it was not anywhere to be found, nor had it been coughed up nor dislodged. Then another laryngeal examination was made, and to his surprise the foreign body had disappeared. He then

waited a few days until the child had recovered its strength, and decided to examine the bronchi, for the foreign body was not in the esophagus, had not been ejected, had not been passed in the stools. It was not located by the x rays; the case was a mystery.

When the bronchoscope was passed into the right bronchus, the foreign body was seen; it was a flat object, but no longer brassy in color. When it was removed, it was found to be a piece of glass, the edge of which was gilded, and this was what had been seen through the bronchoscope, but the glass did not show in the x ray picture. Subsequently it was learned that the child had been given medicine in a gilt edged glass, and had bitten a piece out.

Dr. JOHN W. MURPHY, of Cincinnati, told of a child that had been choked on sixty cents. The interesting part was the ease with which the half dollar was extracted in his office, despite the difficulty which a general surgeon had encountered in his endeavor to esophagoscope the patient. The child was going to a store with sixty cents, and put the coins in her mouth and they disappeared. She was taken to a hospital and given an anesthetic, and for three hours a competent general surgeon worked on the case but was unable to extract the half dollar. Then they sent the child 600 miles to have the coin extracted. It proved very easy, and within three minutes after looking down the esophagus the half dollar was removed. The dime was in the stomach . . . and was given to the child with which to buy candy, for being a good child. The case showed the ease with which these foreign bodies could usually be removed if one was properly prepared, also the difficulties that the general surgeon would encounter if not properly equipped.

Dr. Murphy said he would like to have some suggestions as to what to do for a nine months old baby with a three-inch safety pin in its stomach. The patient came in just as he was leaving, and the x ray plate showed a safety pin in the stomach which had been there for three weeks. The pin was closed, and he advised that it be let alone. The child was apparently perfectly well and happy and was gaining in weight, but the problem was up to him in case it did not eventually pass the pin from the bowels. Several men advised letting the pin alone.

Dr. W. B. CHAMBERLIN, of Cleveland, said that some months ago the child of a colleague had swallowed an open safety pin, which was located in the stomach, and watched with successive x ray pictures at intervals of a few days for two or three weeks. In spite of it being a large safety pin and open, it passed through the pylorus and finally lodged at the anus and was extracted with the fingers.

An Unusual Foreign Body Removed from the Esophagus.—Dr. HENRY L. LYNAH, of New York, presented this paper which was illustrated by lantern slides.

Sir St. Clair Thomson expressed his pleasure in the fact that his suggestion of doing a tracheotomy when in doubt was justified in the cases shown by Dr. Lynah. He said that the statistics of Dr. Gross which Dr. Arrowsmith had quoted should

be read over again by all. He did not wish to seem iconoclastic, but Charles Lamb, the English wit, had said once that whenever a new book was published he always read an old one! It would do every laryngologist good to read over that paper by Dr. Gross in which he showed what a large number of foreign bodies would be expelled by doing a tracheotomy. We all have to learn, and so have our pupils, that one cannot make an omelet without breaking eggs, but in learning to do endoscopy many eggs would be saved by doing a preliminary tracheotomy. Dr. Gross's statistics showed that a surprisingly large number of patients would spontaneously cough up the foreign body after such a tracheotomy. Referring to the fact that the x ray did not always give good service, the speaker cited an instance published by him in which the foreign body had been overlooked. A young man had a weakened tooth plate. He knew it was broken, and one night he found that half of it had disappeared. That half of the plate was removed from his esophagus four and a half years afterward, and in the meantime he had been to two large hospitals in London, with medical schools attached, where they had the most perfect x ray outfits and surgeon laryngologists. He had also been to a smaller special hospital, but in all these places they failed to find the weakened plate, for it was thin and old and the x rays failed to picture it. In these hospitals the esophageal tube had been passed, but the plate being curved and pinkish, the tube had passed it, and three expert men failed to find it. The poor patient had been laughed at and lectured on as a case of functional dysphagia, and the finger of scorn had been pointed at him as being the first male with such a complaint treated in that hospital, all the previous cases having been in females. In the next hospital he had been told that he ought to join the army, and he finally disappeared until he came to the speaker's hospital and the plate was removed four and a half years after the accident.

Dr. YANKAUER said that Sir St. Clair Thomson's remarks reminded him of two cases in which the x ray failed to reveal the foreign body. In one case the man was referred to a surgeon for operation for a lung abscess. He had had an operation some years before and was wearing a tracheotomy tube at the time, but stated that a year previously the tube had broken and he had lost a piece in his lung. He had been x rayed and bronchoscoped without finding it. It was determined to make a further effort, however, and on passing the bronchoscope, Dr. Yankauer found the entire curved portion of the tube in the left bronchus. Its edge was covered with swollen mucous membrane, and it was difficult to see it, but on persevering he was finally successful in removing two inches of the tracheotomy tube, which had been there for a year. In the second case the patient stated that two months previously he had had a tooth extracted, and the moment the tooth was withdrawn, a portion broke off and was inhaled. Shortly after the patient began to cough, had a high temperature, and pain in his right chest. He was radiographed repeatedly but no sign of the tooth could be seen

in any of the radiographs, although a stack of them two inches high had been made. There was not a single shadow which anyone could recognize as a portion of a tooth. The man had been examined by various diagnosticians and his lung had been punctured a number of times. Finally he was bronchoscoped by a man who stated that there was no foreign body in the bronchus, but that there was a carcinoma of the lung with pus in two branches of the bronchus.

Dr. Yankauer again bronchoscoped the patient and removed the foreign body. When the tooth was out he examined it carefully and compared it with the various shadows on the x ray plates, and finally found a shadow that corresponded with the shape of the tooth, but no radiographer could have recognized it before having the tooth to compare with the plates.

Dr. Murphy told of two cases sent to him last summer from a neighboring town; one of the patients died on the train, and the other in an automobile. A tracheotomy might have saved both. Now, if he had any long distance cases referred, he invariably instructed the physician to come with the patient and be prepared to do a tracheotomy. These cases might not be very severe on starting from home, but in the course of two or three hours they might become very sick before they reached the office.

Letters to the Editors.

WILLIAM T. G. MORTON, THE DISCOVERER OF ANESTHESIA, AND HIS PLACE IN THE HALL OF FAME.

16 West Ninety-fifth Street,
New York, June 10, 1926.

To the Editor:

On April 10th you were good enough to publish my open letter entitled No Physician or Surgeon as yet in the Hall of Fame. As you will recall, I deplored the fact that no physician or surgeon had as yet been found worthy to be named among the great American immortals. I ventured to suggest as the three most worthy names William T. G. Morton, the discoverer of ether anesthesia; Ephraim McDowell, the first surgeon to perform a rational, deliberate, and successful ovariectomy, and J. Marion Sims, a great gynecologist who perfected the plastic operation in the vagina for the relief of vesical fistulæ and who invented the speculum. I stated that the nominations should be sent to the senate of the New York University, University Heights, New York City, and that this should be done by every physician who feels the great injustice done to the American medical profession by the apparent neglect or oversight of the previous electors.

I received many letters of approval of my efforts and of my choice of the three names mentioned. A few of my correspondents, however, objected to the name of William T. G. Morton as not being the discoverer of surgical anesthesia, and in the *Journal of the American Medical Association* of April 24th there appeared a strong letter signed by Dr. S. J. Lewis, according to whom the priority of the discovery of sulphuric ether as an anesthetic belongs

to Dr. Crawford W. Long. It would lead to no result to recall here all the details of the old controversy between Morton, Long, and Jackson of half a century ago; the fact remains that before any one of these three men thought of the subject of anesthesia, means to subdue pain by all sorts of physical agents, such as various vapors and lotions were employed, and even hypnosis was resorted to by Esdaile and Elliotson (1790-1868), who operated hundreds of patients in the hypnotic state. Granted that Crawford W. Long discovered the anesthetic properties of sulphuric ether before Morton, he did not make known this method of producing sleep. Long did not prove to the medical profession that surgical anesthesia with the aid of sulphuric ether was "certain, safe and complete." These words were used by Dr. Henry J. Bigelow, a member of the staff which was present during the operation on that memorable day of October 16, 1846.

Concerning the priority claims of Long and Jackson, Dr. J. Collins Warren, Moseley professor of surgery emeritus, Harvard University, who wrote me only recently in reference to this matter, very pertinently says: "It is probable that Long performed three or four minor operations with primary anesthetic and then abandoned his claims. As Dr. Keen says, 'he is deserving of nothing but censure for not having appreciated the value of the agent.'" Concerning the claims of Jackson and his heirs, Dr. Warren wrote: "Dr. Charles T. Jackson was very unwilling to have anything to do with the discovery at first, saying that Morton would kill somebody next, and it was not until after he had attended an operation in the private practice of my father, to which he was invited, and saw Morton give the ether most successfully, that he came out the next day with an article in the newspaper claiming a share in the discovery."

The question resolves itself into what is meant by priority in the case of a great discovery. In Owen's *Homologies of the Skeleton* we read the following definition of priority: "He becomes the true discoverer who establishes the truth, and the sign of the truth is the general acceptance. Whoever, therefore, resumes the investigation of neglected or repudiated doctrine, elicits its true demonstration, and discovers and explains the nature of the errors which have led to its tacit or declared rejection, may certainly and confidently await the acknowledgments of his right in its discovery."

Francis Darwin in *Eugenics Review*, 1914, makes it still clearer when he says: "In science the credit goes to the man who convinces the world, not to the man to whom the idea first occurs." Morton convinced the world; the credit is his.

The late Sir William Osler, our greatest modern medical historian, to whom I referred in my first communication, considers Morton the inventor and revealer of anesthesia by sulphuric ether, and he speaks of him as a new "Prometheus who gave a gift to the world as rich as that of fire, the greatest single gift ever made to suffering humanity." He pertinently asks in one of his latest essays on the subject (*Annals of Medical History*, Vol. I, No. 4):

"Why do we not give the credit to Dioscorides, who described both general and local anesthesia, or to Pliny, or Apuleius or to Hiotho, the Chinaman,

who seems to be next in order, or to the inventor of the spongia somifera, or to Master Mazzeo Montagna, in Boccaccio, or to any one of the score or more of men in the Middle Ages who are known to have operated on patients made insensible by drugs or vapors?"

In addition to the testimony of Osler, that to Morton and to no one else should be given the credit, I may quote the following paragraph from a personal letter sent to Mr. E. L. Snell by Oliver Wendell Holmes on April 2, 1893 (*Century Illustrated Magazine*, August, 1894):

"Few persons have or had better reason than myself to assert the claim of Morton to the introduction of artificial anesthesia into surgical practice. This priceless gift to humanity went forth from the operating theater of the Massachusetts General Hospital, and the man to whom the world owes it is Dr. William Thomas Green Morton."

As further evidence that to Morton should be given the credit, I will cite a paragraph from an address by Prof. William H. Welch, of Baltimore, delivered on October 16, 1908 (the sixty-second anniversary of Ether Day), as follows:

"The attendant circumstances were such as to make the operation performed on October 16, 1846, in the surgical amphitheater of this hospital, by John Collins Warren, upon the patient, Gilbert Abbott, placed in the sleep of ether anesthesia by William Morton, the decisive event from which dates the first convincing public demonstration of surgical anesthesia, the continuous, orderly, historical development of the subject, and the promulgation to the world of the glad tidings of this conquest of pain. Had this demonstration or any subsequent one of like nature failed of success, it is improbable that we should have heard much of claims to the prior discovery of surgical anesthesia."

Dr. Charles H. Mayo, one of the electors of this year, writes me as follows: "It is a sad commentary that no medical man's work has been considered of sufficient importance to warrant a tablet in the Hall of Fame." Let there be no longer a division as to the nomination of Morton for the Hall of Fame. All those who are willing to be helpful in this matter may write to the Senate of the New York University or to any one of the 102 electors. The final election will take place July 1st. Fortunately we have this year among the electors no less than four medical representatives—Major General Leonard Wood, Prof. William H. Welch, and Dr. William J. and Dr. Charles H. Mayo. I hope the good and great general will forgive me for still claiming him as one of ours. A list of the 102 electors will be sent to any one addressing his request to the secretary of the Senate of the New York University.

We should have not only William T. G. Morton, but also the two other great Americans already mentioned who belong to our profession in the Hall of Fame—Ephraim McDowell and J. Marion Sims. However, William T. G. Morton should be the first to be placed among America's great immortals.

It may not be universally known that Morton died virtually in poverty, heartbroken because he had received no recognition for his epochmaking discovery and daring experiment. I feel that I

cannot close this ardent appeal for justice to "the inventor and revealer of anesthetic inhalation before whom in all time surgery was agony" better than by quoting one verse from *The Birth and Death of Pain*, a poem by S. Weir Mitchell, M. D., read on October 16, 1896, at the commemoration of the fiftieth anniversary of the first public demonstration of surgical anesthesia:

"How did we thank him? Ah! no joy-bells rang,
No paeans greeted, and no poet sang,
No cannon thundered, from the guarded strand,
This mighty victory to a grateful land!
We took the gift, so humbly, simply given,
And coldly selfish—left our debt to Heaven.
How shall we thank him? Hush! A gladder hour
Has struck for him, a wiser, juster power
Shall know full well how fitly to reward
The generous soul that found the world so hard."

S. ADOLPHUS KNOPF, M. D.

Births, Marriages, and Deaths.

Died.

BARTON.—In Toronto, Ont., on Friday, April 21st, Dr. Samuel George Barton, aged fifty-eight years.

BROWN.—In Madrid, Ia., Dr. Ernest C. Brown, aged fifty-three years.

COOPER.—In Carrollton, Mo., on Sunday, May 2nd, Dr. John C. Cooper, aged eighty-seven years.

CORNELL.—In Brooklyn, N. Y., on Thursday, June 17th, Dr. George Boardman Cornell, aged eighty-eight years.

DAVIS.—In Wadena, Minn., on Thursday, April 22nd, Dr. Luther A. Davis, aged forty-two years.

FOLEY.—In Montreal, Que., on Friday, April 9th, Dr. Leslie J. Foley, aged sixty years.

FREEMAN.—In Bridgewater, N. S., on Friday, April 16th, Dr. Nelson Porter Freeman, aged fifty-five years.

GLAHN.—In Palmyra, Mo., on Wednesday, April 28th, Dr. Christian P. Glahn, aged fifty-four years.

HARPER.—In Rene, Col., on Tuesday, June 15th, Dr. William Franklin Harper, of Mt. Vernon, N. Y., aged sixty-five years.

LAVOIE.—In Quebec, Que., on Thursday, April 15th, Dr. Joseph Paradis Lavoie, aged sixty-five years.

MOTT.—In Minneapolis, Minn., on Friday, April 28th, Dr. Benjamin F. Mott, aged sixty-nine years.

PEARSON.—In Morrill, Me., on Friday, May 28th, Dr. Thomas N. Pearson, aged fifty-four years.

SMILEY.—In Chambersburg, Pa., on Saturday, June 12th, Dr. Lewis F. Smiley, of Philadelphia, aged sixty-nine years.

SMITH.—In Nelson, Mo., on Monday, April 12th, Dr. James Dismurkes Smith, aged sixty years.

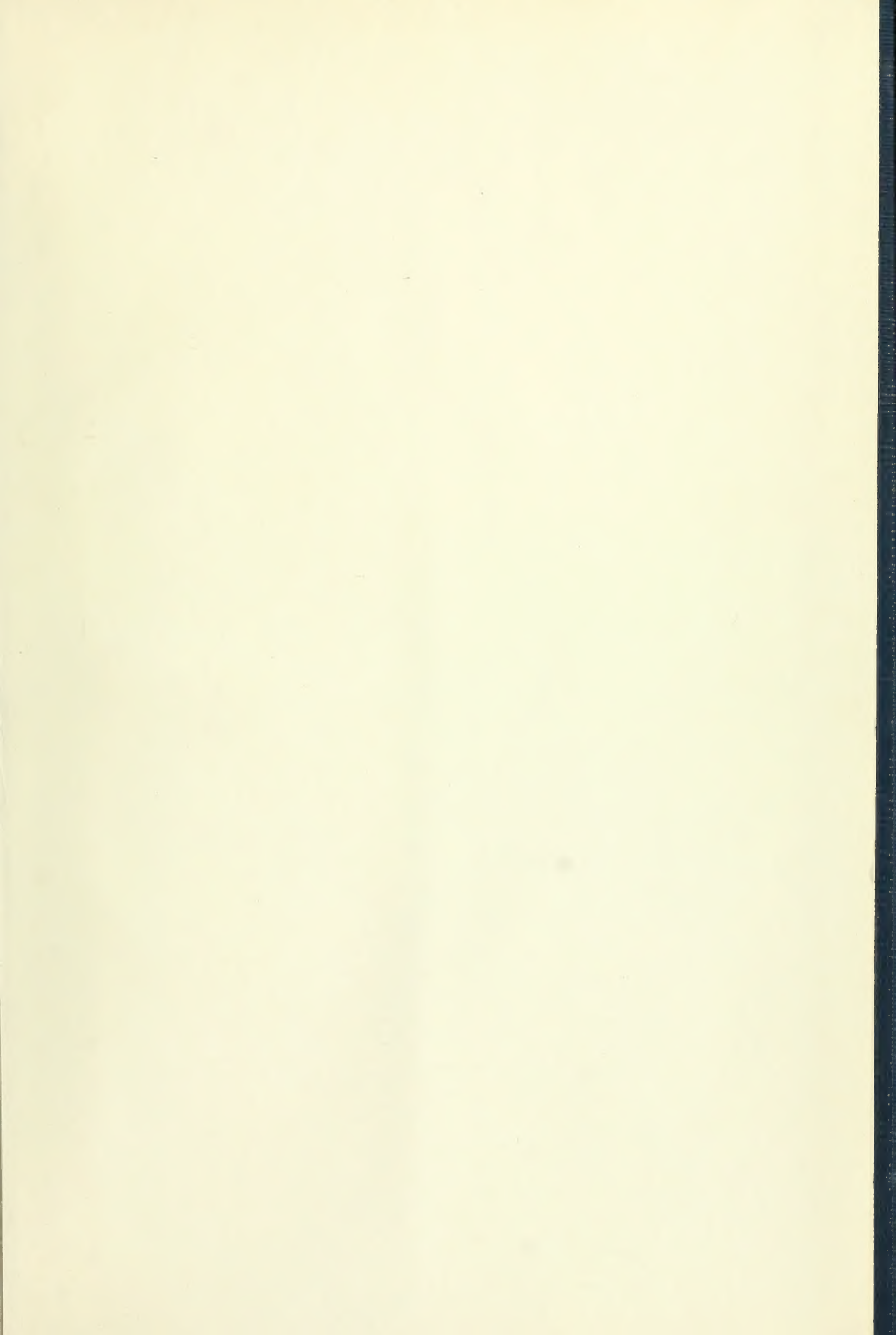
SPRAGUE.—In Belleville, Ont., on Friday, April 23rd, Dr. James Sylvanus Sprague, aged seventy-five years.

UPSHAW.—In St. Louis, Mo., on Saturday, April 3rd, Dr. Harry Anderson Upshaw, aged forty-three years.

WHARTON.—In St. Paul, Minn., on Tuesday, April 13th, Dr. Alfred Wharton, aged eighty-four years.

WILSON.—In Toronto, Ont., on Saturday, April 24th, Dr. Herbert William Wilson.

WITMER.—In Santa Ana, Cal., on Sunday, April 11th, Dr. Cassius M. Witmer, of Marble Hill, Mo., aged sixty-two years.



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